NEVADA

EMERGENCY MEDICAL SERVICES

PROTOCOLS

Table of Contents

FOREWORD

Quality prehospital care depends on clear assessment, timely treatment, and appropriate medical consultation. This manual provides statewide guidance for prehospital care providers and emergency department physicians operating within the Nevada EMS system.

These protocols are not mandatory. They are a state-approved standard of care that agencies may adopt or adapt based on local needs, medical direction, and resources. Agencies remain responsible for their own policies, procedures, and medical oversight in accordance with NRS 450B.

NOTHING in these protocols is intended to delay patient transport. Provide care while preparing for and during transport to an appropriate receiving facility.

General Assessment protocols should be followed in the sequence shown. All other protocols are written as clinical pathways that describe typical care and usual order of actions. The order suggests priority but is not absolute.

Protocols describe what you may do, not what you must do. Use clinical judgment. Think of these protocols as a toolbox, not a checklist. You may apply more than one protocol on a single call. Reassess the patient often. Restart or adjust care as needed. Use only the interventions required to stabilize or improve the patient's condition. Not every step applies to every patient

Online medical direction may be contacted at any time. Providers may perform any intervention authorized at their certification level or below, consistent with agency policy and medical direction.

The goal of this manual is to promote consistency and quality in prehospital care across Nevada while preserving local flexibility. Basic patient care skills and procedures are assumed on every call.

Not all agencies will carry every medication or piece of equipment listed. Availability varies based on agency resources, scope of practice, and medical director approval.

Protocol Key:

 Caution / Warning / Alert

 Pediatric Treatment Consideration (for patients less than 12 years of age)

 Telemetry Contact Required

 Specific Protocol

 EMT Licensed Attendant and above may perform these steps

 AEMT Licensed Attendant and above may perform these steps

 Paramedic Licensed Attendant

Definition of a patient:

> Under NAC 450B.180, a patient is any person who is sick, injured, wounded, incapacitated, or helpless and who is evaluated, treated, or transported by EMS personnel acting within their scope of practice.

Pediatric patient considerations:

> Pediatric treatment protocols are intended to be used on children who have not yet experienced puberty. Signs of puberty include chest or underarm hair on males, and any breast development in females.

Protocol authority

Each Nevada EMS permitted service operates under a Medical Director as required by NAC 450B.505. Agency protocols may be added or revised with Medical Director approval, provided they remain consistent with NRS 450B, NAC 450B, and the authorized scope of practice.

Recommendations for protocol improvements may be submitted to:

> Nevada EMS Program
> 4126 Technology Way, Suite 100
> Carson City, NV 89706
> NevadaEMS@health.nv.gov

EMS Agency Medical Directors who serve on the Protocol Committee:

Kersten Milligan MD, City of Elko Fire Department, Elko County Ambulance Service

EMS Agency Chiefs:

Chris McHan, EMS Chief/Paramedic, Elko County Ambulance
Daniel Hassett BS, EMS Deputy Chief/Paramedic, Elko County Ambulance
James Johnston PhD, Fire Chief/Paramedic/Emergency Manager, City of Elko Fire Department
Joel Finley, Deputy Fire Chief/Paramedic, City of Elko Fire Department
Matt Petersen, Fire Chief, Elko County Fire Protection District
John A. Pitts, Deputy Fire Chief, Elko County Fire Protection District

Protocol Committee Members:

Dakota Adkins, Paramedic, Elko County Ambulance
Patrick Davlin BS, Paramedic, Elko County Ambulance
Joel Finley, Deputy Fire Chief/Paramedic, City of Elko Fire Department
Seth Frandsen, Fire Marshall/Paramedic, City of Elko Fire Department
Josh Kirby BS, Captain/Paramedic, Elko County Ambulance
Amberlia Lefeber, Paramedic, Elko County Ambulance
John Mittelman MS, EMS Representative II, Nevada EMS Program
Jose Pacheco, Paramedic, Elko County Ambulance
Jamey Riley, Firefighter/Paramedic, City of Elko Fire Department
Piyasa Viriyakul, Advanced EMT, Elko County Ambulance

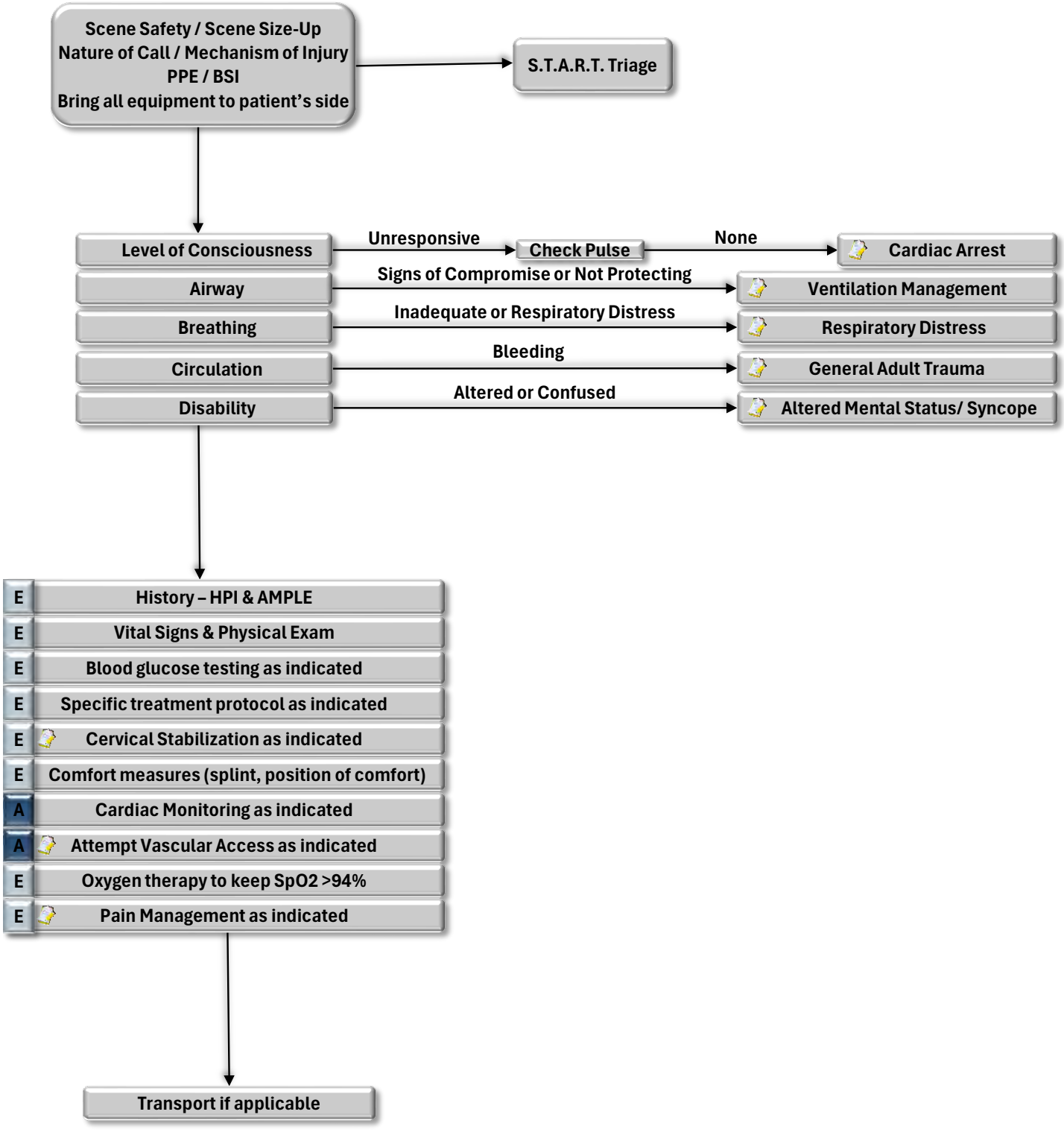
TERMS AND CONVENTIONS

AED	means Automated External Defibrillator
AMPLE	means Allergies; Medications; Prior history; Last meal eaten; Events leading up to injury/illness
AMS	means Altered Mental Status
ASA	means Acetylsalicylic Acid
BG	means Blood Glucose
BP	means Blood Pressure
BVM	means Bag-Valve-Mask
CCC	means Continuous Cardiac Compressions
CHF	means Congestive Heart Failure
COPD	means Chronic Obstructive Pulmonary Disease
CP	means Chest Pain
CPR	means Cardiopulmonary Resuscitation
CVA	means Cardiovascular Accident
DCAP-BTLS	means Deformities; Contusions; Abrasions; Punctures/Penetrations; Burns; Tenderness; Lacerations; Swelling
DKA	means Diabetic Ketoacidosis
ECG	means Electrocardiogram
ETA	means Estimated Time of Arrival
ETT	means Endotracheal Tube
GCS	means Glasgow Coma Scale
GU	means Genitourinary
HEENT	means Head, Ears, Eyes, Nose, Throat
HPI	means History of Present Illness
HR	means Heart Rate
ICP	means Intracranial Pressure
IM	means Intramuscular
IN	means Intranasal
IO	means Intraosseous
IV	means Intravenous
IVP	means Intravenous Push
IVPB	means Intravenous Piggyback
JVD	means Jugular Venous Distention
MAD	means Mucosal Atomizer Device
MI	means Myocardial Infarction
MOI	means Mechanism of Injury
NRB	means Non-rebreather
NS	means Normal Saline
NV	means Nausea/Vomiting
OEMSTS	means Office of Emergency Medical Services & Trauma System
OPQRST	means Onset; Provokes; Quality; Radiates; Severity; Time (used in evaluating localized pain)
PCI	means Percutaneous Coronary Intervention
PCR	means Patient Care Record/Report

PO	means By Mouth
PRN	means As Needed
q	means Every
ROSC	means Return of Spontaneous Circulation
RR	means Respiratory Rate
RUQ	means Right Upper Quadrant
SAMPLE	means Symptoms; Allergies; Medications; Prior history; Last meal eaten; Events leading up to injury/illness
SL	means Sublingual
SOB	means Shortness of Breath
S/P	means Status/Post
SQ	means Subcutaneous
S/S	means Signs/Symptoms
SVT	means Supraventricular Tachycardia
TCAs	means Tricyclic Antidepressants
TFTC	means Trauma Field Triage Criteria
TIA	means Transient Ischemic Attack
TKO/KVO	means To Keep Open/Keep Vein Open
VF	means Ventricular Fibrillation
VT	means Ventricular Tachycardia
VS	means Vital Signs
WPW	means Wolff-Parkinson-White Syndrome

ADULT TREATMENT PROTOCOLS

General Adult Assessment



General Adult Assessment

General Adult Assessment

Pearls

- For all scenes where patient needs exceed available EMS resources, initial assessment and treatment shall be in accordance with an approved triage methodology.
- Correct life-threatening problems as identified.
- If the ability to adequately ventilate a patient cannot be established, the patient must be transported to the nearest emergency department.
- Never withhold oxygen from a patient in respiratory distress.
- Contact with online medical control should be established by radio. Telephone contact may be used if Radio contact is unavailable.

Air Medical Utilization:

Consider activating Air Medical for helicopter transport from scene for:

1. Transport times >20 minutes with a critically injured or ill patient including:
   - Hemodynamically unstable
   - Respiratory distress
   - 2nd or 3rd degree burns to greater than 20% body surface area
   - Significant trauma
   - Amputations
   - MI
   - CVA
   - GI bleed
2. Areas inaccessible by ground ambulance
3. Multiple casualty incidents requiring more ambulance than system has available
4. Pediatric trauma patients
5. Patient condition exceeds capabilities of nearest receiving facility.

To activate Air Medical Response utilize Elko County Central Dispatch.

Waiting Room Criteria:

Upon arrival in the emergency department, if transfer of care has not occurred within 30 min in accordance with NRS 450B.790, any patient, excluding patients placed on a legal psychiatric hold, meeting *ALL* the following criteria may be placed in the hospital waiting room or other appropriate location:

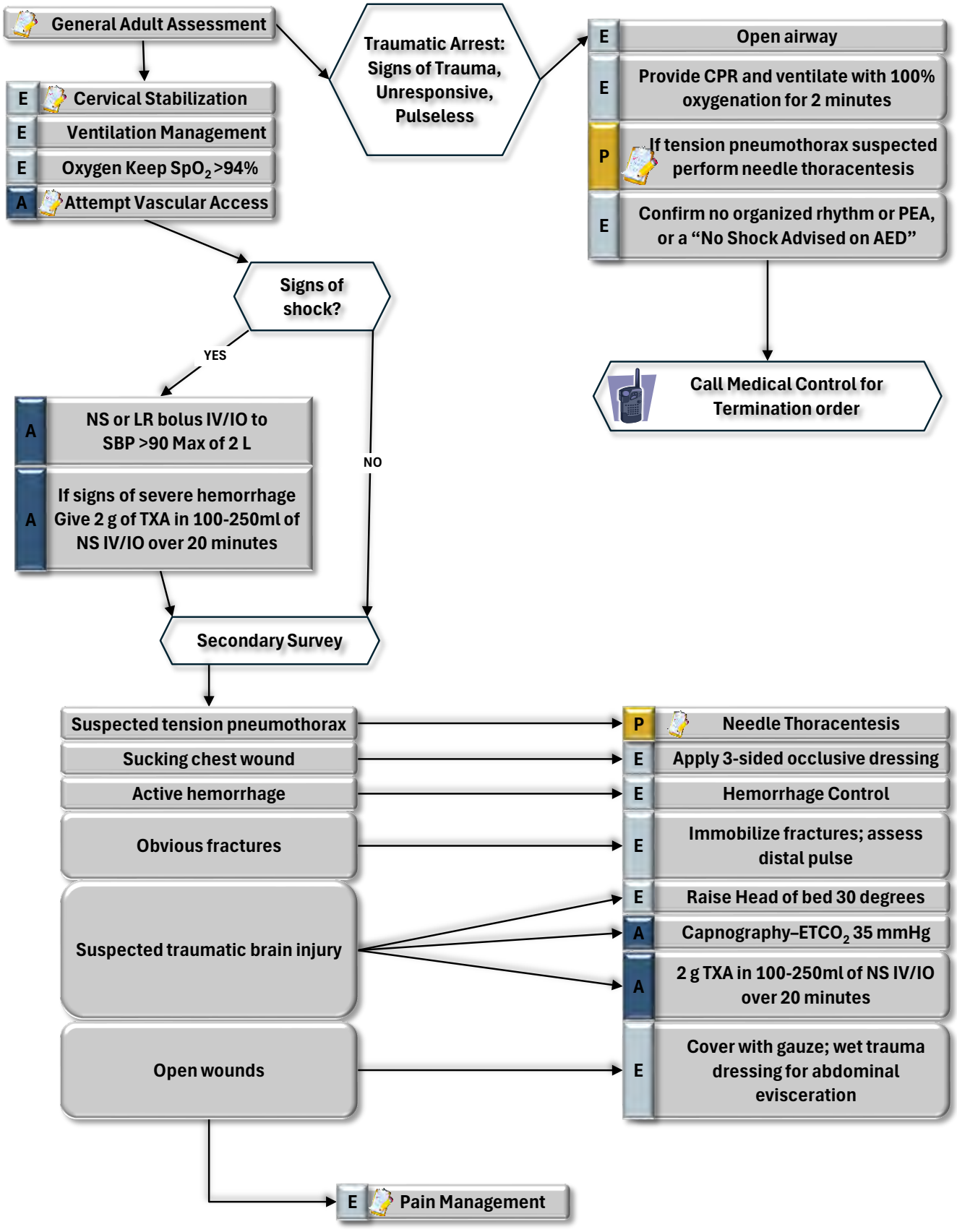
1. Normal vital signs
   - Heart rate 60 - 100
   - Respiratory rate 10 - 20
   - Systolic BP 100 - 180
   - Diastolic BP 60 - 110
   - Room air pulse oximetry >94%
   - Alert and oriented x 4
2. Did not receive an IV or any parenteral medications during EMS transport except a single dose of analgesia and/or an antiemetic.
3. In the judgment of the Paramedic, does not require continuous cardiac monitoring. Note: Any ECG by a transferring facility may not be discontinued by EMS personnel.
4. Can maintain a sitting position without adverse impact on their medical condition.
5. EMS Crew must complete a verbal report to hospital personnel.

Internal Disaster:

Operational exceptions may be initiated in regard to transport to hospitals on internal disaster.

General Adult Assessment

General Adult Trauma Assessment



General Adult Trauma Assessment

General Adult Trauma Assessment

Signs and Symptoms
- Pain, swelling
- Deformity, wounds
- AMS or unconscious
- Hypotension or shock
- Arrest

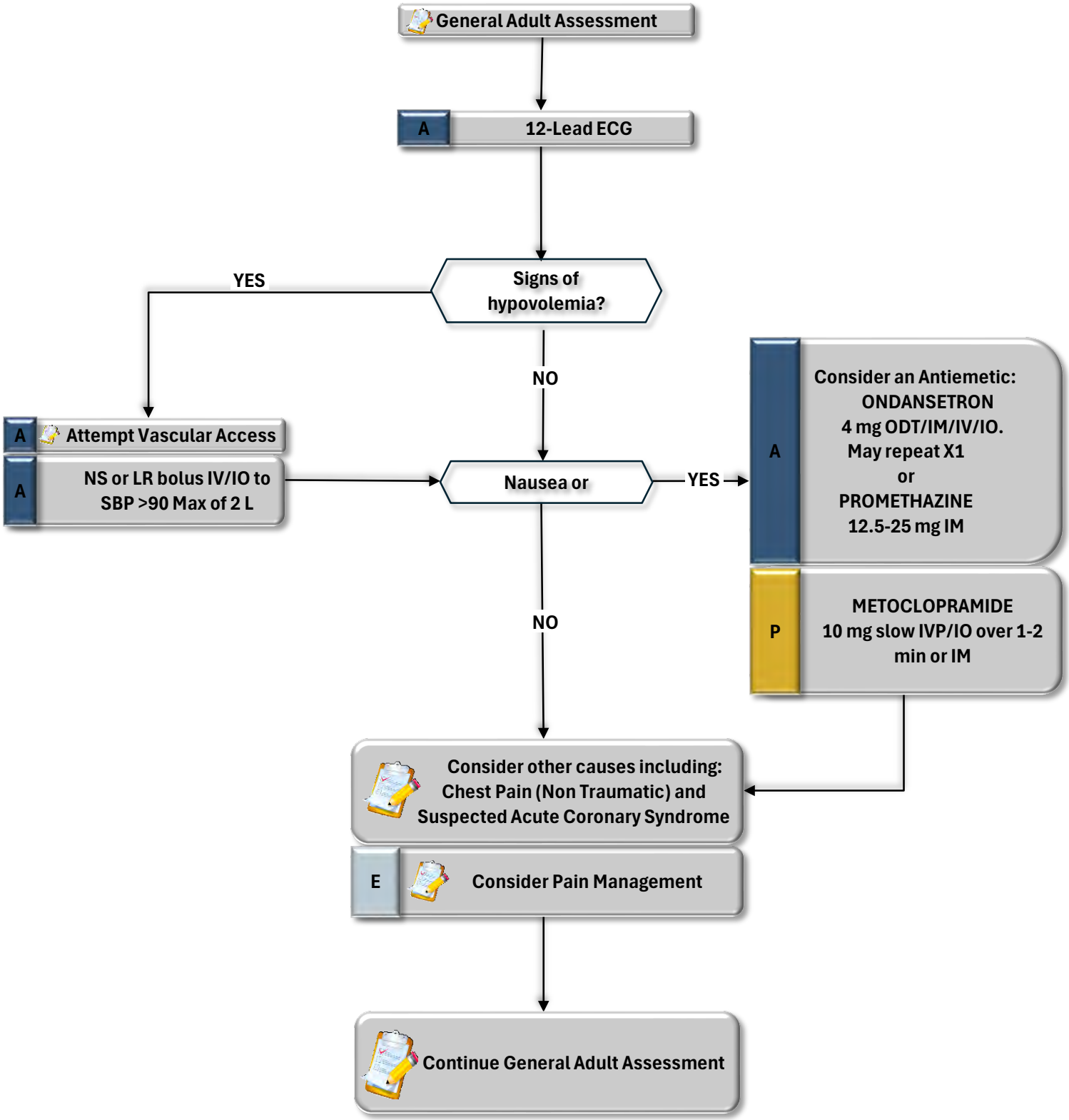
History
- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints/protective equipment
- Past medical history
- Medications
- Allergies

Differential (life threatening)
- Hemorrhage
- Traumatic brain injury
- Tension pneumothorax
- Pericardial tamponade
- Sucking chest wound
- Hemothorax
- Intra-abdominal bleeding
- Pelvic fracture
- Spine fracture/spinal cord injury
- Femur fracture

Pearls
- Recommended exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro.
- Transport should not be delayed for procedures; ideally procedures should be performed en-route when possible.
- BVM is an acceptable method of ventilating and managing an airway if pulse oximetry can be maintained ≥90%.
- Geriatric patients should be evaluated with a high index of suspicion; occult injuries may be present and geriatric patients can decompensate quickly.

General Adult Trauma Assessment

Abdominal / Flank Pain, Nausea & Vomiting



Abdominal / Flank Pain, Nausea & Vomiting

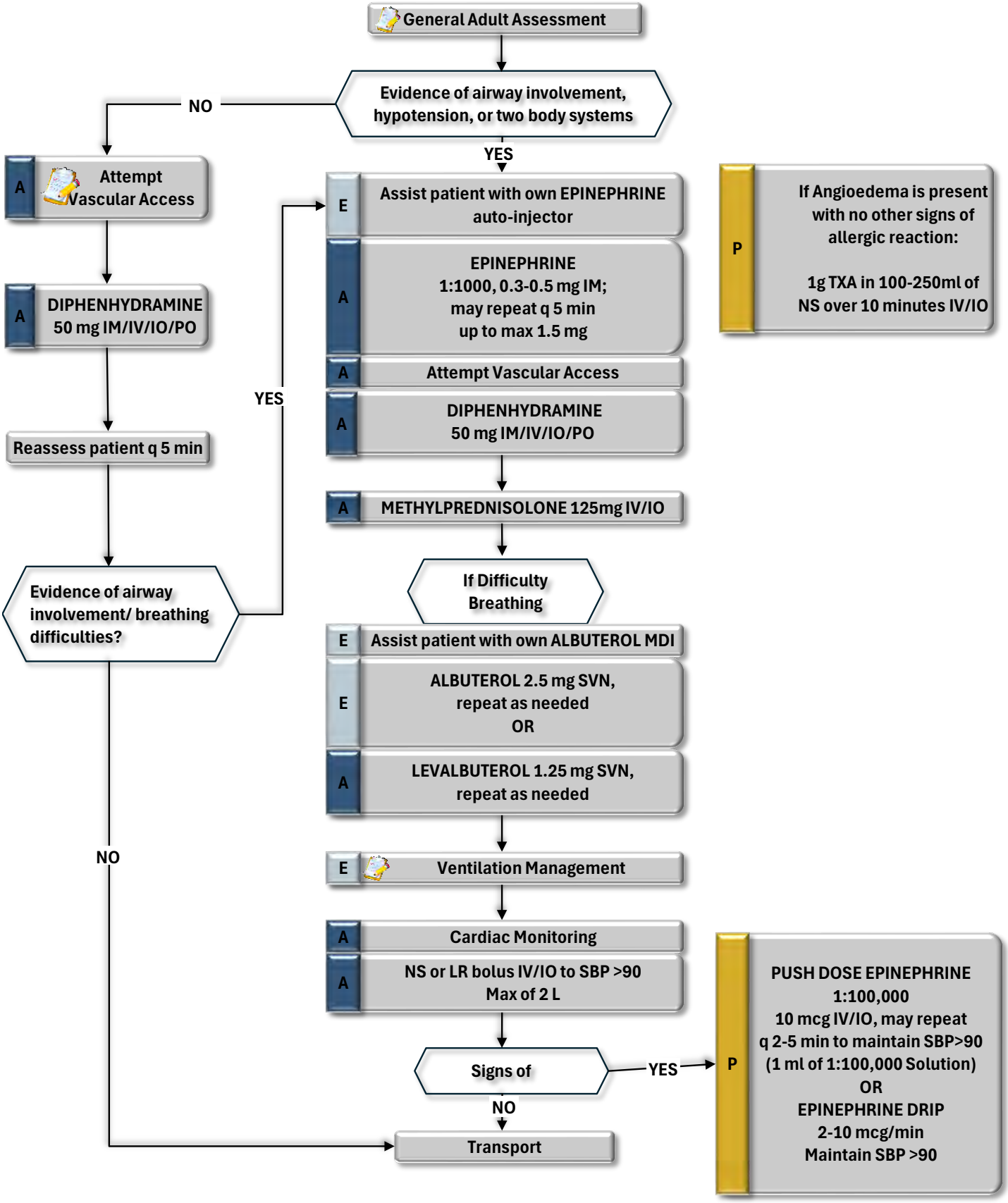
History
- Age
- Medical/surgical history
- Onset
- Quality
- Severity
- Fever
- Menstrual history

Signs and Symptoms
- Abdominal pain
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Constipation
- Dysuria
- Vaginal bleeding/discharge
- Pregnancy

Differential
- Abdominal aortic aneurysm/dissection
- Ectopic pregnancy/labor
- MI
- Ovarian/testicular torsion
- Appendicitis
- Cholecystitis
- Cholelithiasis
- Bowel obstruction
- UTI/pyelonephritis
- Kidney stone
- Perforated bowel

Pearls
- Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Hypoperfusion/shock in the presence of abdominal pain may indicate a ruptured aortic aneurysm.
- Document mental status and vital signs prior to administration of antiemetics & pain management.
- Repeat vital signs after each fluid bolus.
- In patients ≥35 years old consider cardiac origin. Perform a 12-Lead ECG if appropriate.
- Abdominal pain in women of childbearing age should be considered pregnancy until proven otherwise.

Allergic Reaction



Allergic Reaction

Allergic Reaction

Allergic Reaction

History
- Onset and location
- Insect sting or bite
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap, detergent
- Past history of reactions
- Past medical history
- Medication history

Signs and Symptoms
- Tongue, lip or throat swelling
- Difficulty swallowing
- Coughing, wheezing or respiratory distress
- Itching or hives
- Edema, erythema
- Nausea, vomiting, diarrhea
- Hypotension/shock

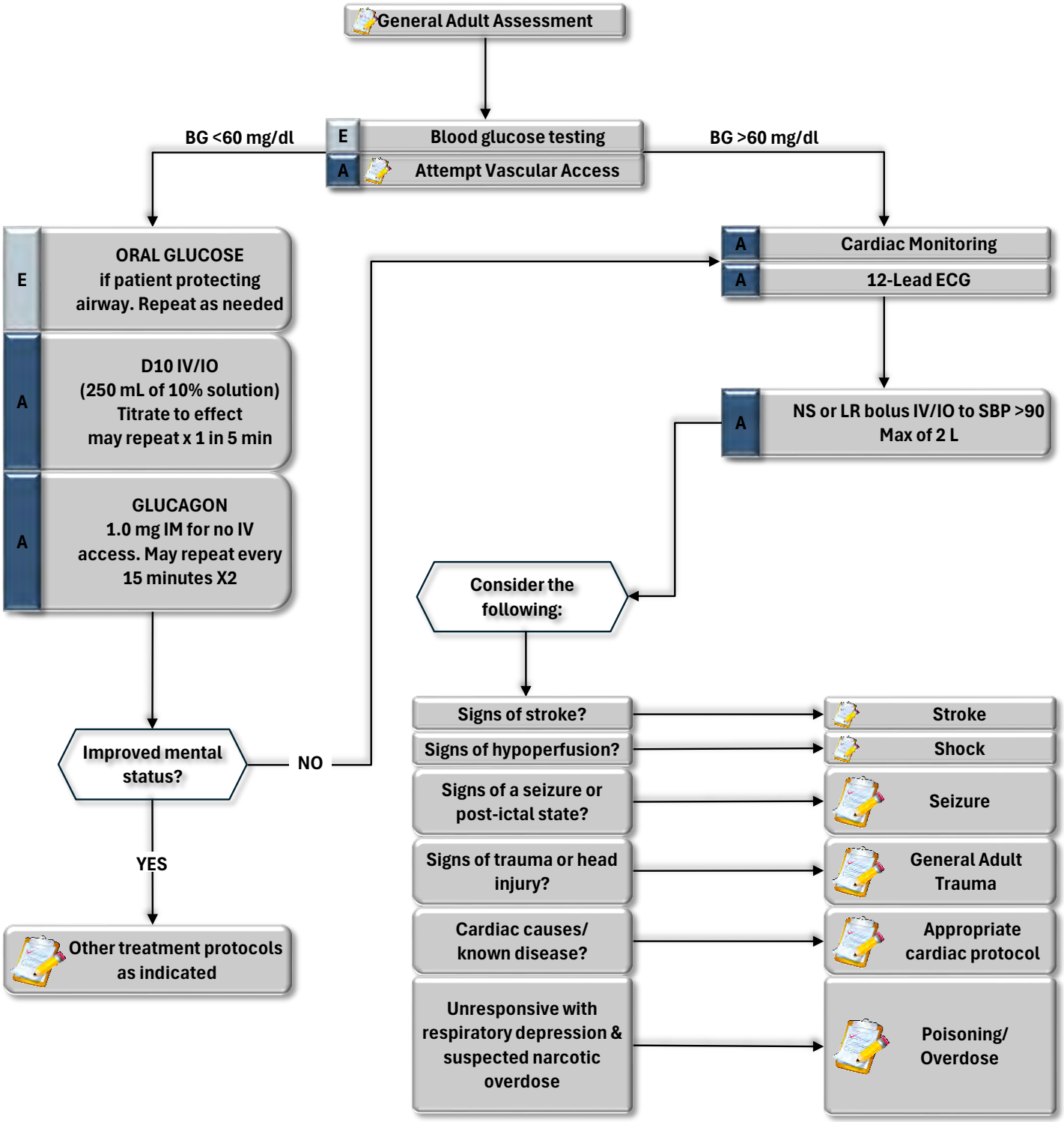
Differential
- Urticaria (rash only)
- Anaphylaxis (systemic reaction)
- Angioedema (may be drug induced)
- Aspiration/airway obstruction
- Asthma/COPD
- CHF
- Shock

Pearls
- Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Extremities.
- Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.
- Epinephrine is a first-line drug that should be administered in acute anaphylaxis. IM Epinephrine (1:1,000) should be administered in priority before or during attempts at IV or IO access.
- Contact Medical Control for refractory anaphylaxis.
- Consider ETCO2 monitoring.
- Hypovolemia or distributive shock should be addressed with a fluid bolus prior to the administration of push-dose pressors.
- While there are no absolute contraindications to epinephrine, it should be used with caution in elderly patients, patients with known cardiovascular disease, or significant tachycardia or hypertension, and should be administered only when the patient has evidence of airway involvement, difficulty breathing, hypotension or two body systems involved (Skin-Rash, GI-Vomiting/Diarrhea, Respiratory-Wheezing/Hypoxia, Vascular-Hypotension).

Special Considerations
- Always perform ECG monitoring when administering Epinephrine.
- Consider Dopamine for hypotension refractory to administration of Epinephrine.
- Provide oxygen and airway support as needed.

Allergic Reaction

Altered Mental Status/Syncope



Altered Mental Status/Syncope

Altered Mental Status/Syncope

Altered Mental Status/Syncope

History
- Known diabetic, Medic Alert tag
- Report of drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition
- Changes in feeding or sleep habits
- Fever

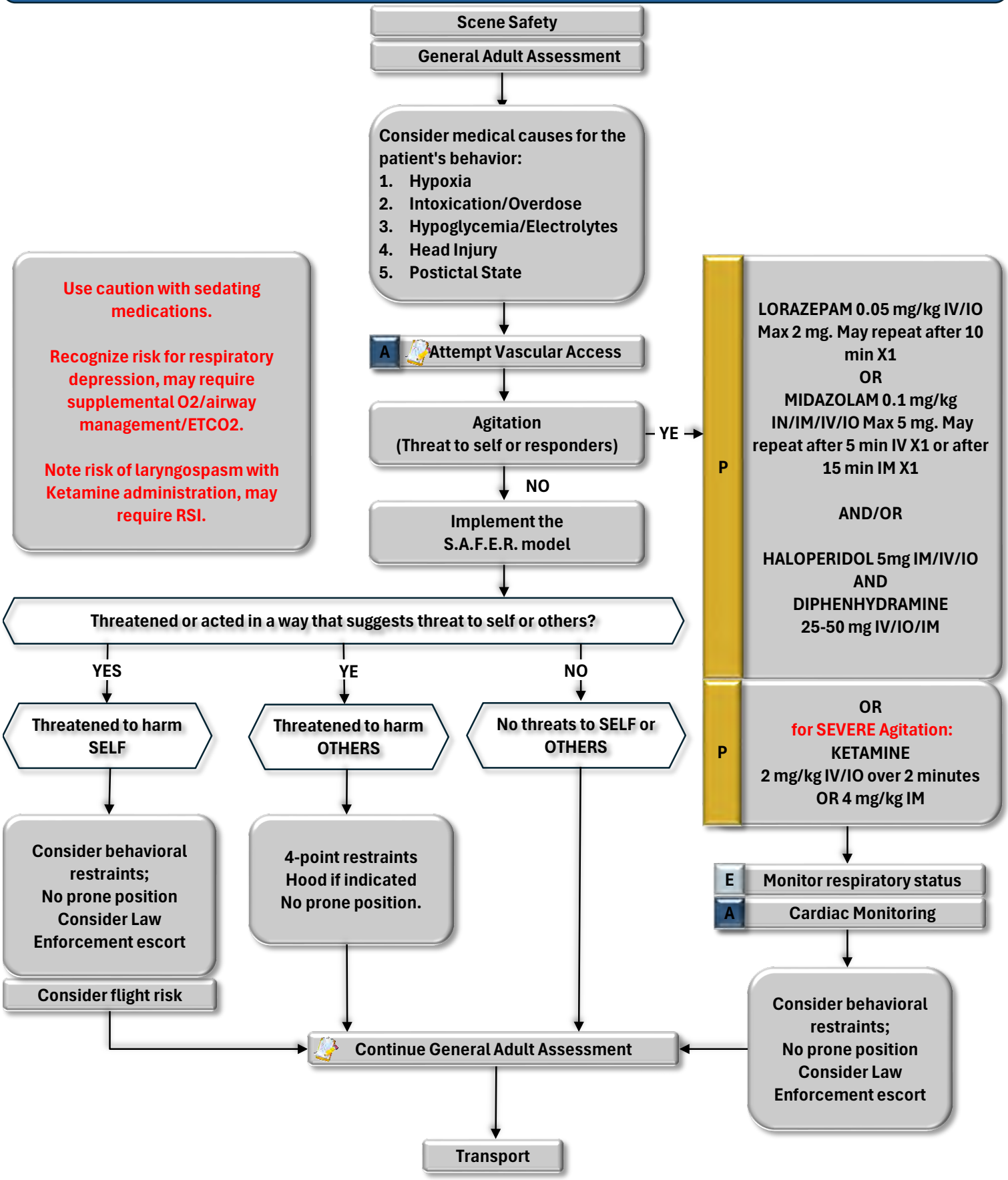
Signs and Symptoms
- Decreased alertness or lethargy
- Changes in baseline mental status
- Focal weakness
- Bizarre behavior
- Hypoglycemia
- Hyperglycemia
- Irritability

Differential
- Traumatic brain injury
- CVA
- Seizure
- Cardiac arrhythmia
- Hypoxia
- Hypothermia
- Infection (meningitis, UTI)
- Shock (septic, traumatic)
- Hypoglycemia/hyperglycemia
- Toxic ingestion
- Drug or alcohol intoxication
- Electrolyte/thyroid abnormality
- Psychiatric disorder`

Pearls
- Recommended Exam: Mental Status, HEENT, Skin, Heart, Lung, Abdomen, Back Extremities, Neuro.
- Pay careful attention to the head exam for signs of injury.
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure, and protect personal safety and that of other responders.
- Do not let alcohol confuse the clinical picture; alcohol is not commonly a cause of total unresponsiveness to pain.
- If narcotic overdose or hypoglycemia is suspected, administer Narcan 0.4-2mg or Glucose prior to advanced airway procedures.
- Consider titrating glucose to effect.

Altered Mental Status / Syncope

Behavioral Emergency



Behavioral Emergency

History
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medic Alert tag
- Substance abuse/overdose
- Diabetes

Signs and Symptoms
- Anxiety, agitation, confusion
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative, violent
- Expression of suicidal/homicidal thoughts

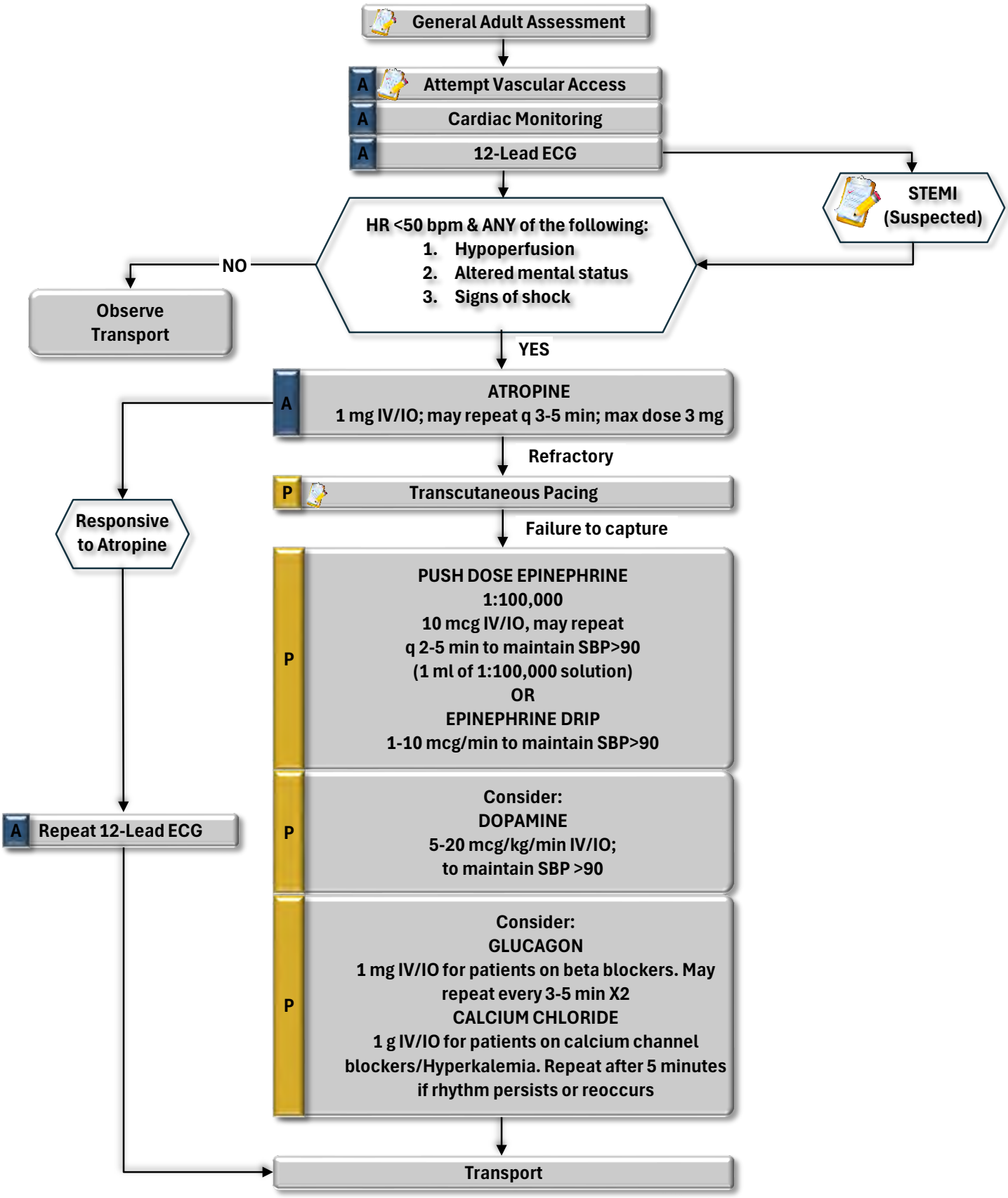
Differential
- AMS differential
- Alcohol intoxication
- Toxin/substance abuse
- Medication effect or overdose
- Drug or alcohol withdrawal
- Depression
- Bipolar
- Schizophrenia
- Anxiety disorder

Pearls
- Law enforcement assistance should be requested on all calls involving potentially violent patients.
- Under no circumstances are patients to be transported restrained in the prone position.
- Recommended Exam: Mental Status, Skin, Heart, Lungs, Neuro.
- Consider all possible medical/trauma causes for behavior.
- Do not irritate the patient with a prolonged exam.
- EMS providers are mandatory reporters in regard to suspected abuse of any vulnerable person.
- Consider ETCO2 monitoring.
- EMS providers are not to remove taser darts unless there is a need to do so to administer medical care. Dart removal is part of the education to use the device and is the responsibility of the person or agency who deploys the device.

Dystonic Reaction
- Condition causing involuntary muscle movements or spasms typically of the face, neck and upper extremities.
- Typically an adverse reaction to drugs such as Haloperidol (may occur with administration).

S.A.F.E.R.
- Stabilize the situation by containing and lowering the stimuli.
- Assess and acknowledge the crisis.
- Facilitate the identification and activation of resources (chaplain, family, friends or police).
- Encourage patient to use resources and take actions in his/her best interest.
- Recovery or referral – leave patient in care of responsible person or professional, or

Bradycardia



Bradycardia

History
- Past medical history
- Medications
- Pacemaker
- Trauma

Signs and Symptoms
- HR <50 beats/min with hypotension, acute AMS, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Respiratory distress

Differential
- Acute myocardial infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Athletic
- Head injury (elevated ICP) or stroke
- Spinal cord lesion
- AV block
- Overdose
- Hyperkalemia

Pearls
- Recommended Exam: Mental Status, HEENT, Heart, Lung, Neuro.
- Bradycardia causing symptoms is typically <50 beats/minute. Rhythm should be interpreted in the context of symptoms and pharmacological treatment given only when symptomatic, otherwise monitor and reassess.
- Identifying signs and symptoms of poor perfusion caused by bradycardia is paramount.
- Do not delay pacing while waiting for IV access.
- Hypoxemia is a common cause of bradycardia; be sure to oxygenate the patient and provide ventilatory support as needed.
- Consider dose related effects of Dopamine: 2-10 mcg/kg/min increases myocardial contractility and HR, improves BP via vasoconstriction; 10-20 mcg/kg/min causes vasoconstriction of renal, mesenteric, and peripheral blood vessels that can result in poor perfusion and renal failure.

Burns

General Adult Assessment

Thermal Exposure

Stop the burning process with water or saline
Remove smoldering clothing and jewelry
Do not remove STUCK clothing

Cover burned area with dry sterile dressing/sheet. DO NOT USE any ice, lotion, ointment or antiseptic!

Chemical Exposure

Consider Hazmat

Protect from hypothermia!

Electrical Exposure

A Cardiac Monitoring

Eye Involvement?
Continuous saline flush in affected eyes. Flush with water or NS for 10-15 min

Remove jewelry, constricting items, and expose burned area

Identify entry and exit sites, apply sterile dressings

E Ventilation Management

A Consider Secure Airway/RSI

A Attempt Vascular Access

A NS or LR bolus IV/IO to SBP >90
OR
If >20% TBSA burn present:
Transport time <15 min give 1L NS or LR wide open rate,
Transport time >15 min NS or LR at 500 ml/hr
OR
follow Parkland formula

Parkland Formula for fluids for partial (2nd degree) and full thickness (3rd degree) burns

NS or LR = 4 ml x TBSA burns (%) x Weight (kg)

½ over first 8 hours

½ over next 16 hours

A Cardiac Monitoring

E Pain Management

Consider Smoke Inhalation

Transport to appropriate facility

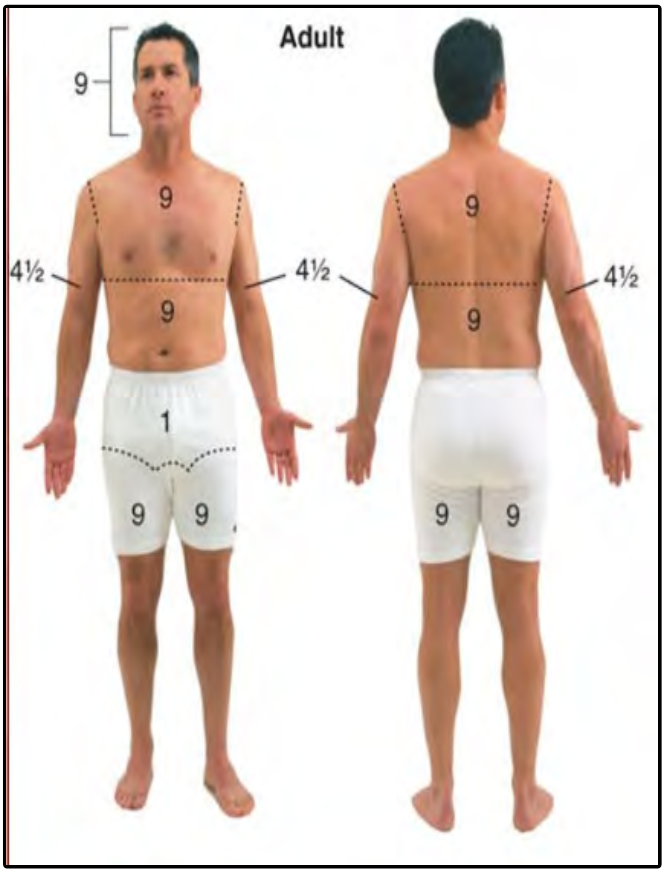
Burns

History
- Type of exposure (heat, gas, chemical)
- Inhalational injury
- Time of injury
- Past medical history & medications
- Other trauma
- Loss of consciousness
- Tetanus immunization status

Signs and Symptoms
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress
- Wheezing
- Singed facial or nasal hair
- Hoarseness or voice changes

Differential
- Superficial (1st degree) – red and painful
- Partial Thickness (2nd degree) – blistering
- Full Thickness (3rd degree) – painless/charred or leathery skin
- Thermal
- Chemical
- Electrical
- Radiation
- Lightning

Pearls
- Burn patients are trauma patients; evaluate for multisystem trauma.
- Assure whatever has caused the burn, is no longer contacting the patient. (Stop the burning process!)
- Recommended Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, Neuro.
- Consider early intubation with patients experiencing significant inhalation injuries.
- Potential CO exposure should be treated with 100% oxygen. (For patients in which the primary event is CO inhalation, transport to a hospital equipped with a hyperbaric chamber is indicated [when reasonably accessible].)
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling. Elevate extremity.
- Burn patients are prone to hypothermia - never apply ice or cool burns; must maintain normal body temperature.
- Consider ETCO2 monitoring.



Early Intubation Indications
- Signs of Airway Obstruction
- Hoarseness, Stridor, Dysphagia
- Extensive Deep Facial Burns
- Signs of Respiratory Compromise
- Accessory Muscle Use
- Inability to Clear Secretions
- Poor Oxygenation
- Burns in Mouth
- Total BSA ≥ 40%
- Altered Mentation
- Significant Risk of Edema

Pearls (Electrical)
- Do not contact the patient until you are certain the source of the electric shock has been disconnected.
- Attempt to locate contact points, (entry wound where the AC source contacted the patient; an exit at the ground point); both sites will generally be full thickness.
- Cardiac monitor; anticipate ventricular or atrial irregularity to include V-Tach, V-Fib, heart blocks, etc.
- Attempt to identify the nature of the electrical source (AC vs DC), the amount of voltage and the amperage the patient may have been exposed to during the electrical shock.

Pearls (Chemical)
- NS or Sterile Water is preferred for irrigation; however if it is not readily available, do not delay; use tap water for flushing the affected area or other immediate water sources. Flush the area as soon as possible with the cleanest, readily available water or saline solution using copious amounts of fluids.

Cardiac Arrest (Non-Traumatic)

General Adult Assessment

Meets criteria for Prehospital Death Determination or DNR/POLST present?

YES → Refer to Termination of Resuscitation or DNR/POLST Protocol as appropriate

NO

IF HYPOXIA IS THE CAUSE OF THE ARREST, EARLY VENTILATION IS RECOMMENDED

E — If witnessed by EMS or CPR in progress and patient is unresponsive with no pulse, begin chest compressions at a rate of 30:2 until an advanced airway is successfully placed.

E — Apply AED and defibrillate, if prompted

E — Insert NPA or OPA and begin BVM at 10-12 BPM

A — Cardiac Monitoring

Rhythm shockable?

VF/VT

YES

E — Defibrillate if prompted (AED)

P — Defibrillate

E — Continue CPR for 2 min

A — Attempt Vascular Access

Rhythm shockable?

NO

YES

E — Defibrillate if prompted (AED)

P — Defibrillate

E — Continue CPR for 2 min

A — EPINEPHRINE 1:10,000 1 mg IV/IO q 3-5 min
ETT Administration requires 2 to 2.5 times the dose (use 1:1,000)

A — Consider Extraglottic Airway Device

P — Consider Endotracheal Intubation

Rhythm shockable?

YES

E — Defibrillate if prompted (AED)

P — Defibrillate

E — Continue CPR for 2 min

P — AMIODARONE
300 mg IV/IO; may repeat one dose of 150 mg
Or
LIDOCAINE
1mg/kg IV/IO; may repeat 0.5mg/kg every 5 min to total Max of 300mg

NO → Use Asystole/PEA side as indicated

Asystole/PEA

NO

E — Continue CPR for 2 min

A — Attempt Vascular Access

A — EPINEPHRINE 1:10,000
1 mg IV/IO q 3-5 min;
ETT Administration requires 2 to 2.5 times the dose (use 1:1,000)

A — Consider Extraglottic Airway Device

P — Consider Endotracheal Intubation

Rhythm shockable?

YES → Use VF/VT side as indicated

NO

E — Continue CPR for 2 min

E — Address H's & T's as appropriate

Rhythm shockable?

NO

YES → Use VF/VT side as indicated

Use Asystole/PEA side as indicated

Check pulse, if organized rhythm

If patient remains unresponsive to resuscitation efforts, consider Termination of Resuscitation Protocol

Cardiac Arrest (Non-Traumatic)

History
- Events leading to arrest
- Estimated down time
- Past medical history
- Medications
- Existence of terminal illness

Signs and Symptoms
- Unresponsive
- Apneic
- Pulseless

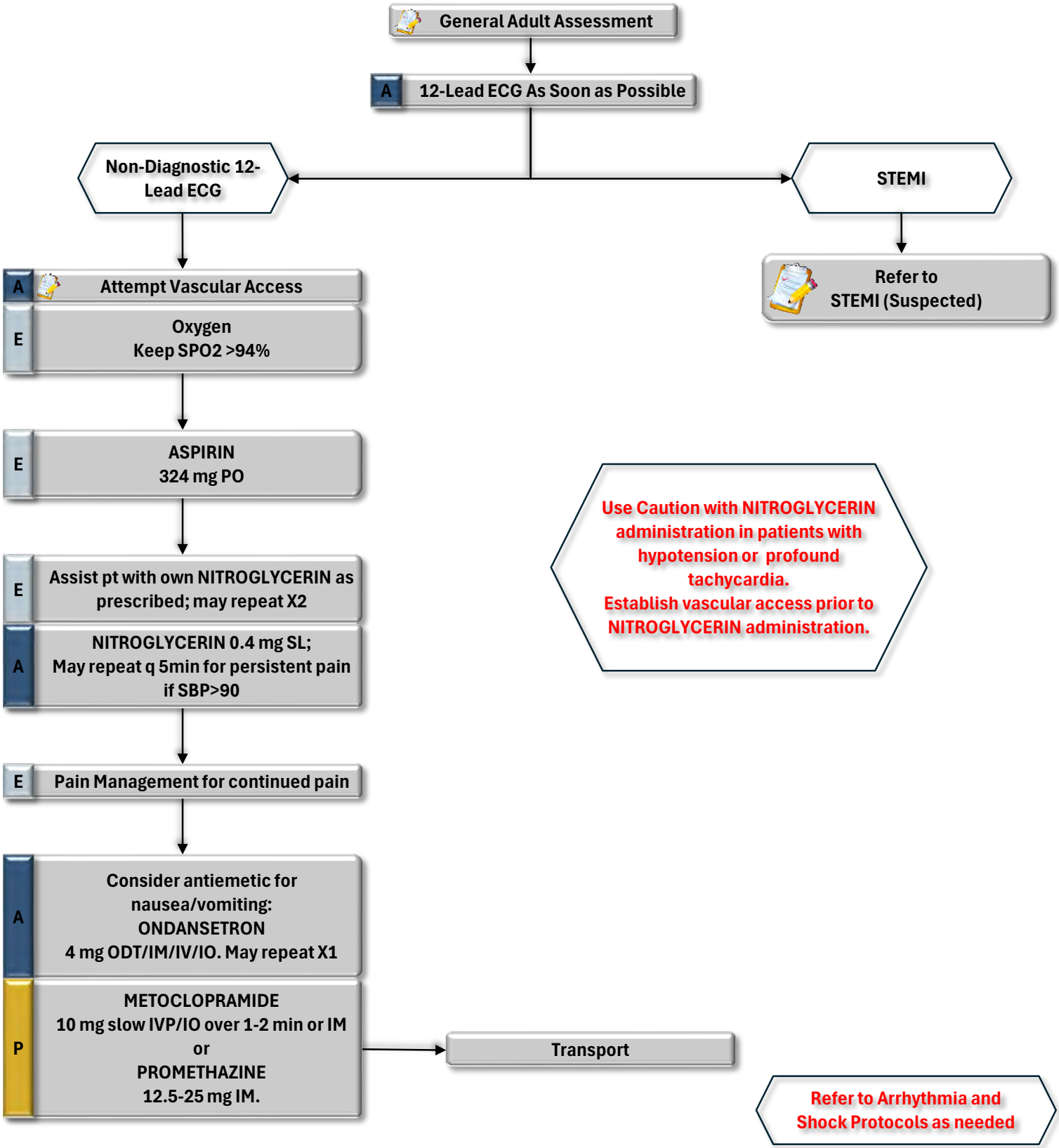
Differential
- Medical vs. trauma
- VF vs. Pulseless VT
- Asystole
- PEA
- Primary cardiac event vs. respiratory arrest

Pearls
- For cardiac arrest patients who are pregnant, manual CPR is recommended.
- For cardiac arrest patients who are pregnant, manual displacement of the uterus to the left side is recommended.

- Efforts should be directed at high quality and continuous compressions with limited interruptions and early defibrillation when indicated.
- Consider early IO placement if IV is difficult.
- DO NOT HYPERVENTILATE.
- Reassess and document ETT placement using auscultation and ETCO2 capnography.
- Switch compressors every two minutes.
- Try to maintain patient modesty.
- Mechanical chest compression devices should be used if available in order to provide for consistent uninterrupted chest compressions and crew safety. As noted above, mechanical chest compression devices are not recommended for the pregnant patient.

H's & T's (reversible causes)
- Hypovolemia – Volume infusion
- Hypoxia – Oxygenation & ventilation, CPR
- Hydrogen ion (acidosis) – Ventilation, CPR
- Hypokalemia
- Hyperkalemia -Calcium chloride, sodium bicarbonate, albuterol
- Hypothermia - Warming
- Tension pneumothorax – Needle decompression
- Tamponade, cardiac – Volume infusion
- Toxins – Agent specific antidote
- Thrombosis, pulmonary – Volume infusion if hypovolemic
- Thrombosis, coronary – Emergent PCI

Chest Pain (Non Traumatic) and Suspected Acute Coronary Syndrome



Chest Pain (Non Traumatic) and Suspected Acute Coronary Syndrome

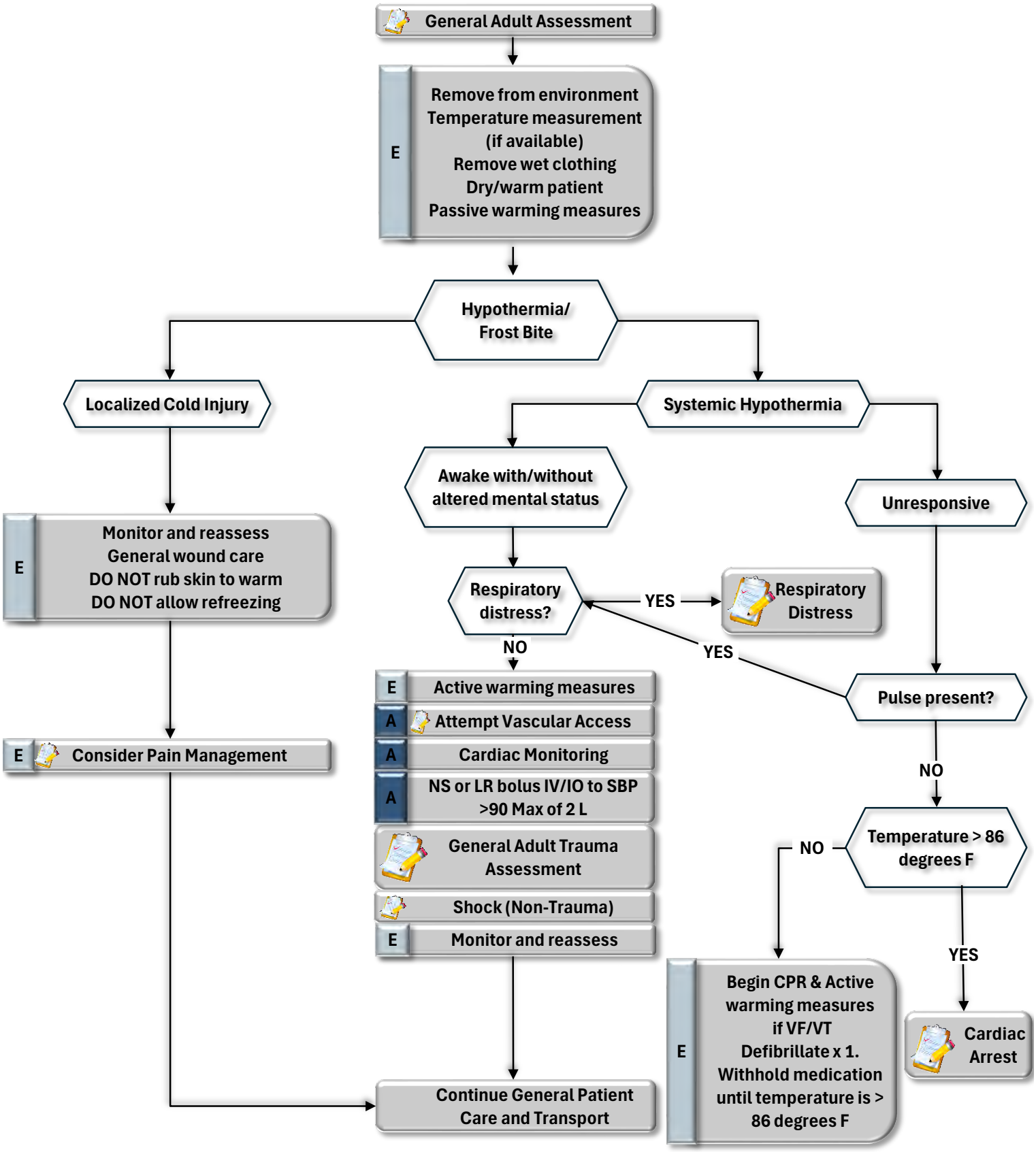
History
- Age
- Medications: Viagra, Levitra, Cialis
- Past medical history of MI, angina, or diabetes
- Allergies
- Recent physical exertion
- Palliation, provocation
- Quality
- Region, radiation, referred
- Severity (1-10)
- Time of onset, duration, repetition

Signs and Symptoms
- CP, pressure, ache, vise-like pain, tight
- Location, substernal, epigastric, arm, jaw, neck, shoulder
- Radiation of pain
- Pale, diaphoresis
- Shortness of breath
- Nausea, vomiting, dizziness

Differential
- MI
- Angina
- Pericarditis
- Pulmonary embolism
- Pneumothorax
- Aortic dissection or aneurysm
- Esophageal rupture
- Esophageal spasm
- Chest wall pain
- Gastroesophageal reflux

Pearls
- Recommended exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Diabetics, geriatrics, and female patients often have atypical pain. Have a high index of suspicion.
- Perform a 12-Lead ECG on all patients 35 years old or older experiencing vague jaw/ chest/ abdominal discomfort.
- Perform a 12-Lead ECG within 5 minutes of patient contact.
- The administration of nitroglycerin is contraindicated for any patient who has used erectile dysfunction medications within the last 48 hours.
- Nitroglycerin is contraindicated in any patient with hypotension, bradycardia, or tachycardia in the absence of heart failure and evidence of a right ventricular infarction.
- Avoid the use of nitroglycerin in patients with a suspected aortic dissection.

Cold-Related Illness



Cold-Related Illness

History
- Age
- Past medical history/medications
- Drug or alcohol use
- Infections/sepsis
- Time of exposure/wetness/wind chill
- Temperature of exposure

Signs and Symptoms
- AMS/coma
- Cold, clammy
- Shivering
- Extremity pain
- Bradycardia
- Hypotension or shock

Differential
- Sepsis
- Environmental exposure
- Hypoglycemia
- Stroke
- Head injury
- Spinal cord injury

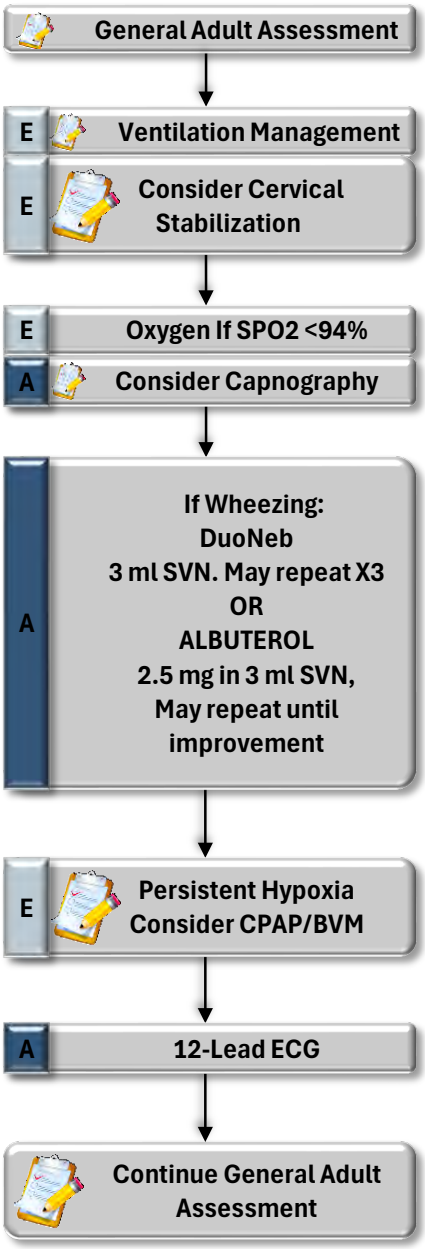
Pearls
- Recommended exam: Mental Status, Heart, Lungs, Abdomen, Extremities, Neuro.
- Extremes of age are more prone to cold emergencies.
- Obtain and document patient temperature.
- If temperature is unknown, treat the patient based on suspected temperature.
- Active warming includes hot packs that can be used on the armpit and groin; care should be taken not to place the packs directly on the skin.
- Warm saline or lactated ringers IV may be used.
- Recognize the cardiac arrest resuscitation guidelines for the hypothermic patient.

Hypothermia Categories
- Mild 90°- 95° F (33°- 35° C)
- Moderate 82°- 90° F (28°- 32° C)
- Severe <82 degrees F (<28° C)

Hypothermia Mechanisms
- Radiation
- Convection
- Conduction
- Evaporation

Active Heating Measures
- Hot packs to the armpits and groin (do not place directly onto skin)

Drowning



CAVEATS:

1. **Adequate ventilation is KEY!**
2. **For patients breathing on their own, start Oxygen 15 L NRB; for patients not adequately breathing ➡ BVM**
3. **Do not suction foam in airway, just bag through it initially.**
4. **For drowning victims in cardiac arrest, emphasis should be on good oxygenation/ventilation.**

Drowning

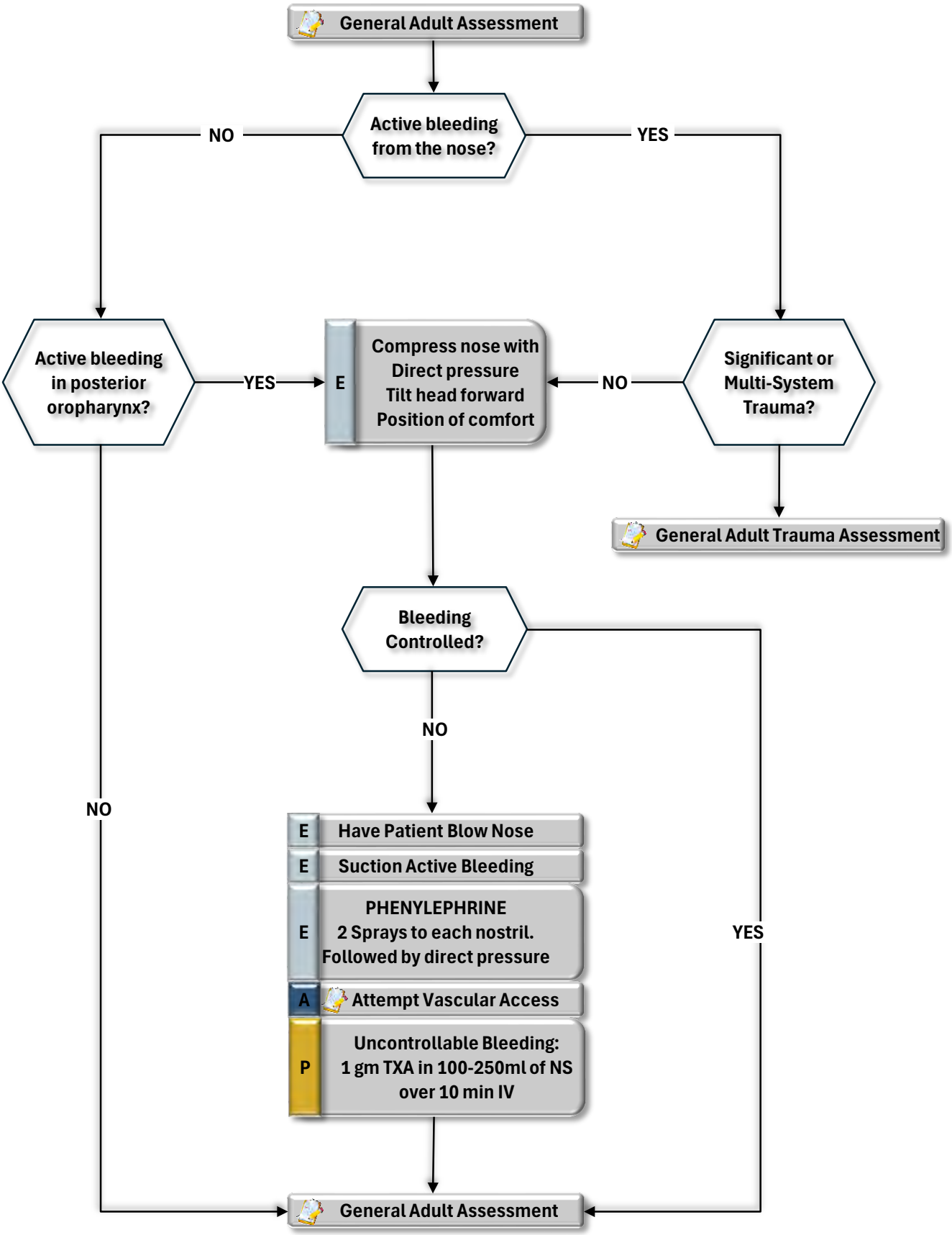
History
- Submersion in fluid, regardless of depth
- Possible history of trauma (dive)
- Duration of immersion
- Temperature of water or possibility of hypothermia
- Degree of water contamination

Signs and Symptoms
- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Vomiting
- Coughing, wheezing, rales, stridor, rhonchi
- Apnea
- Frothy/foamy sputum

Differential
- Trauma
- Medical condition (MI, hypoglycemia, seizure, CVA)
- Barotrauma
- Decompression illness
- Post-immersion syndrome

Pearls
- Recommended Exam: Trauma Survey, Head, Neck, Chest, Abdomen, Back, Extremities, Skin, Neuro.
- Ensure scene safety.
- Hypothermia is often associated with submersion incidents.
- All patients should be transported for evaluation because of potential for worsening over the next several hours.

Epistaxis


General Adult Assessment
Active bleeding from the nose?
NO
YES
Active bleeding in posterior oropharynx?
YES
E
Compress nose with
Direct pressure
Tilt head forward
Position of comfort
NO
Significant or Multi-System Trauma?
General Adult Trauma Assessment
Bleeding Controlled?
NO
YES
NO
E Have Patient Blow Nose
E Suction Active Bleeding
E PHENYLEPHRINE
2 Sprays to each nostril.
Followed by direct pressure
A Attempt Vascular Access
P Uncontrollable Bleeding:
1 gm TXA in 100-250ml of NS
over 10 min IV
General Adult Assessment

Epistaxis

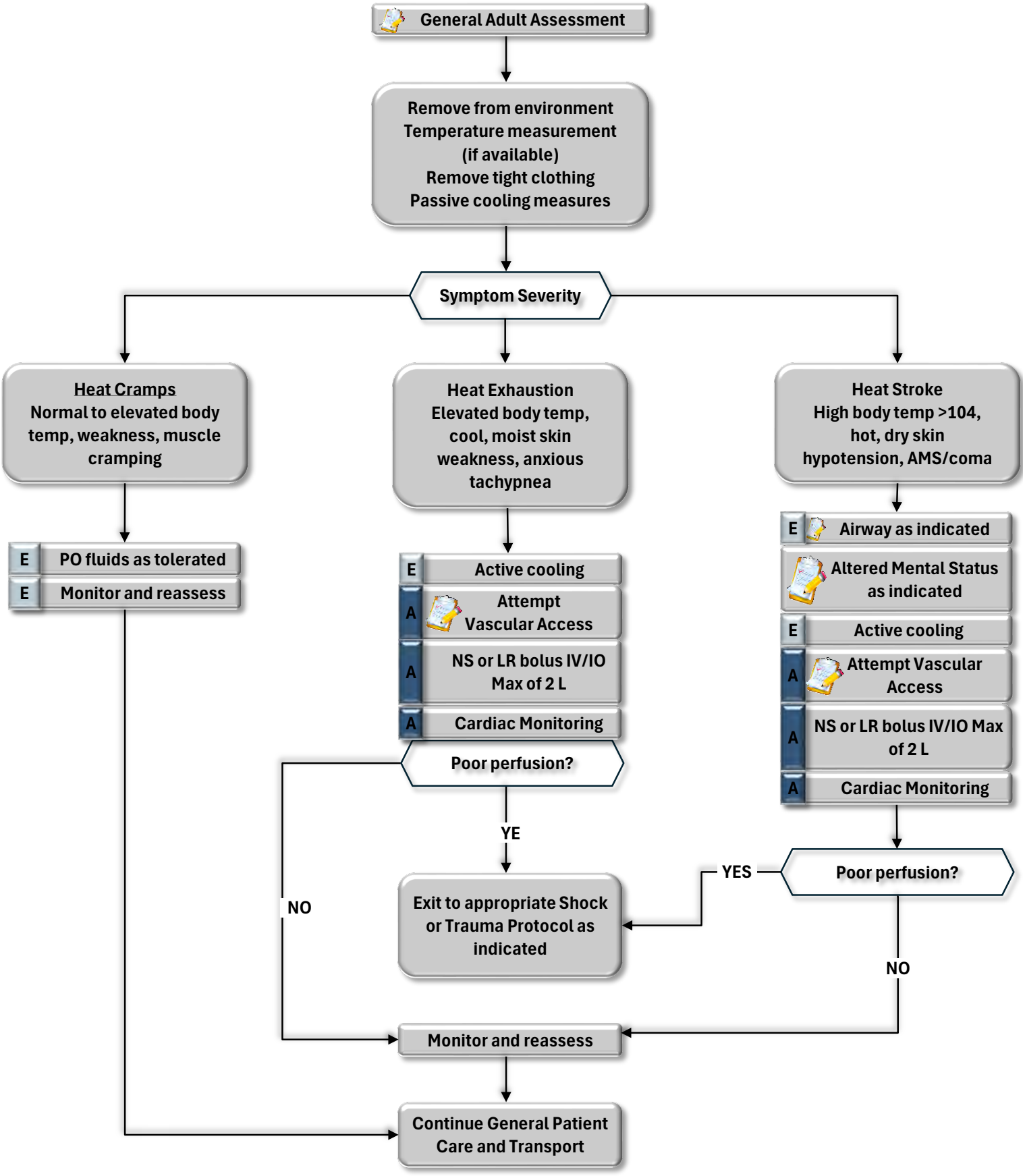
History
- Age
- Past Medical History
- Medications (HTN, Anticoagulants, aspirin, NSAIDS)
- Previous episodes of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding

Signs and Symptoms
- Bleeding from nasal passages
- Pain
- Nausea
- Vomiting

Differential
- Trauma
- Infection (viral URI or sinusitis)
- Allergic rhinitis
- Lesions (polyps, ulcers)
- Coagulopathy

Pearls
- **Recommended exam: Mental Status, HEENT, Lungs, Neuro**
- **It is very difficult to quantify the amount of blood loss with epistaxis**
- **Bleeding may be also occurring posteriorly. Evaluate for posterior blood loss by examining the posterior pharynx.**
- **Anticoagulants include warfarin (Coumadin), heparin, enoxaparin (Lovenox), dabigatran (Pradaxa), rivaroxaban (Xarelto), and many other over the counter headache relief powders.**
- **Anti-platelet agents like aspirin, clopidogrel (Plavix), aspirin/dipyridamole (Aggrenox), and ticlopidine (Ticlid) can contribute to bleeding.**

Heat-Related Illness



Heat-Related Illness

History
- Exposures to increased temperatures and/or humidity
- Past medical history/medications
- Time and duration of exposure
- Poor PO intake, extreme exertion
- Fatigue and/or muscle cramping
- Decreased urination, dark urine

Signs and Symptoms
- AMS/coma
- Hot, dry, or sweaty skin
- Hypotension or shock
- Seizures
- Nausea

Differential
- Fever
- Dehydration
- Medication side effect/overdose
- Hyperthyroidism
- Heat cramps, heat exhaustion, heat stroke
- CNS lesions or tumors
- Rhabdomyolysis

Pearls
- Recommended exam: Mental Status, Skin, Heart, Lung, Abdomen, Extremities, Neuro.
- Extremes of age are more prone to heat emergencies.
- Cocaine, amphetamines, and salicylates may elevate body temperatures.
- Sweating generally disappears as body temperatures rise over 104° F (40° C).
- Intense shivering may occur as patient is cooled.
- Active cooling includes application of cold packs or ice (not directly on skin), fanning either by air conditioning or fanning.
- Cold Saline is not to be administered for the treatment of hyperthermia unless directed by telemetry physician.

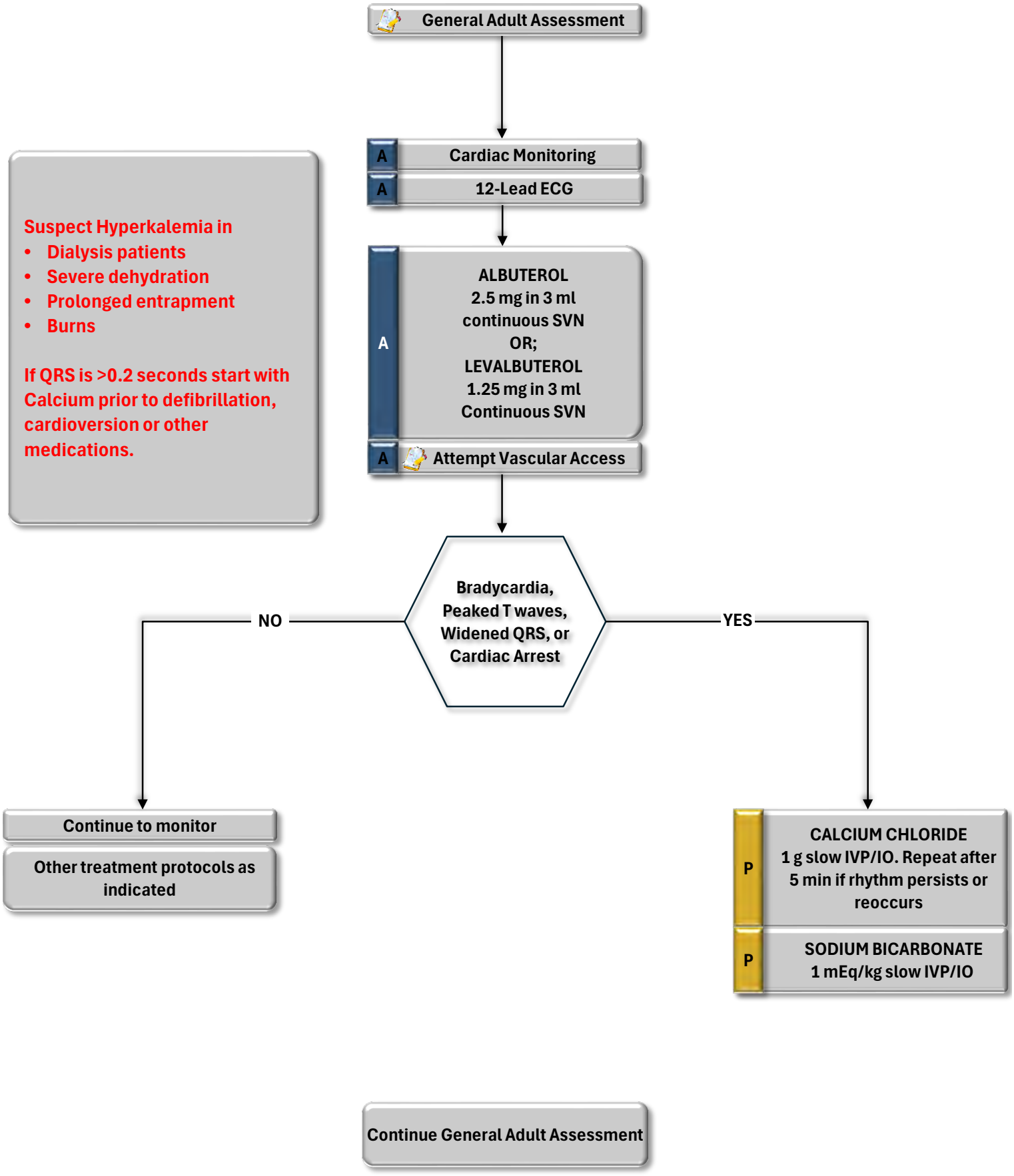
Heat Cramps
- Consist of benign muscle cramping caused by dehydration and is not associated with an elevated temperature.

Heat Exhaustion
- Consists of dehydration, salt depletion, dizziness, fever, AMS, headache, cramping, N/V. Vital signs usually consist of tachycardia, hypotension and elevated temperature.

Heat Stroke
- Consists of dehydration, tachycardia, hypotension, temperature >104° F (40° C), and

Active Cooling Measures
- Cold packs
- Ice (do not place directly onto patient's skin)
- Fanning
- Air Conditioning

Hyperkalemia (Suspected)



Hyperkalemia (Suspected)

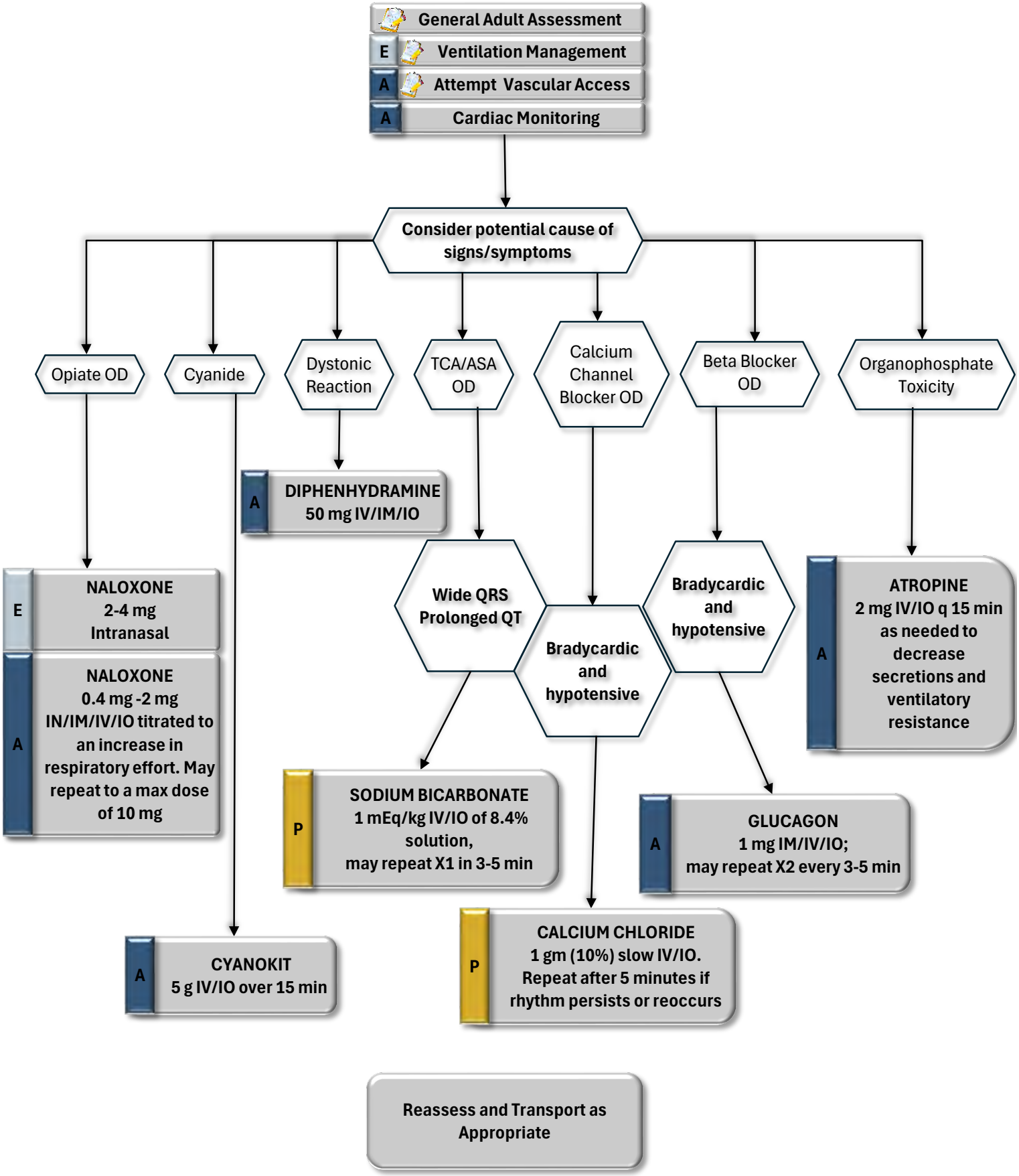
History
- History of renal failure
- History of dialysis
- Trauma, crush injury

Signs and Symptoms
- Cardiac conduction disturbances
- Irritability
- Abdominal distension
- Nausea
- Diarrhea
- Oliguria
- Weakness

Differential
- Cardiac disease
- Renal failure
- Dialysis
- Trauma

Pearls
- Patients must have suspected hyperkalemia OR electrocardiographic findings consistent with hyperkalemia (bradycardia with widening QRS complexes) BEFORE initiating treatment.
- If QRS is >0.2 seconds start with Calcium prior to defibrillation, cardioversion or other medications.
- Hyperkalemia is defined as a potassium level higher than 5.5 mmol/L.
- Potassium of 5.5 - 6.5 mmol/L - Tall tented T waves.
- Potassium of 6.5 - 7.5 mmol/L - Loss of P waves.
- Potassium of 7.5 - 8.5 mmol/L - Widening QRS.
- Potassium of >8.5 mmol/L - QRS continues to widen, approaching sine wave.

Overdose/Poisoning



Overdose/Poisoning

History
- Ingestion or suspected ingestion of a potentially toxic agent
- Substance ingested, route, quantity
- Time of ingestion
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Past medical history, medications

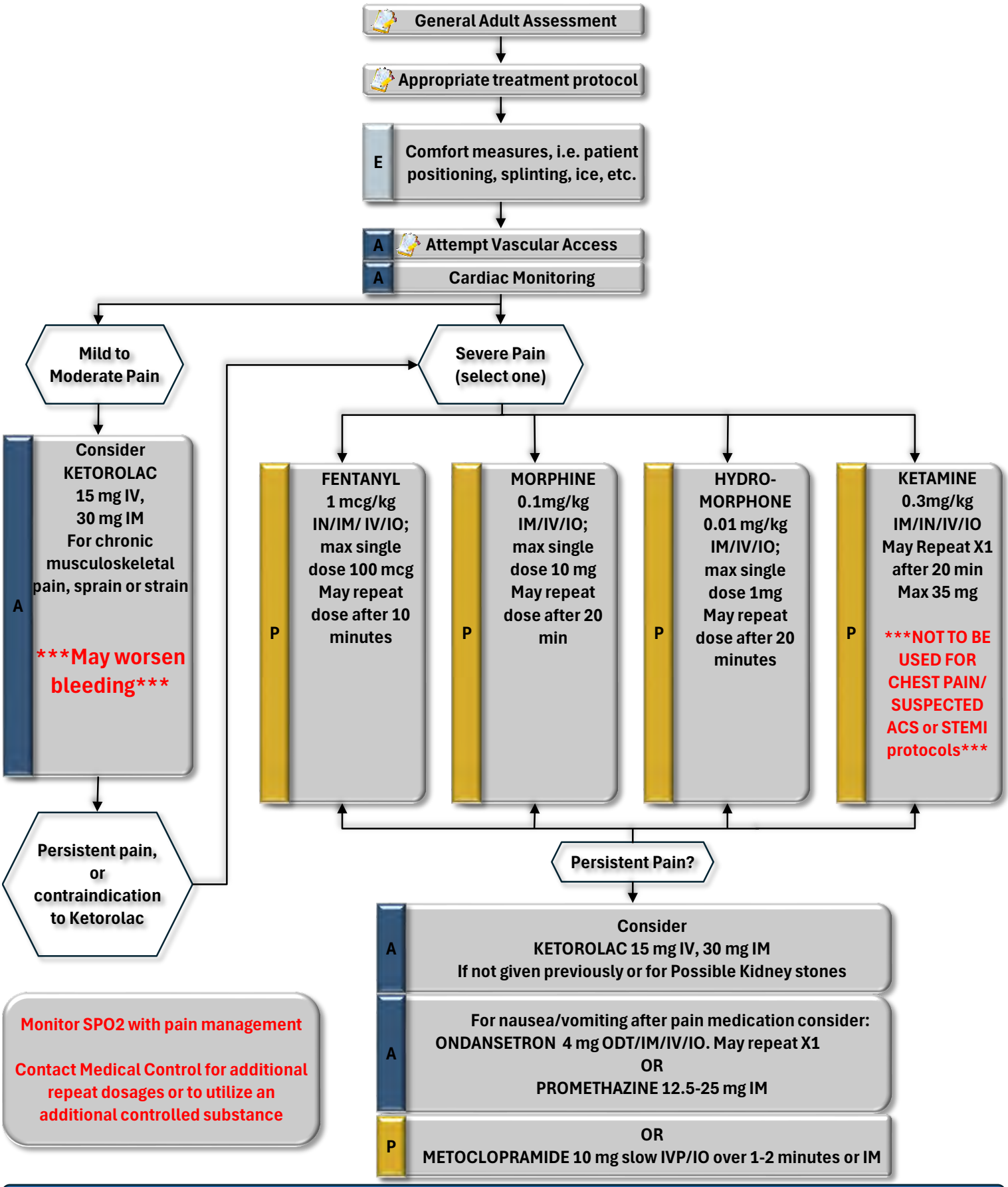
Signs and Symptoms
- Mental status changes
- Hypotension/hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures
- SLUDGE
- Malaise, weakness
- GI symptoms
- Dizziness
- Syncope
- Chest pain

Differential
- Medication overdose
- Hypoglycemia
- Depressants
- Stimulants
- Solvents, alcohols, cleaning agents, insecticides

Pearls
- Recommended exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Neuro.
- Narcan should be administered in small increment doses IV to address respiratory depression and ensure adequate ventilation. Monitor patient to watch for any signs of respiratory depression reoccurring. IV/IM are preferred routes for predictability.
- Overdose or toxin patients with significant ingestion/exposure should be closely monitored and aggressively treated. Do not hesitate to contact medical control if needed.
- In the case of cyanide poisoning, altered mental status may be profound. Profound altered mental status can be defined as a deficit that includes disorientation, bewilderment and difficulty following commands.
- If patient is suspected to have narcotic overdose/hypoglycemia, administer Narcan/Glucose prior to Extraglottic device/intubation.
- Poison Control: 1-800-222-1222

Agents
- **Acetaminophen**: Initially normal or N/V. Tachypnea and AMS may occur later. Renal dysfunction, liver failure and/or cerebral edema may manifest.
- **Depressants**: Decreased HR, BP, temp and RR.
- **Anticholinergic**: Increased HR, increased temperature, dilated pupils and AMS changes.
- **Insecticides**: May include S/S of organophosphate poisoning.
- **Solvents**: N/V, cough, AMS.
- **Stimulants**: Increased HR, BP, temperature, dilated pupils, seizures, and possible violence.
- **TCA**: Decreased mental status, dysrhythmias, seizures, hypotension, coma, death.

Pain Management



Pain Management

History
- Age
- Location, duration
- Severity (1-10)
- Past medical history
- Pregnancy status
- Drug allergies and medications

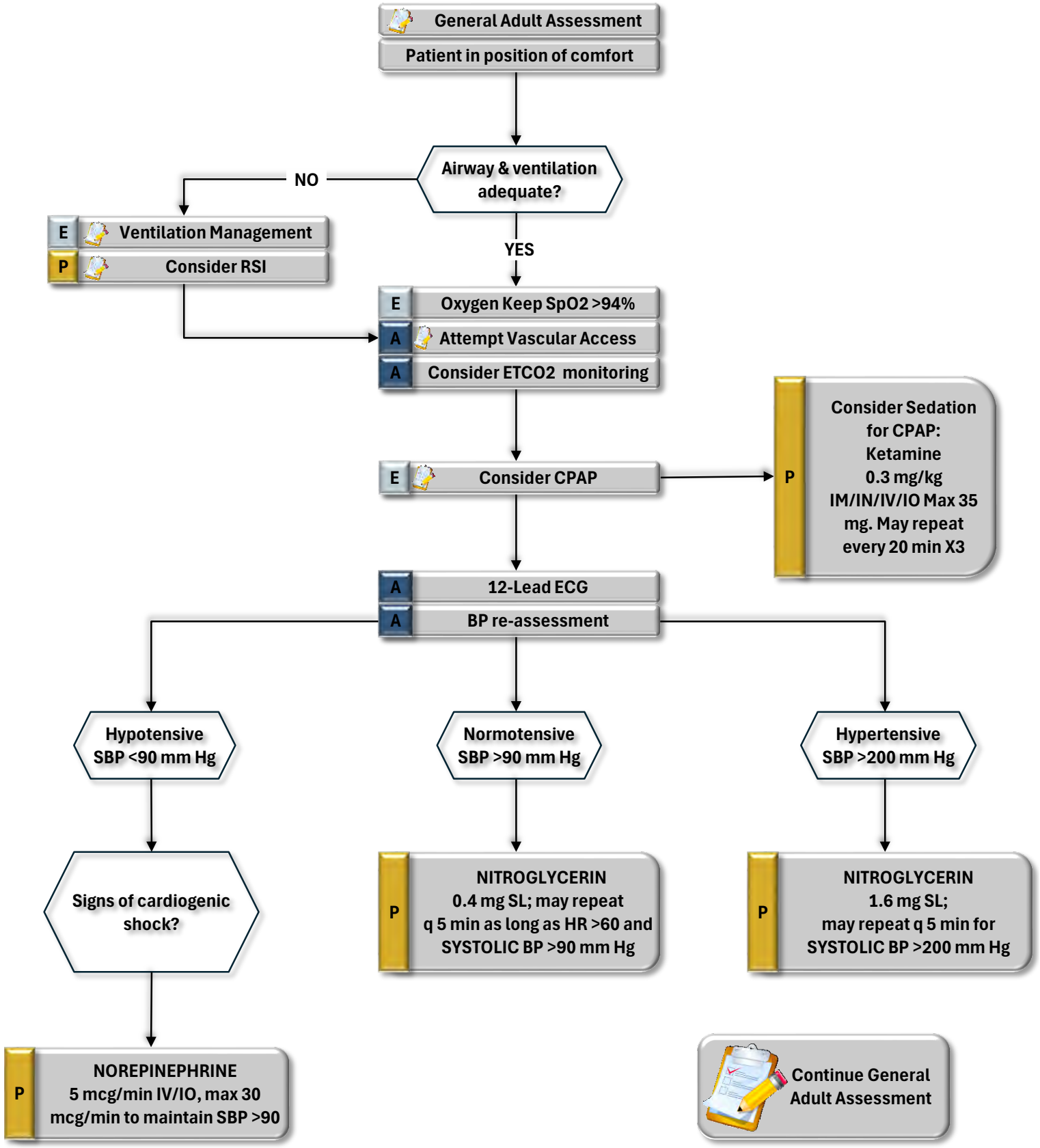
Signs and Symptoms
- Severity (pain scale)
- Quality
- Radiation
- Relation to movement, respiration
- Increased with palpation of area

Differential
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural, respiratory
- Neurogenic
- Renal (colic)

Pearls
- Recommended exam: Respiratory Status, Mental Status, Area of pain, Neuro.
- Pain severity (1-10) is to be recorded before and after medication administration and patient hand off.
- Monitor BP and respirations closely as sedative and pain control agents may cause hypotension and/or respiratory depression.
- Consider patient's age, weight, clinical condition, use of drugs/alcohol, exposure to opiates when determining initial opiate dosing. Weight based dosing may provide a standard means of dosing calculation, but it does not predict response.
- Consider starting opiate at a lower initial dose and titrating to effect is recommended. Patients may not exceed listed maximum dose without Medical Control orders.
- Exercise care when administering opiates and benzodiazepines; this combination results in deeper anesthesia with significant risk of respiratory compromise.
- Burn patients may require more aggressive dosing. Consider early Medical Control for additional doses.
- Acetaminophen is not to be used as the primary pain management medication for Chest Pain/Suspected ACS or STEMI patients.
- Acetaminophen should be considered the primary treatment for severe pain for patients that do not wish to receive narcotic analgesia.
- Consider fentanyl as the preferred opioid agent for traumatic pain.

QI Metrics
- Vital signs with O2 sats recorded.
- Pain scale documented before and after intervention.
- Vital signs repeated after intervention.
- If considering repeat administration of pain medications, nasal cannula capnography must be utilized.

Pulmonary Edema/CHF



Pulmonary Edema/CHF

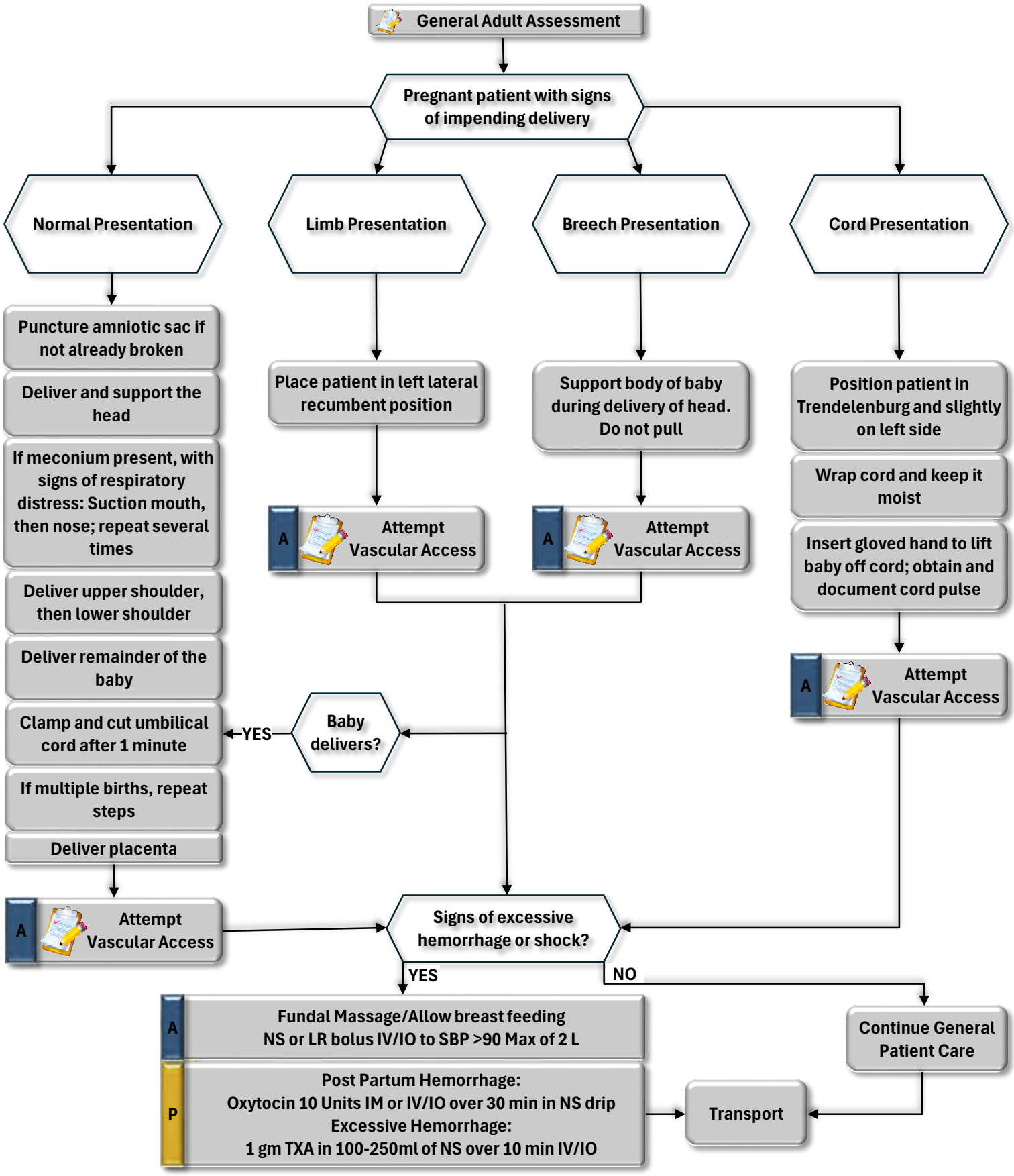
History
- Congestive heart failure
- Past medical history
- Medications
- Cardiac history

Signs and Symptoms
- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- JVD
- Pink, frothy sputum
- Peripheral edema
- Diaphoresis
- Hypotension, shock
- Chest pain

Differential
- MI
- Congestive heart failure
- Pulmonary embolism
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pericardial tamponade

Pearls
- The administration of nitroglycerin is contraindicated for any patient who has used erectile dysfunction medications within the last 48 hours.
- Carefully monitor the patient as you administer interventions.
- Consider MI.
- Allow patient to maintain position of comfort.

Pregnancy (Childbirth / Labor)



Pregnancy (Childbirth / Labor)

Pregnancy (Childbirth / Labor)

History
- Due date
- Time contractions started/duration/frequency
- Rupture of membranes
- Time and amount of any vaginal bleeding
- Sensation of fetal movement
- Pre-natal care
- Past medical and delivery history, gravida, para
- Medications
- High risk pregnancy

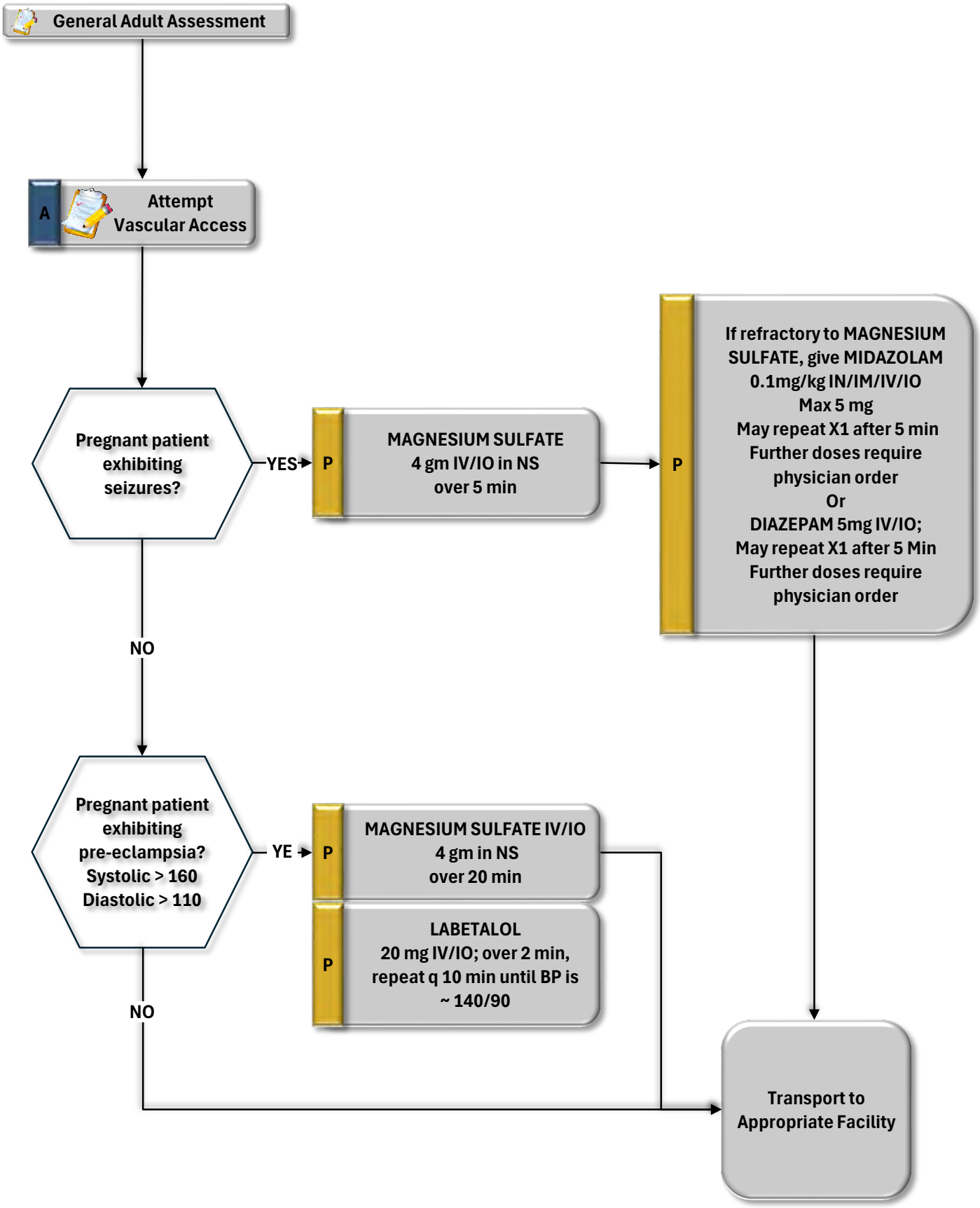
Signs and Symptoms
- Spasmodic pain
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

Differential
- Abnormal presentation (breech, limb)
- Prolapsed cord
- Placenta previa
- Placental abruption

Pearls
- Recommended exam (of mother): Mental Status, Heart, Lungs, Abdomen, Neuro.
- Document all times (delivery, contraction duration and frequency).
- Some bleeding is normal; copious amounts of blood or free bleeding is abnormal.
- Record APGAR at one and five minutes after birth.
- APGAR of 7-10 is normal, while 4-7 requires resuscitative measures.

APGAR	Score = 0	Score = 1	Score = 2
❖ Activity/Muscle Tone	Absent	Arms/legs flexed	Active movement
❖ Pulse	Absent	Below 100	Above 100
❖ Grimace/Reflex Irritability	No Response	Grimace	Sneeze, cough, pulls away
❖ Appearance/Skin Color	Blue-Grey, Pale all over	Normal, except extremities	Normal over entire body
❖ Respiration	Absent	Slow, irregular	Good, crying

Pregnancy (Eclampsia/Preeclampsia)



Pregnancy (Eclampsia/Preeclampsia)

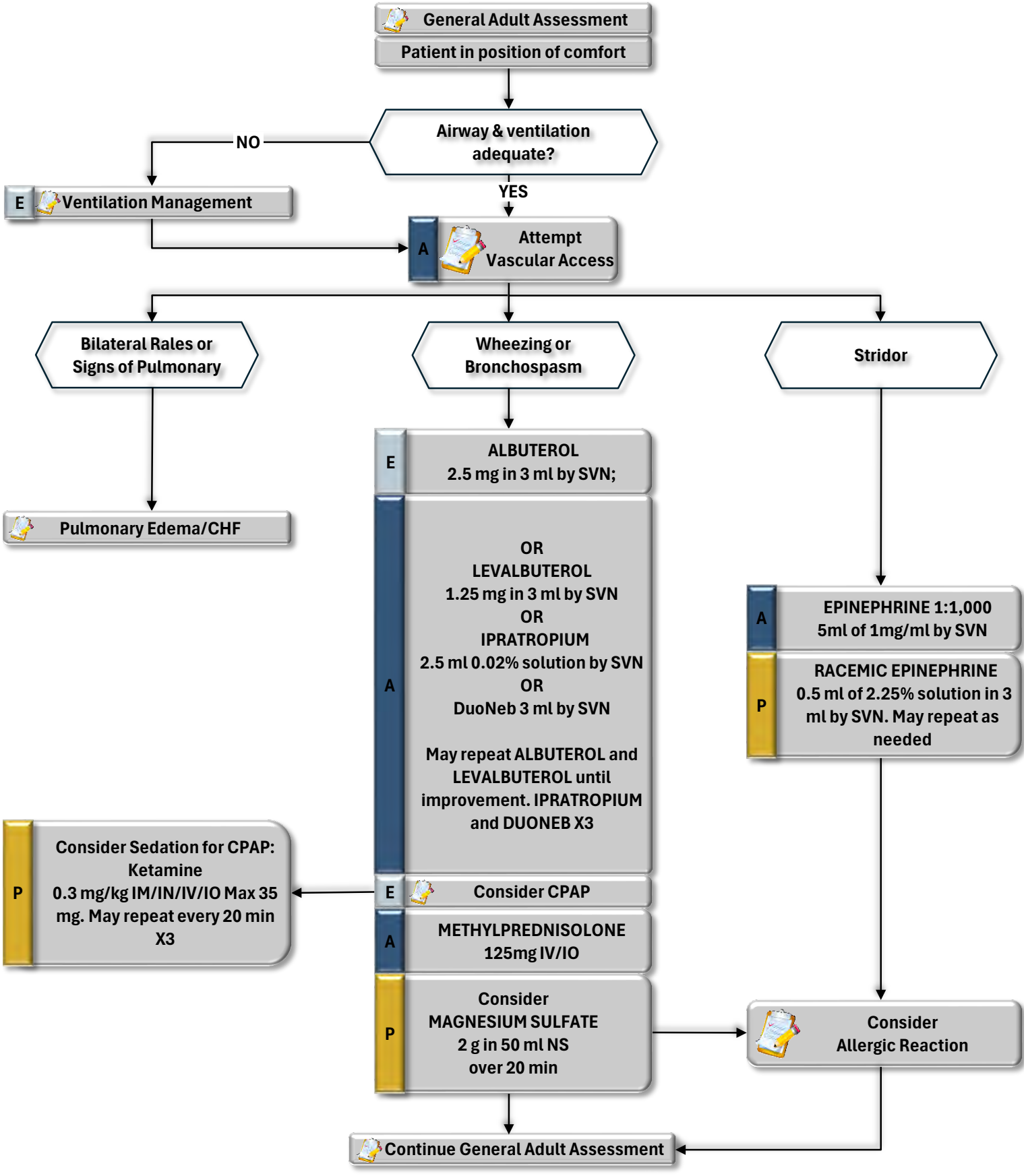
History
- Medical history
- Hypertension medication
- Prenatal care
- Prior pregnancies/births
- Previous pregnancy complications

Signs and Symptoms
- Vaginal bleeding
- Abdominal pain
- Seizures
- Hypertension
- Severe headache
- Visual changes
- Edema of the hands or face

Differential
- Pre-eclampsia/eclampsia
- Placenta previa
- Placenta abruptio
- Spontaneous abortion

Pearls
- Recommended exam: Mental Status, Heart, Lung, Abdomen, Neuro.
- Severe headache, vision changes or RUQ pain may indicate pre-eclampsia.
- In the setting of pregnancy hypertension is defined as >140 systolic or >90 diastolic or a relative increase of 30 systolic and 20 diastolic from the patient's normal pre-pregnancy BP.
- Maintain left lateral position.
- Ask patient to quantify bleeding - number of pads used per hour.
- Any pregnant patient involved in a MVC should be seen by a physician for evaluation.
- Postpartum eclampsia/pre-eclampsia commonly presents up to 48 hours after childbirth. If symptomatic, treat as eclampsia/pre-eclampsia.
- May present up to 6 weeks after childbirth, Assess for history or pre-eclampsia/eclampsia during pregnancy or delivery.

Respiratory Distress



Respiratory Distress

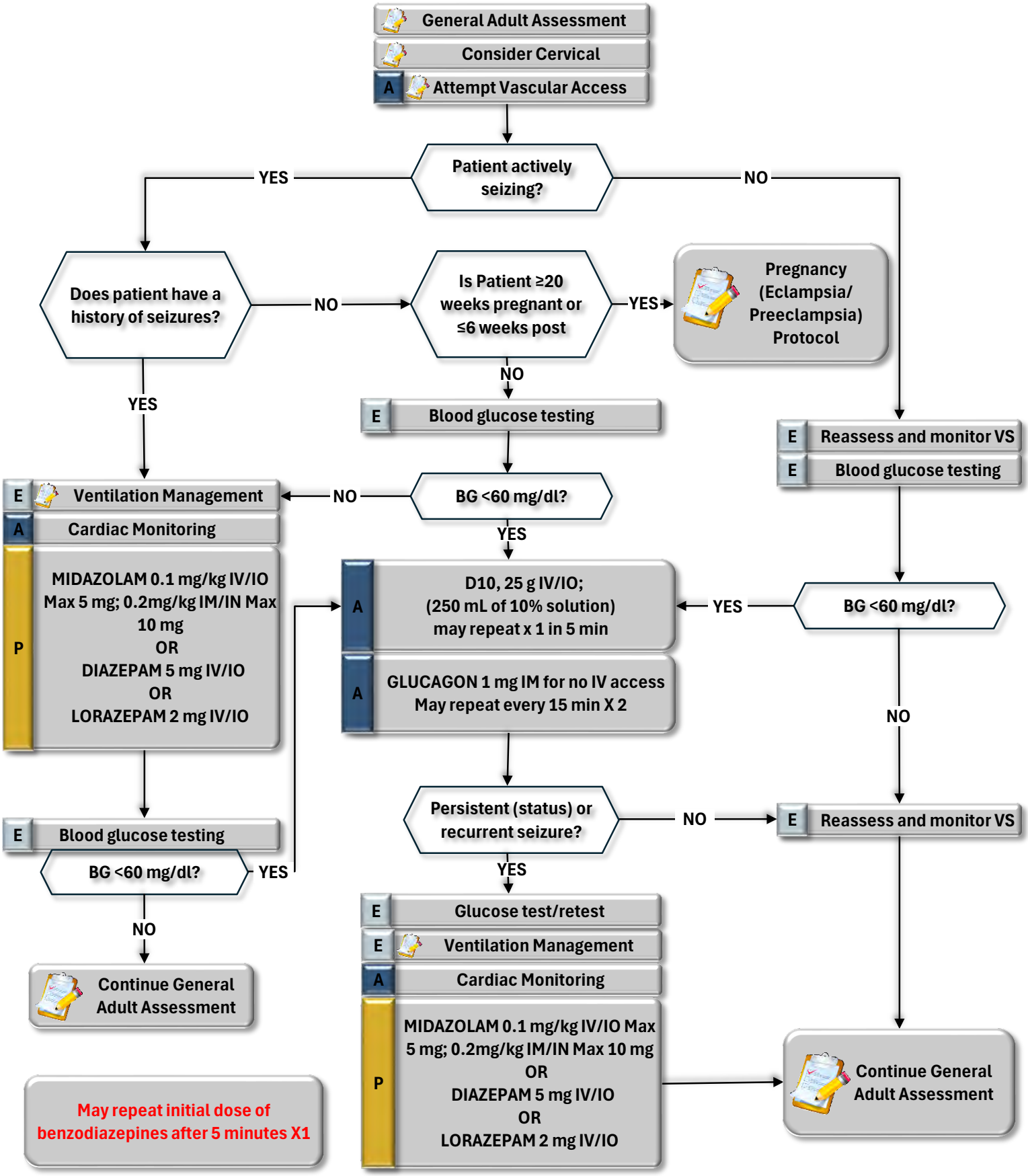
History
- Asthma, COPD, CHF, chronic bronchitis, emphysema
- Home treatment (oxygen, nebulizers)
- Medication
- Toxic exposure

Signs and Symptoms
- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Wheezing, rhonchi
- Use of accessory muscles
- Fever, cough
- Tachycardia

Differential
- Asthma
- Anaphylaxis
- Aspiration
- COPD
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Inhaled toxin

Pearls
- Recommended exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro.
- Pulse oximetry and end tidal continuous waveform capnography should be monitored.
- Consider MI.
- Allow the patient to assume a position of comfort.

Seizure


General Adult Assessment
Consider Cervical
A Attempt Vascular Access
Patient actively seizing?
YES
NO
Does patient have a history of seizures?
NO
Is Patient ≥20 weeks pregnant or ≤6 weeks post
YES
Pregnancy (Eclampsia/ Preeclampsia) Protocol
YES
NO
E Blood glucose testing
E Reassess and monitor VS
E Blood glucose testing
E Ventilation Management
A Cardiac Monitoring
P MIDAZOLAM 0.1 mg/kg IV/IO Max 5 mg; 0.2mg/kg IM/IN Max 10 mg
OR
DIAZEPAM 5 mg IV/IO
OR
LORAZEPAM 2 mg IV/IO
NO
BG <60 mg/dl?
YES
A D10, 25 g IV/IO; (250 mL of 10% solution) may repeat x 1 in 5 min
A GLUCAGON 1 mg IM for no IV access May repeat every 15 min X 2
YES
BG <60 mg/dl?
NO
E Blood glucose testing
BG <60 mg/dl?
YES
NO
Persistent (status) or recurrent seizure?
NO
E Reassess and monitor VS
YES
E Glucose test/retest
E Ventilation Management
A Cardiac Monitoring
P MIDAZOLAM 0.1 mg/kg IV/IO Max 5 mg; 0.2mg/kg IM/IN Max 10 mg
OR
DIAZEPAM 5 mg IV/IO
OR
LORAZEPAM 2 mg IV/IO
Continue General Adult Assessment
Continue General Adult Assessment
May repeat initial dose of benzodiazepines after 5 minutes X1

Seizure

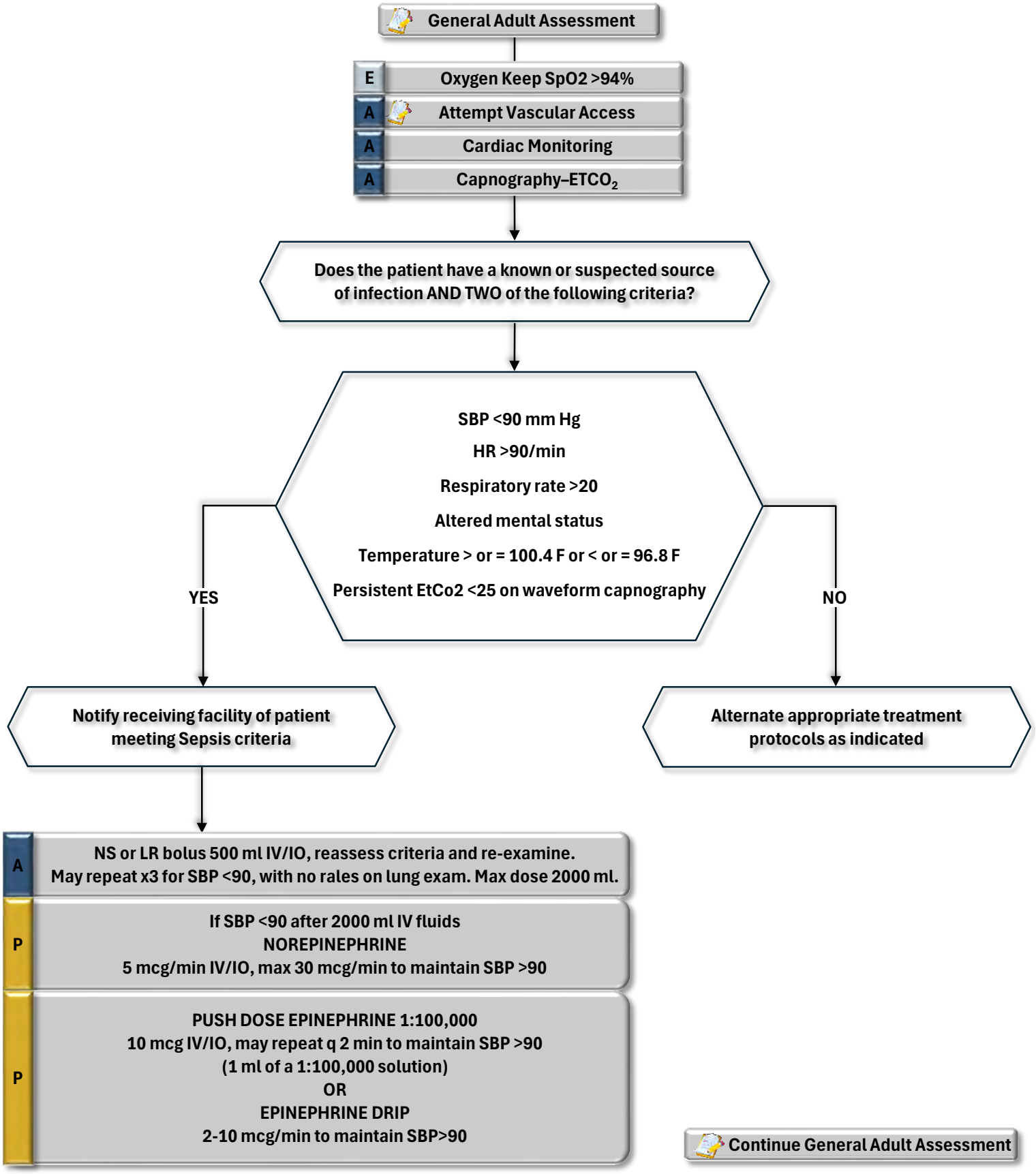
History
- Reported or witnessed seizure activity
- Previous seizure history
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy
- Time of seizure onset
- Number of seizures
- Alcohol use, abuse, or abrupt cessation
- Fever

Signs and Symptoms
- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconsciousness

Differential
- Head injury
- Hypoxia
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, medication non-compliance
- Infection, fever
- Alcohol withdrawal
- Benzodiazepine withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypothermia

Pearls
- Recommended exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro.
- Benzodiazepines are effective in terminating seizures; do not delay IM/IN administration while initiating an IV.
- Status epilepticus is defined as two or more seizures successively without an intervening lucid period, or a seizure lasting over five minutes.
- Grand mal seizures (generalized) are associated with loss of consciousness, and often incontinence and/or oral trauma.
- Focal seizures affect only part of the body and are not usually associated with a loss of consciousness.
- Be prepared to address airway issues and support ventilation as needed.
- Consider ETCO2 monitoring.

Sepsis (Suspected)



Sepsis (Suspected)

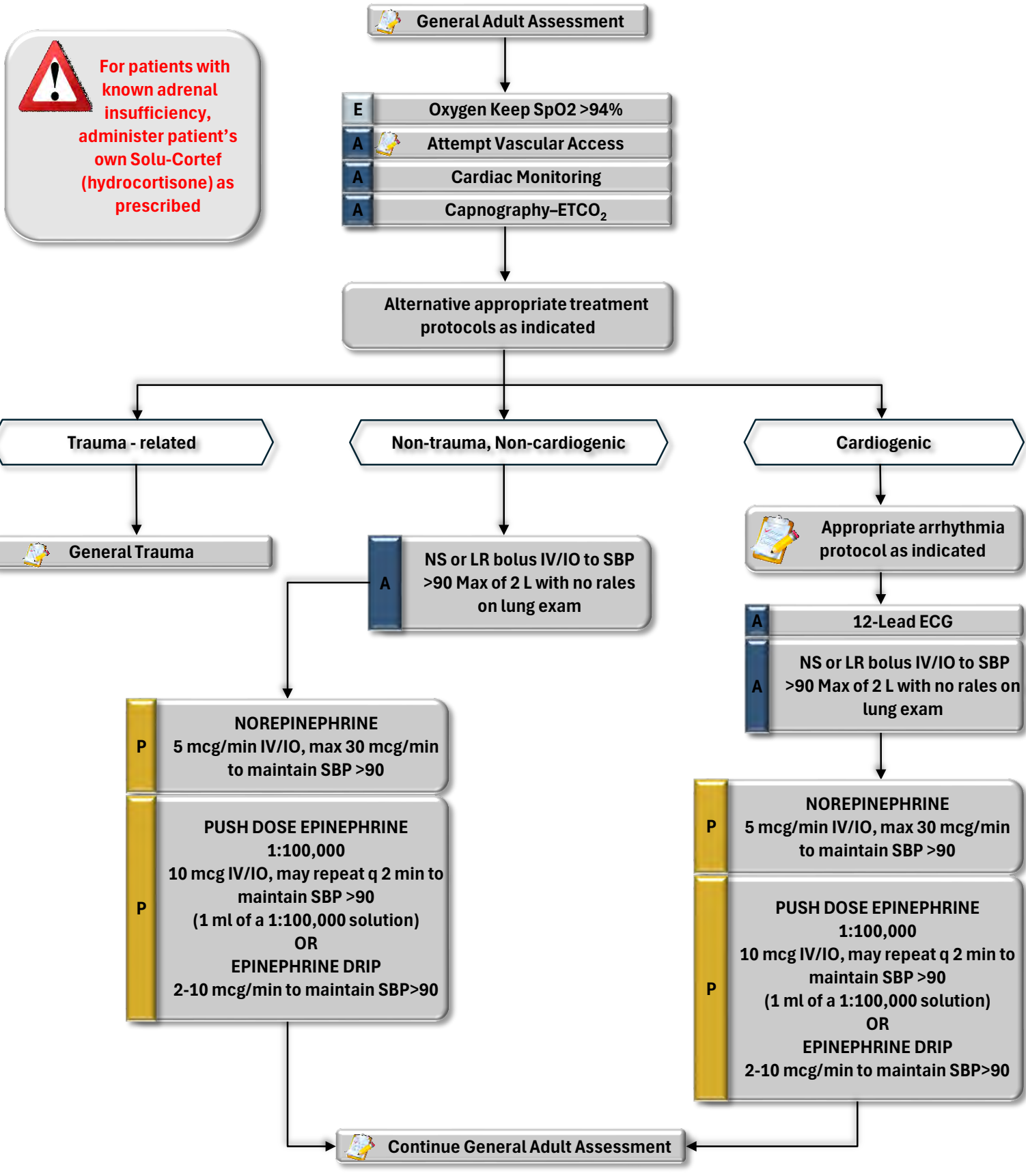
History
- Age (Common in elderly and very young)
- Presence and duration of fever
- Previously documented infection or illness (UTI, pneumonia, meningitis, cellulitis, abscesses, etc.)
- Recent surgery or invasive procedure
- Any recent hospitalization
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Bedridden or immobile patients
- Prosthetic or indwelling devices
- Immunization status

Signs and Symptoms
- Hyper or hypothermia
- Chills
- Myalgias
- Decreased urine output
- Altered mentation
- Delayed capillary refill
- Elevated blood glucose
- Rash and/or excessive bruising

Differential
- Cardiogenic Shock
- Hypovolemic Shock
- Dehydration
- Hyperthyroidism
- Medication reaction
- Allergic reaction/anaphylaxis
- Toxicological emergency

Pearls
- Early recognition of sepsis allows for attentive care and early administration of antibiotics.
- Aggressive IV fluid therapy is the most important prehospital treatment for sepsis. Suspected septic patients should receive repeated fluid boluses (to a max total of 2 liters) while being checked frequently for signs of pulmonary edema, especially those patients with known history of CHF or ESRD on dialysis. STOP fluid resuscitation in the setting of pulmonary edema.
- Time IV fluid bolus was initiated and total amount given is to be recorded and reported to hospital staff at patient hand off.
- Septic patients are especially susceptible to traumatic lung injury and ARDS. If artificial ventilation is necessary, avoid ventilating with excessive tidal volumes. If CPAP is utilized, airway pressure should be limited to 5 cm H2O.
- Attempt to identify source of infection (skin, respiratory, etc.) and relay previous treatments and related history to the ED physician and nursing staff.
- Conditions such as Crohn's, psoriasis, rheumatoid arthritis and other autoimmune disorders are now being treated with medications that impair the immune system. These patients need to be considered as immunocompromised.
- Hypovolemia or distributive shock should be addressed with a fluid bolus prior to the administration of push-dose pressors.
- While there are no absolute contraindications to epinephrine, it should be used with caution in elderly patients, patients

Shock


For patients with known adrenal insufficiency, administer patient's own Solu-Cortef (hydrocortisone) as prescribed
General Adult Assessment
E Oxygen Keep SpO2 >94%
A Attempt Vascular Access
A Cardiac Monitoring
A Capnography–ETCO2
Alternative appropriate treatment protocols as indicated
Trauma - related
Non-trauma, Non-cardiogenic
Cardiogenic
General Trauma
A NS or LR bolus IV/IO to SBP >90 Max of 2 L with no rales on lung exam
Appropriate arrhythmia protocol as indicated
A 12-Lead ECG
A NS or LR bolus IV/IO to SBP >90 Max of 2 L with no rales on lung exam
P NOREPINEPHRINE 5 mcg/min IV/IO, max 30 mcg/min to maintain SBP >90
P PUSH DOSE EPINEPHRINE 1:100,000 10 mcg IV/IO, may repeat q 2 min to maintain SBP >90 (1 ml of a 1:100,000 solution) OR EPINEPHRINE DRIP 2-10 mcg/min to maintain SBP>90
P NOREPINEPHRINE 5 mcg/min IV/IO, max 30 mcg/min to maintain SBP >90
P PUSH DOSE EPINEPHRINE 1:100,000 10 mcg IV/IO, may repeat q 2 min to maintain SBP >90 (1 ml of a 1:100,000 solution) OR EPINEPHRINE DRIP 2-10 mcg/min to maintain SBP>90
Continue General Adult Assessment

Shock

History
- Blood loss - Vaginal bleeding, ectopic, GI bleeding or AAA
- Fluid loss - Vomiting, diarrhea, fever, heat exposure
- Infection
- Cardiac tamponade
- Medication reaction
- Allergic reaction
- History of poor oral intake

Signs and Symptoms
- Restlessness, confusion
- Weakness, dizziness
- Weak rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Coffee-ground emesis
- Tarry stools

Differential

Hypovolemic shock
- Hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm, or pregnancy related bleeding
- Cardiogenic shock
  Heart failure, MI, cardiomyopathy, myocardial contusion, toxins

Distributive shock
- Sepsis, anaphylaxis, neurogenic, toxins

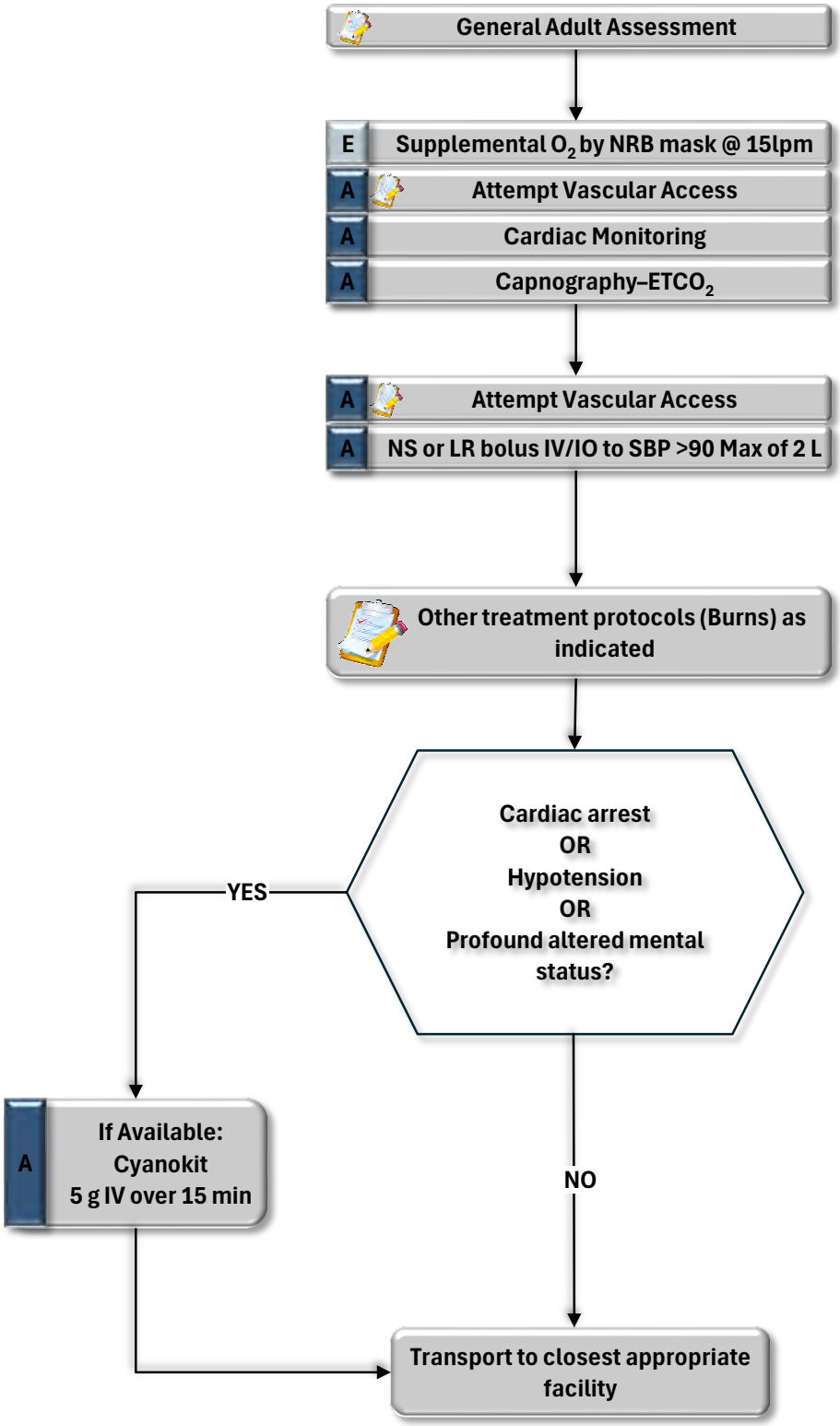
Obstructive shock
- Pericardial tamponade,

Pearls
- Recommended exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Hypotension can be defined as a systolic BP of <90. This is not always reliable and should be interpreted in context of patient's typical BP, if known. Shock may present with a normal BP initially.
- Hypovolemic and distributive shock should be addressed with a fluid bolus prior to the administration of pressors.
- While there are no absolute contraindications to epinephrine, it should be used with caution in elderly patients, patients with known cardiovascular disease, or significant tachycardia or hypertension, and should be administered only when the patient's signs and symptoms are severe.
- Shock may develop insidiously. Tachycardia may be the only initial manifestation.
- Consider all possible causes of shock and treat per appropriate protocol.
- An ETCo2 measurement of <25 mm/hg is indicative of shock

For patients with known adrenal insufficiency, administer patient's own
Solu-Cortef (hydrocortisone) as prescribed.

Causes of Adrenal Insufficiency:
Addison's Disease
Congenital Adrenal Hyperplasia

Smoke Inhalation



Smoke Inhalation

History
- Exposed to smoke in a structure fire
- Exposed to smoke in a vehicle fire
- Exposed to smoke from other sources (Industrial, confined space, wilderness fire, etc.)

Signs and Symptoms
- Facial burns
- Singed nasal hairs or facial hair
- Shortness of breath
- Facial edema
- Stridor
- Grunting respirations

Differential
- Asthma
- Anaphylaxis
- COPD
- CHF
- Toxic inhalation injury
- Caustic inhalation injury

Pearls
- Protect yourself and your crew.
- Have a high index of suspicion when treating patients at the scene of a fire.
- If the medication is not available on scene do not delay transport waiting for it.
- Carefully monitor respiratory effort and correct life threats immediately.
- Decide early on if you want to intubate as burned airways swell, making intubation difficult.
- Profound altered mental status can be defined as a deficit that include disorientation,

Preparation and Administration of Hydroxocobalamin

Complete Starting Dose: 5 g

Reconstitute:

Place the vial in an upright position. Add 200 mL of 0.9% Sodium Chloride Injection* to the vial using the transfer spike. Fill to the line.

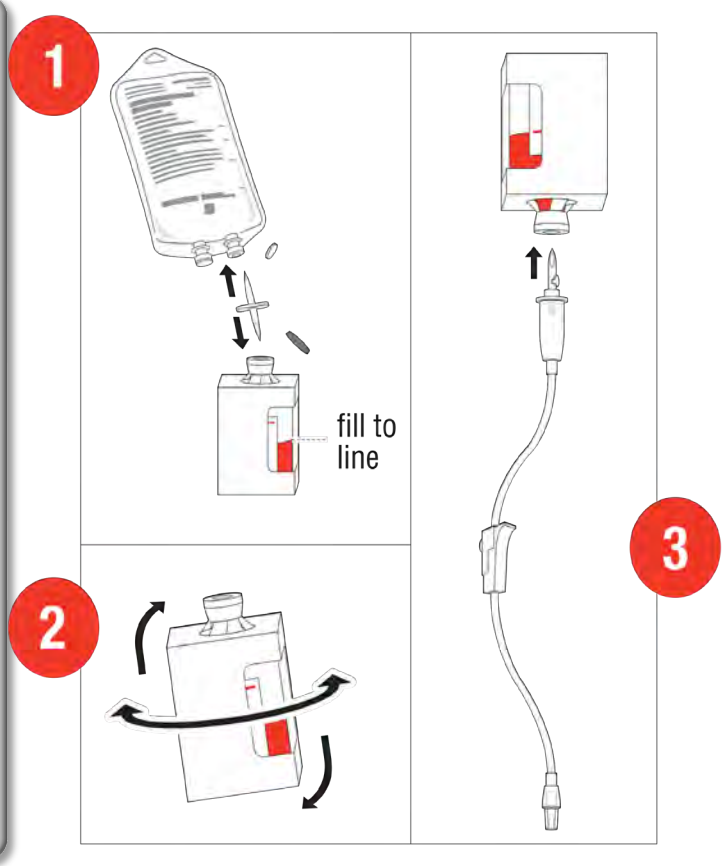
* 0.9% Sodium Chloride Injection is the recommended diluent (diluent not included in the kit). Lactated Ringer's Solution and 5% Dextrose Injection have also been found to be compatible with Hydroxocobalamin.

Mix:

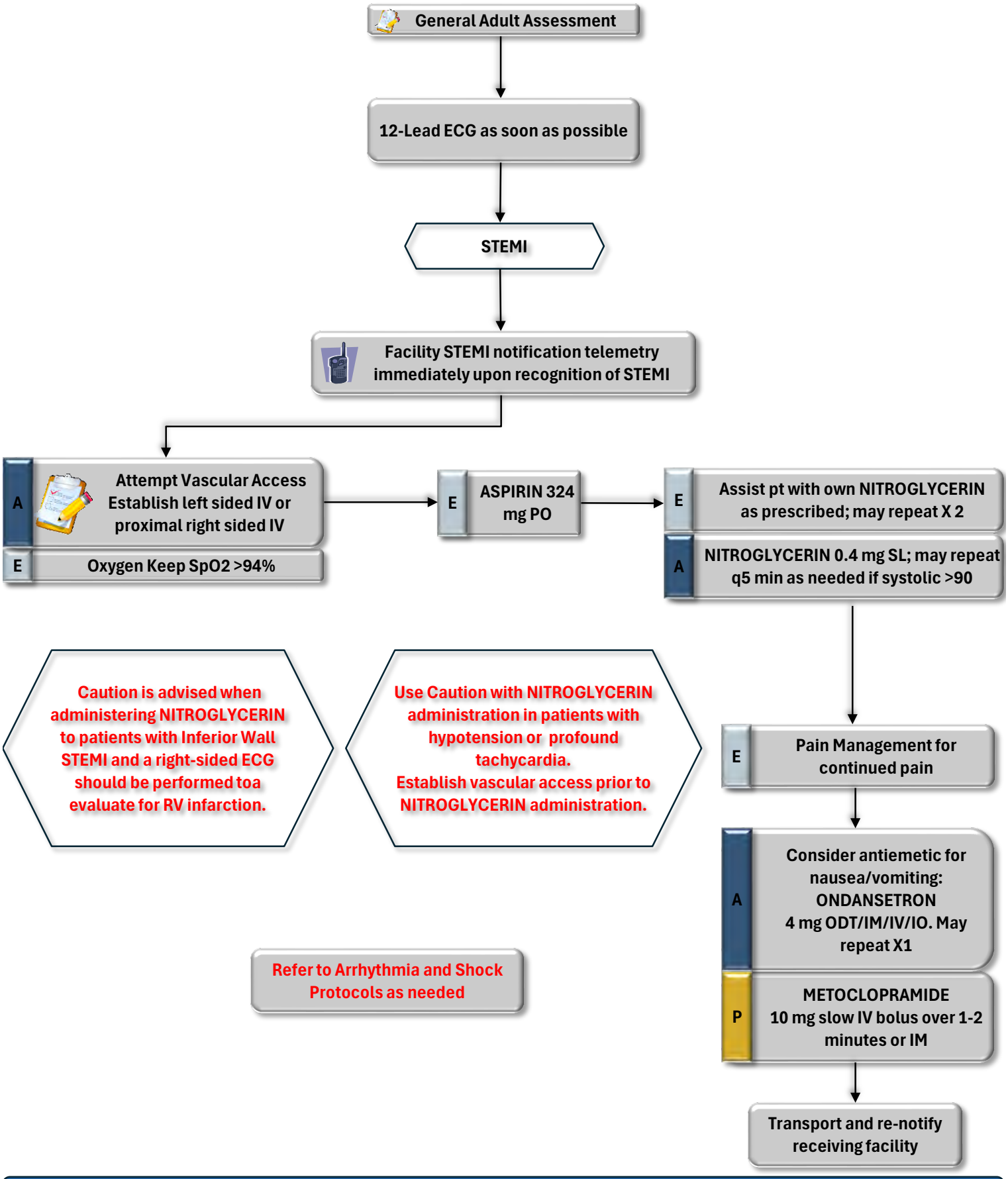
The vial should be repeatedly inverted or rocked, NOT shaken, for at least 60 seconds prior to infusion.

Infuse Vial:

Use vented intravenous tubing, hang and infuse over 15 minutes.



STEMI (Suspected)



STEMI (Suspected)

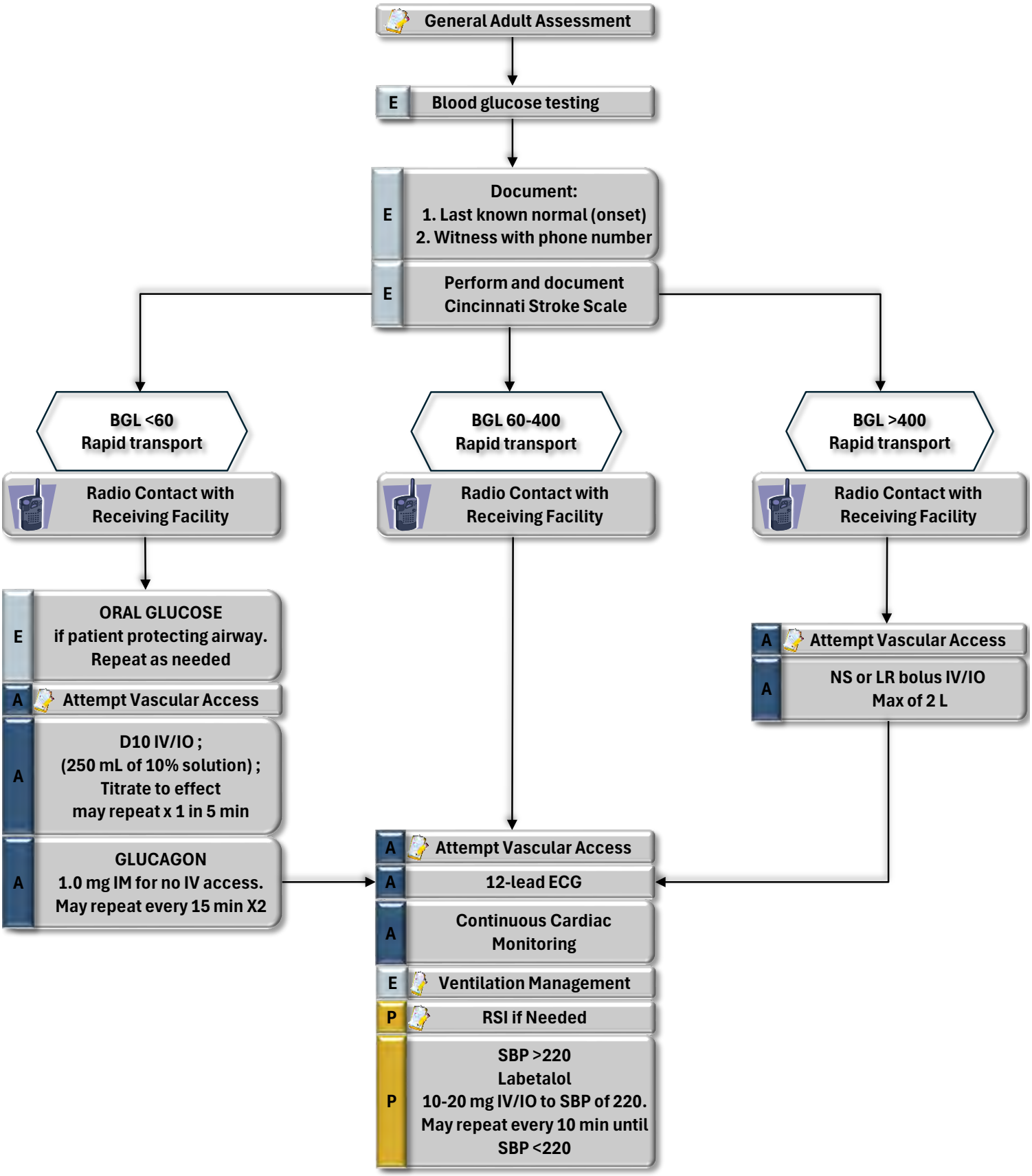
History
- Age
- Medication: Viagra, Levitra, Cialis
- Past Medical History of MI, angina, diabetes
- Allergies
- Recent Physical Exertion
- Palpitation, provocation
- Quality
- Region, radiation, referred
- Severity (1-10)
- Time of onset, duration, repetition

Signs and Symptoms
- CP, pressure, ache, vice-like pain, tight
- Location, substernal, epigastric, arm, jaw, neck, shoulder
- Radiation of pain
- Pale, diaphoresis
- Shortness of breath
- Nausea, vomiting, dizziness
- Time of onset

Differential
- Chest trauma
- Angina
- Pericarditis
- Pulmonary embolism
- Asthma, COPD
- Pneumothorax
- Aortic dissection or aneurysm
- GE reflux or hiatal hernia
- Esophageal spasm
- Drug overdose (cocaine, methamphetamines)

Pearls
- Recommended exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Diabetics, geriatrics, and female patients often have atypical pain. Have a high index of suspicion.
- Perform a 12-Lead ECG on all patients 35 years old and older experiencing vague jaw/chest/abdominal discomfort.
- Perform a 12-Lead ECG within 5 minutes of patient contact.
- The administration of nitroglycerin is contraindicated for any patient who has used erectile dysfunction medications within the last 48 hours.

Stroke (CVA)



Stroke (CVA)

Stroke (CVA)

History
- Previous CVA, TIAs
- Previous cardiac/vascular surgery
- Associated diseases:
  - Diabetes,
  - HTN
  - CAD
  - Atrial Fibrillation
- Medications, including anticoagulants
- History of trauma

Signs and Symptoms
- AMS
- Weakness, paralysis
- Blindness or other sensory loss
- Aphasia, dysarthria
- Syncope
- Vertigo, dizziness
- Vomiting
- Headache
- Seizures
- Respiratory pattern change
- Hypertension, hypotension

Differential
- AMS
- TIA
- Seizure
- Hypoglycemia
- Tumor
- Trauma
- Electrolyte abnormality
- Medication side effect
- Intoxication

Pearls
- Recommended exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro
- Determine time of onset of symptoms or last time patient was seen normal

Cincinnati Pre-hospital Stroke Scale

1. FACIAL DROOP: *Have patient show teeth or smile.*

Normal: both sides of the face move equally

Abnormal: one side of face does not move as well as the other side

2. ARM DRIFT: *Patient closes eyes & holds both arms out for 10 sec.*

Normal: both arms move the same or both arms do not move at all

Abnormal: one arm does not move or drifts down compared to the other

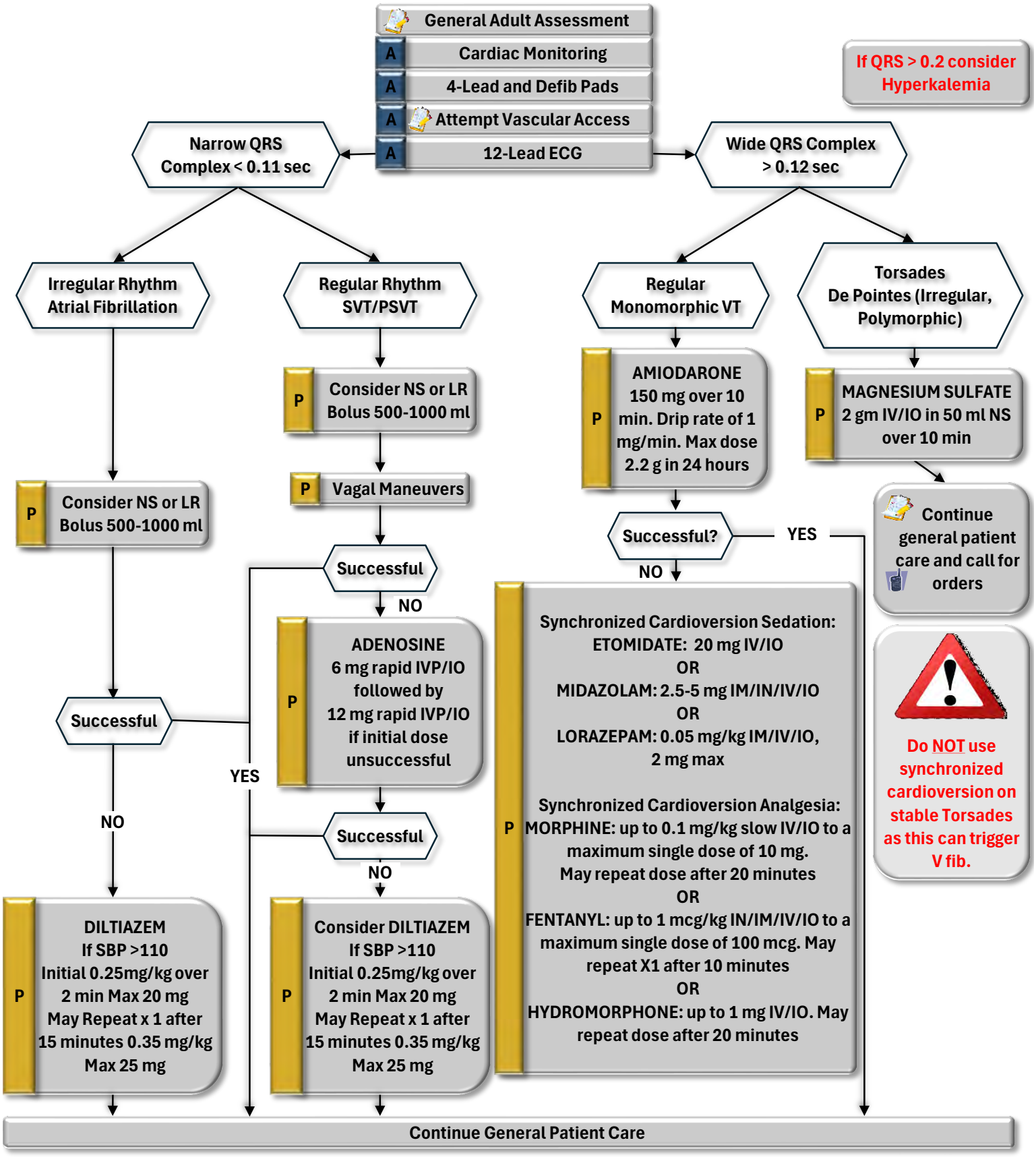
3. ABNORMAL SPEECH: *Have the patient say "you can't teach an old dog new tricks."*

Normal: patient uses correct words with no slurring **Abnormal:** patient slurs words, uses the wrong words, or is unable to speak

INTERPRETATION: If any 1 of these 3 signs is abnormal, the probability of a stroke is 72%.

Stroke (CVA)

(Stable) Tachycardia
(Normal Mental Status, Normotensive, HR >150)



(Stable) Tachycardia

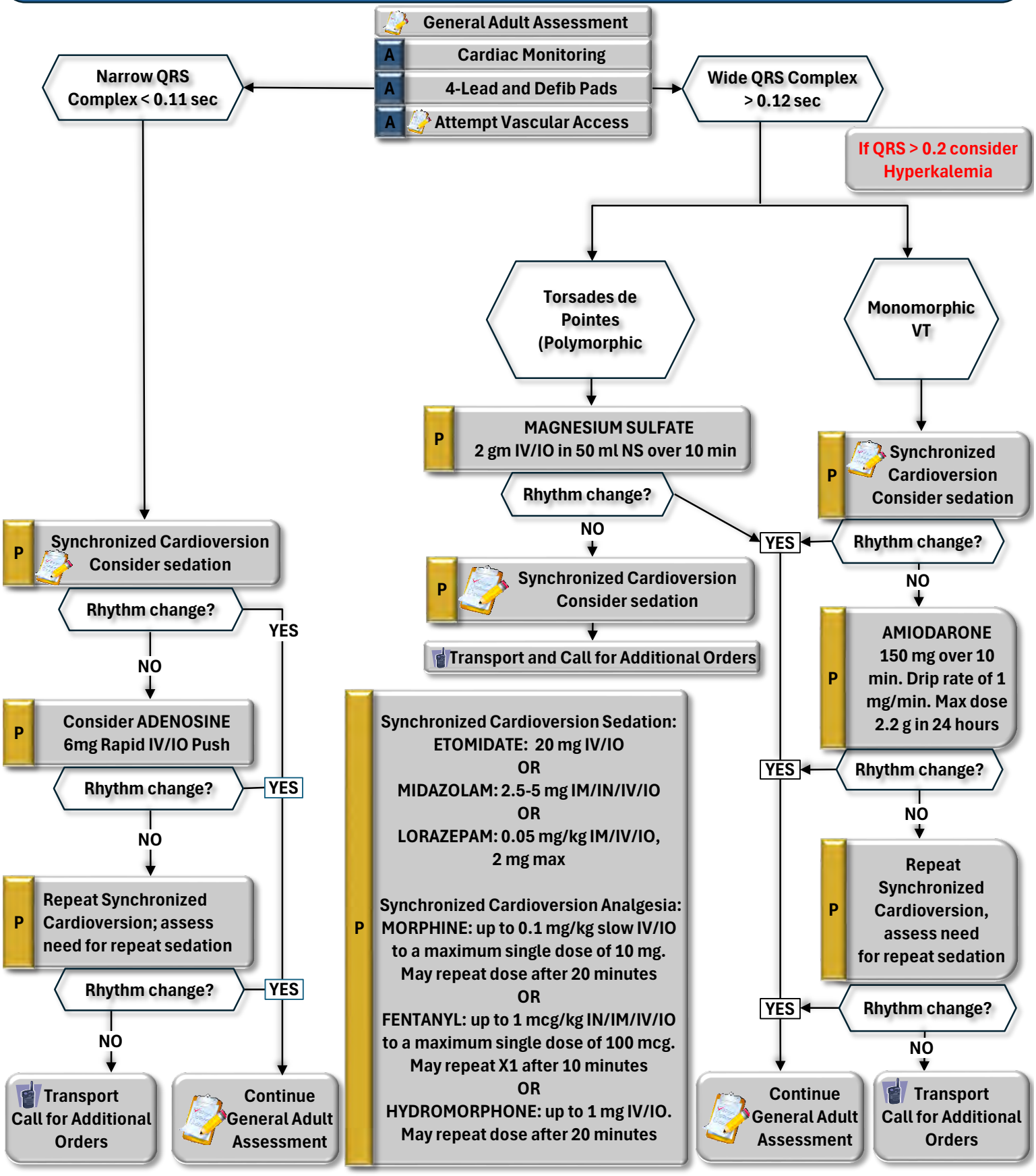
History
- Past medical history
- Medications (aminophylline, diet pills, thyroid supplements, decongestants, digoxin)
- Diet (caffeine)
- Drugs (cocaine, methamphetamines)
- Syncope/near syncope
- History of palpitations/racing heart

Signs and Symptoms
- Heart rate >150
- Dizziness, CP, SOB
- Diaphoresis
- CHF

Differential
- Heart disease (WPW, valvular)
- Sick sinus syndrome
- MI
- Electrolyte imbalance
- Exertion, fever, pain, emotional stress
- Hypoxia
- Hypovolemia
- Drug effect, overdose
- Hyperthyroidism

Pearls
- Recommended exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Carefully monitor patients as you treat them; stable tachycardia may convert to unstable rhythms/conditions quickly.
- Sedate patients prior to cardioversion, if time allows.
- Administer Adenosine at a proximal IV site, rapidly followed by a saline flush.

(Unstable) Tachycardia
(Mental Status Changes, Hypotension, HR >150)



(Unstable) Tachycardia

History
- Past medical history
- Medications (aminophylline, diet pills, thyroid supplements, decongestants, digoxin)
- Diet (caffeine)
- Drugs (cocaine, methamphetamines)
- Syncope/near syncope
- History of palpitations/racing heart

Signs and Symptoms
- Cardiac arrest
- Heart rate >150
- Dizziness, CP, SOB
- Diaphoresis
- CHF

Differential
- Heart disease (WPW, valvular)
- Sick sinus syndrome
- MI
- Electrolyte imbalance
- Exertion, fever, pain, emotional stress
- Hypoxia
- Hypovolemia
- Drug effect, overdose
- Hyperthyroidism

Pearls
- Recommended exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- If patient is in arrest, efforts should focus on quality chest compressions and rhythm correction.
- Administer Adenosine at a proximal IV site, rapidly followed by a saline flush.

Ventilation Management

Use supplemental oxygen to maintain an oxygen saturation of >94% or >90% for patients on home oxygen for chronic conditions

Basic Airway Maneuvers
Open Airway Chin Lift/Jaw Thrust
NPA or OPA as needed
Suction as needed

Respiratory Distress and/or Tracheostomy Tube Replacement Protocol if needed

Consider Cervical Stabilization

Consider Altered Mental Status/Syncope

E Administer oxygen

E BVM as needed

Intervention effective?

NO

YES

A Extraglottic Airway with Capnography

A Attempt Vascular Access

A Cardiac Monitoring

P Endotracheal Intubation with Capnography

P Consider Rapid Sequence Intubation (RSI)

P

Post-Intubation Sedation and Analgesia:
Opioid (Fentanyl/Hydromorphone) and Benzodiazepine (Midazolam/Lorazepam/Diazepam) or Ketamine.

Fentanyl 1 mcg/kg IV/IO Max of 100 mcg. May repeat every 10 minutes as needed for analgesia.
OR
Hydromorphone 0.01 mg/kg IV/IO Max of 1 mg. May repeat every 20 minutes as needed for analgesia.
PLUS
Midazolam 0.1 mg/kg IV/IO Max 10 mg. May repeat every 5 minutes as needed for sedation.
OR
Lorazepam 0.1 mg/kg IV/IO Max 4mg. May repeat every 10 minutes as needed for sedation.
OR
Diazepam 0.2 mg/kg IV/IO Max 5mg. May repeat every 5 minutes as needed for sedation.
OR
Ketamine: Initial dose is 1 mg/kg slow IV/IO push if not used for induction. If used for induction, initial dose is 0.5 mg/kg slow IV/IO push. May repeat 0.5 mg/kg every 15 minutes as necessary to maintain analgesia and sedation.
Ketamine should not be used for sedation following ROSC in cardiac arrest patients.

Extraglottic/ETT placement successful?

NO

Able to ventilate without Extraglottic/ETT in place?

NO

P Cricothyroidotomy

YES

Continue Care and Transport as Appropriate

Ventilation Management

Always weigh the risks and benefits of endotracheal intubation in the field against transport. All prehospital endotracheal intubations are considered high risk. Consider Extraglottic airway. If ventilation/oxygenation is adequate, transport may be the best option. The most important airway device and the most difficult to use correctly and effectively is the Bag Valve Mask (not the laryngoscope). Few prehospital airway emergencies cannot be temporized or managed with proper BVM techniques.

DIFFICULT AIRWAY ASSESSMENT:

Difficult BVM Ventilation-MOANS: Difficult Mask seal due to facial hair, anatomy, blood or secretions/trauma; Obese or late pregnancy; Age >55; No teeth (roll gauze and place between gums and cheeks to improve seal); Stiff or increased airway pressures (asthma, COPD, obese, pregnant).

Difficult Laryngoscopy-LEMON: Look externally for anatomical distortions (small mandible, short neck, large tongue); Evaluate 3-3-2 Rule (Mouth open should accommodate 3 patient fingers, mandible to neck junction should accommodate 3 patient fingers, chin-neck junction to thyroid prominence should accommodate 2 patient fingers); Mallampati (difficult to assess in the field); Obstruction / Obese or late pregnancy; Neck mobility.

Difficult Extraglottic Device Placement-RODS: Restricted mouth opening; Obstruction / Obese or late pregnancy; Distorted or Disrupted airway; Stiff or increased airway pressures (asthma, COPD, obese, pregnant).

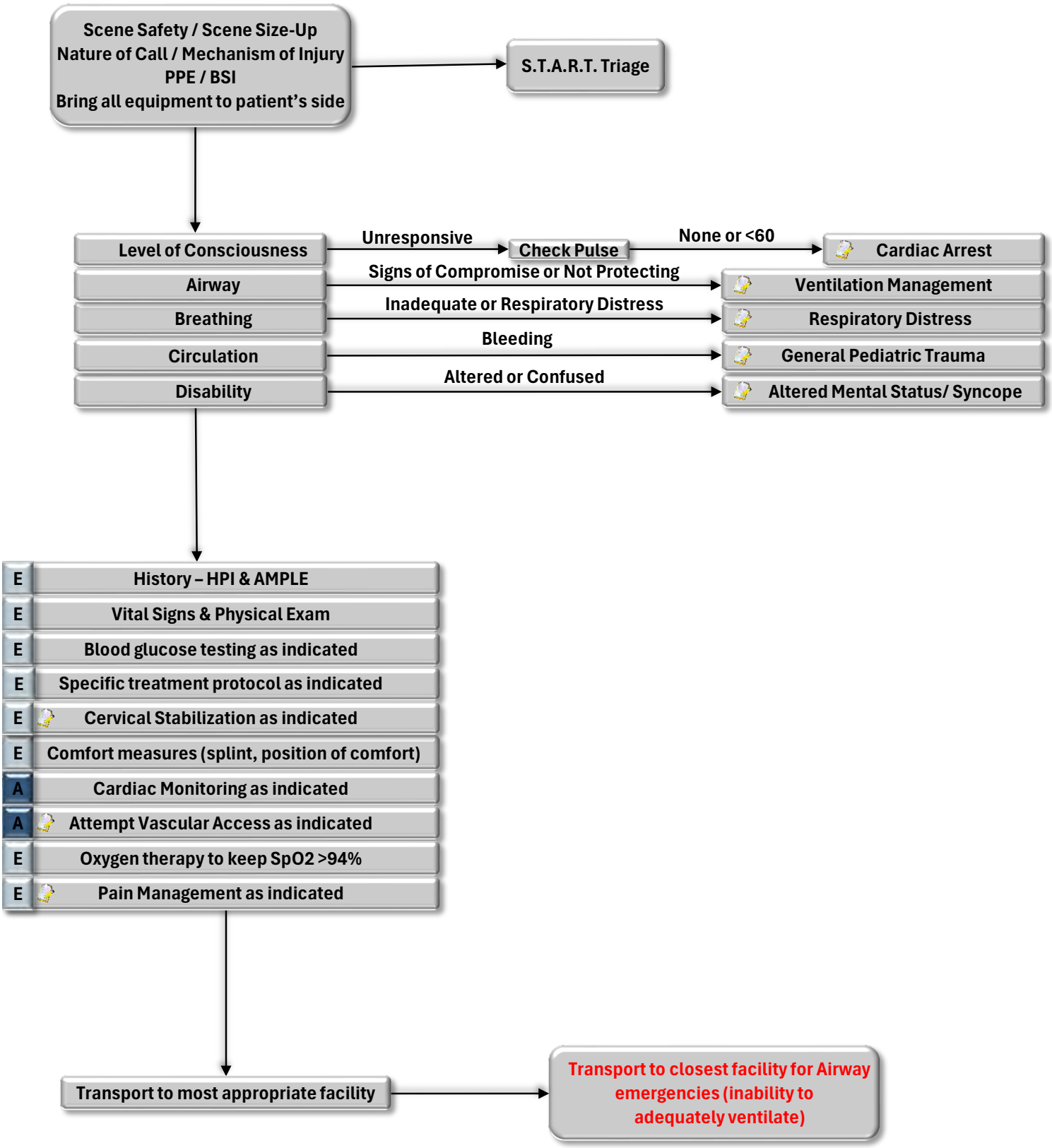
Pearls

- Consider preoxygenation/lung denitrogenation with a non-rebreather, a nasal cannula at 15 LPM, or CPAP prior to intubation (as patient condition allows).
- Severe hypotension (SBP<90) should be addressed with IV fluids and/or pressors (as appropriate) prior to intubation in order to reduce the likelihood of post-intubation cardiovascular decline.
- Capnometry (Color) or capnography is mandatory with all methods of intubation. Document results.
- Continuous capnography (ETCO2) is mandatory for the monitoring of all patients with an ET tube.
- If an effective airway is being maintained by BVM and/or basic airway adjuncts (e.g. nasopharyngeal airway) with continuous pulse oximetry values of ≥90% or values expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. pulse oximetry of 85% with otherwise normal vitals in a post-drowning), it is acceptable to continue with basic airway measures instead of using an Extraglottic airway device or intubation. Consider CPAP as indicated by protocol and patient condition.
- For the purposes of this protocol, a secure airway is achieved when the patient is receiving appropriate oxygenation and ventilation.
- An intubation attempt is defined as passing the laryngoscope blade or endotracheal tube past the teeth or inserted into the nasal passage.
- An appropriate ventilatory rate is one that maintains an ETCO2 of 35 - 45. Avoid hyperventilation.
- Paramedics should use an Extraglottic airway device if oral-tracheal intubation is unsuccessful.
- Maintain C-spine stabilization for patients with suspected spinal injury.
- Gastric tube placement should be considered in all intubated patients, if time allows.
- It is important to secure the endotracheal tube well.

PEDIATRIC TREATMENT PROTOCOLS

(for patients under 12 years of age)

General Pediatric Assessment



General Pediatric Assessment

General Pediatric Assessment

Pearls

- For all scenes where patient needs exceed available EMS resources, initial assessment and treatment shall be in accordance with an approved triage methodology.
- Correct life-threatening problems as identified.
- If the ability to adequately ventilate a patient cannot be established, the patient must be transported to the nearest emergency department.
- Never withhold oxygen from a patient in respiratory distress.
- Contact with online medical control should be established by radio. Telephone contact may be used if Radio Contact is unavailable.

Air Medical Utilization:

1. Consider activating Air Medical for helicopter transport from scene for:
2. Transport times >20 minutes with a critically injured or ill patient including:
   - Hemodynamically unstable, respiratory distress, 2nd or 3rd degree burns to greater than 20% body surface area, significant trauma, amputations, MI, CVA, GI bleed
3. Areas inaccessible by ground ambulance
4. Multiple casualty incidents requiring more ambulance than system has available
5. Pediatric trauma patients
6. Patient condition exceeds capabilities of nearest receiving facility.

To activate Air Medical Response utilize Elko County Central Dispatch.

Waiting Room Criteria:

Upon arrival in the emergency department, if transfer of care has not occurred within 30 min in accordance with NRS 450B.790, any patient, excluding patients placed on a legal psychiatric hold, meeting *ALL* the following criteria may be placed in the hospital waiting room or other appropriate location:

1. Normal vital signs: Refer to chart
2. Did not receive an IV or any parenteral medications during EMS transport except a single dose of analgesia and/or an antiemetic.
3. In the judgment of the Paramedic, does not require continuous cardiac monitoring. Note: Any ECG by a transferring facility may not be discontinued by EMS personnel.
4. Can maintain a sitting position without adverse impact on their medical condition.
5. Is left with a verbal report to hospital personnel.
6. Has a parent or legal guardian present.

Internal Disaster:

Operational exceptions may be initiated in regard to transport to hospitals on internal disaster.

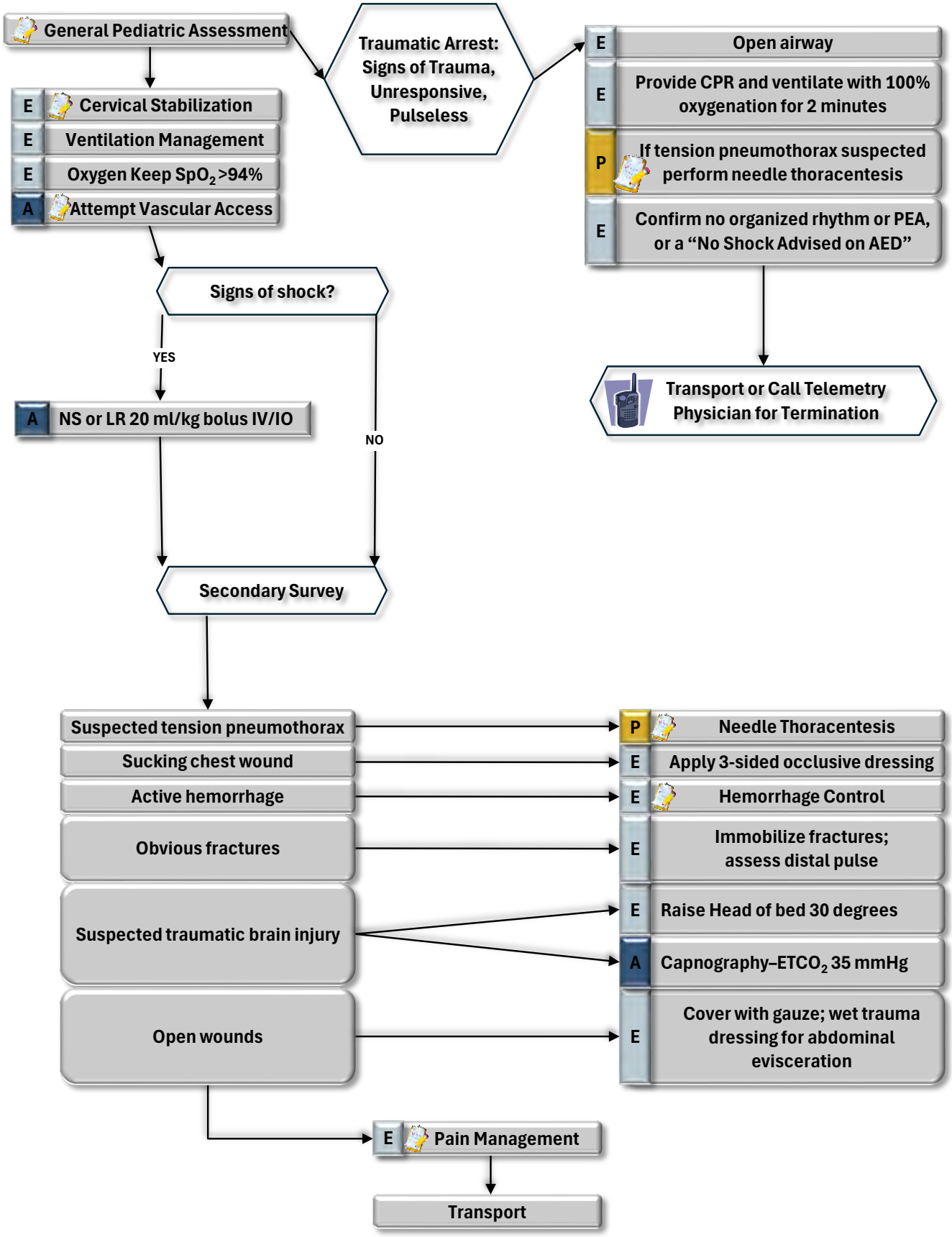
Age	Breaths/min
<1 year	30-53
1 to 3 years	22-37
4-5 years	20-28
6-12 years	18-25
13-18 years	12-20

Age	Awake Rate
Newborn	100-205
Infant	100-180
Toddler	98-140
Preschool	80-120
School-age	75-118
Adolescent	60-100

Age	Systolic BP (mm Hg)	Diastolic BP (mm Hg)	MAP (mm Hg) Mean Arterial Pressure
Birth (12 hrs, <1000g)	39-59	16-36	28-42
Birth (12 hrs, 3kg)	60-76	31-45	48-57
Neonate (96 hours)	67-84	35-53	45-60
1-12 months	72-104	37-56	50-62
1-2 years	86-106	42-63	49-62
3-5 years	89-112	46-72	58-69
6-7 years	97-115	57-76	66-72
10-12 years	102-120	61-80	71-79
12-15 years	110-131	64-83	73-84

General Pediatric Assessment

General Pediatric Trauma Assessment



General Pediatric Trauma Assessment

General Pediatric Trauma Assessment

Signs and Symptoms
- Pain, swelling
- Deformity, wounds
- AMS or unconscious
- Hypotension or shock
- Arrest

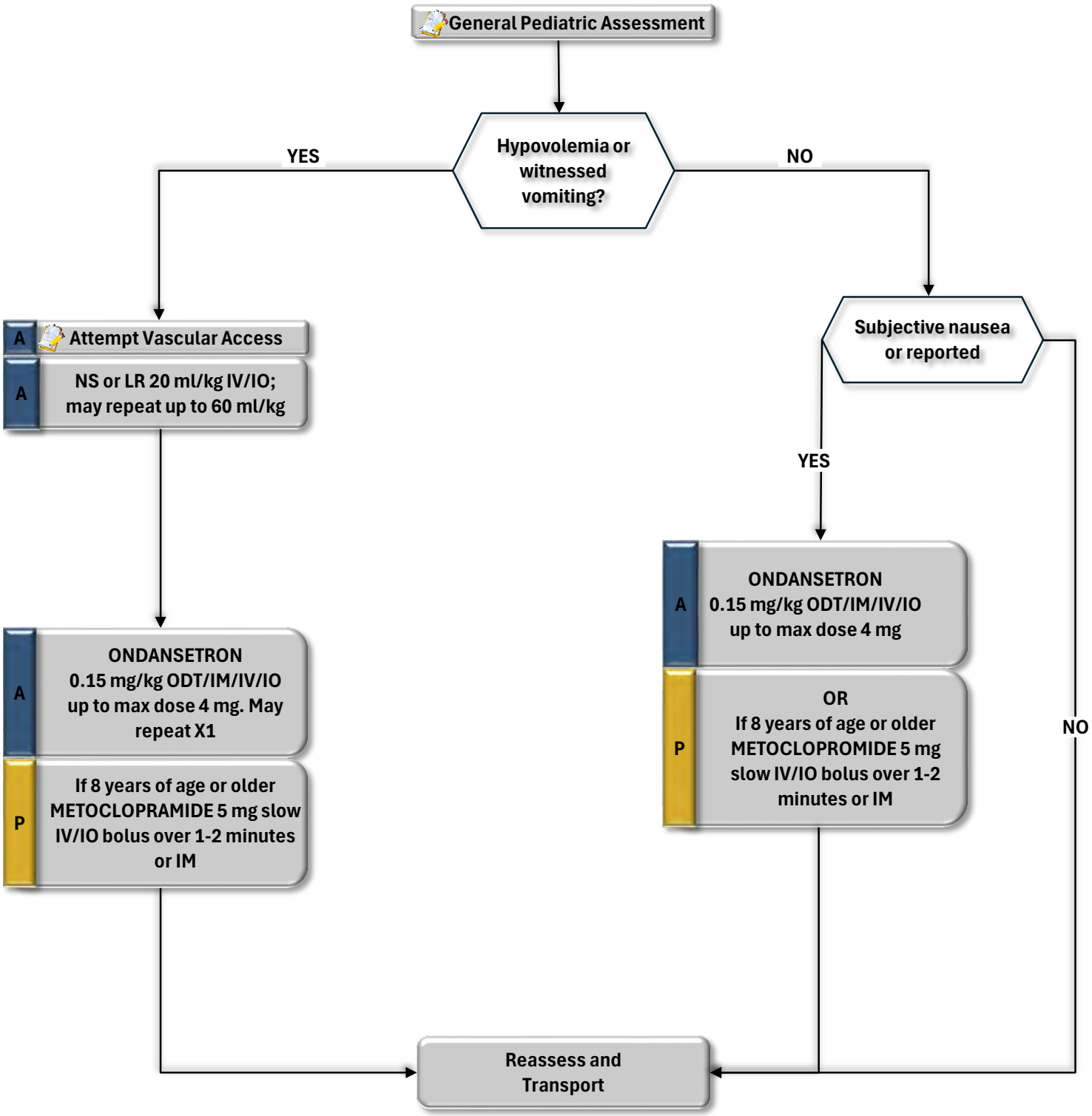
History
- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints/protective equipment
- Past medical history
- Medications
- Allergies

Differential (life threatening)
- Hemorrhage
- Traumatic brain injury
- Tension pneumothorax
- Pericardial tamponade
- Sucking chest wound
- Hemothorax
- Intra-abdominal bleeding
- Pelvic fracture
- Spine fracture/spinal cord injury
- Femur fracture

Pearls
- Recommended exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro.
- Transport should not be delayed for procedures; ideally procedures should be performed en-route when possible.
- BVM is an acceptable method of ventilating and managing an airway if pulse oximetry can be maintained ≥90%.
- Pediatric patients should be evaluated with a high index of suspicion; occult injuries may be present and pediatric patients can decompensate quickly.

General Pediatric Trauma Assessment

Pediatric Abdominal Pain, Nausea & Vomiting



Pediatric Abdominal Pain, Nausea & Vomiting

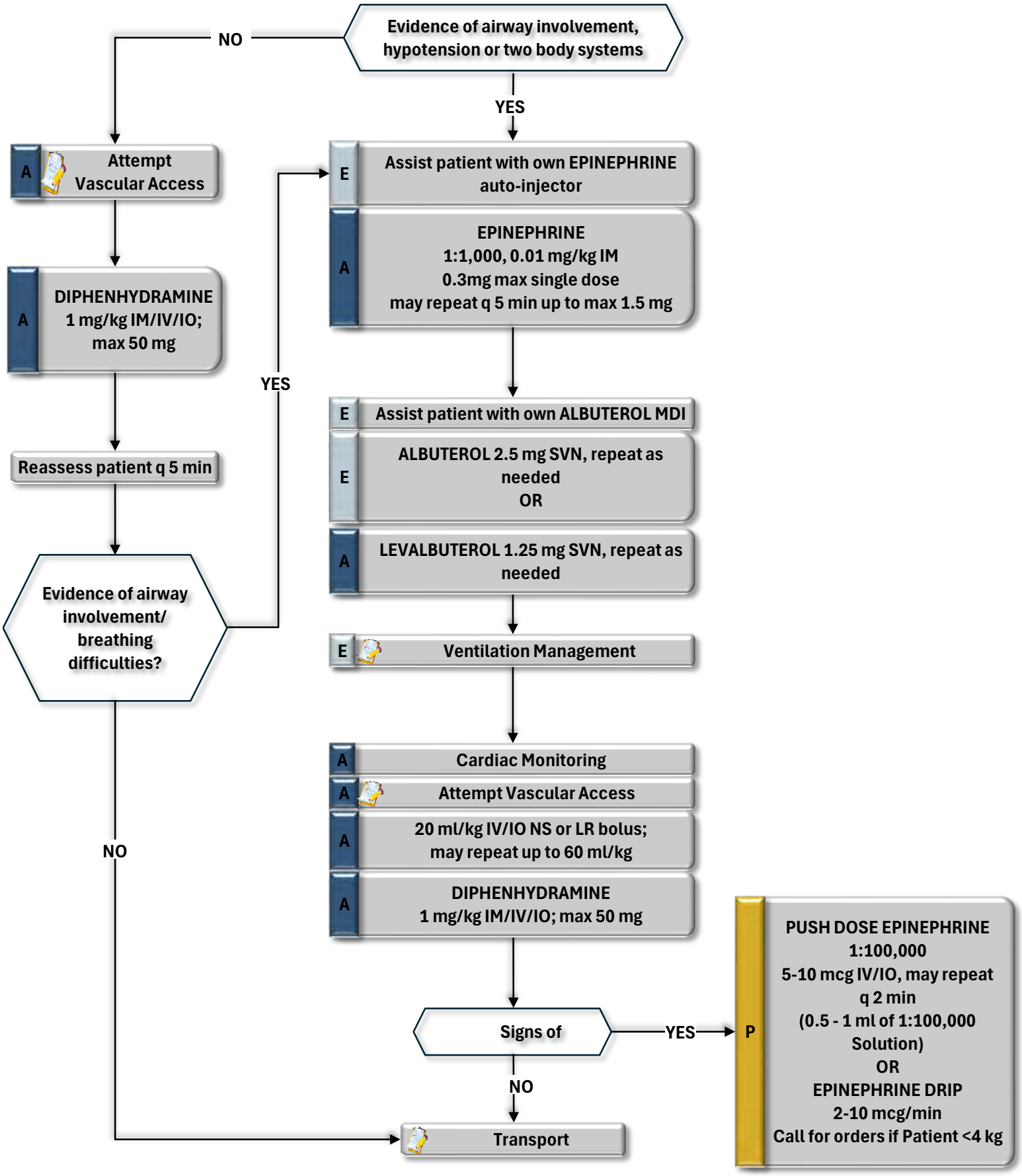
History
- Age
- Medical/surgical history
- Onset
- Quality
- Severity
- Fever
- Menstrual history if applicable

Signs and Symptoms
- Abdominal pain
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Dysuria
- Constipation

Differential
- Appendicitis
- Bowel obstruction
- UTI/pyelonephritis
- DKA
- Testicular torsion
- Pregnancy/ectopic pregnancy
- Head trauma (nausea and vomiting)
- Heart failure
- Cardiac arrhythmia

Pearls
- Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Document mental status and vital signs prior to administration of antiemetics & pain management.
- Repeat vital signs after each fluid bolus.
- Pediatric fluid bolus is 20 ml/kg; may repeat to a maximum of 60 ml/kg.
- If there is suspicion that the patient is in DKA, do not exceed 20 ml/kg NS or LR.
- Consider cardiac and ETCO2 monitoring.

Pediatric Allergic Reaction



Pediatric Allergic Reaction

History
- Onset and location
- Insect sting or bite
- Food allergy/exposure
- Medication allergy/exposure
- New clothing, soap, detergent
- Past history of reactions
- Past medical history
- Medication history

Signs and Symptoms
- Itching or hives
- Coughing, wheezing or respiratory distress
- Throat or chest constriction
- Difficulty swallowing
- Hypotension/shock
- Edema
- Nausea, vomiting or diarrhea

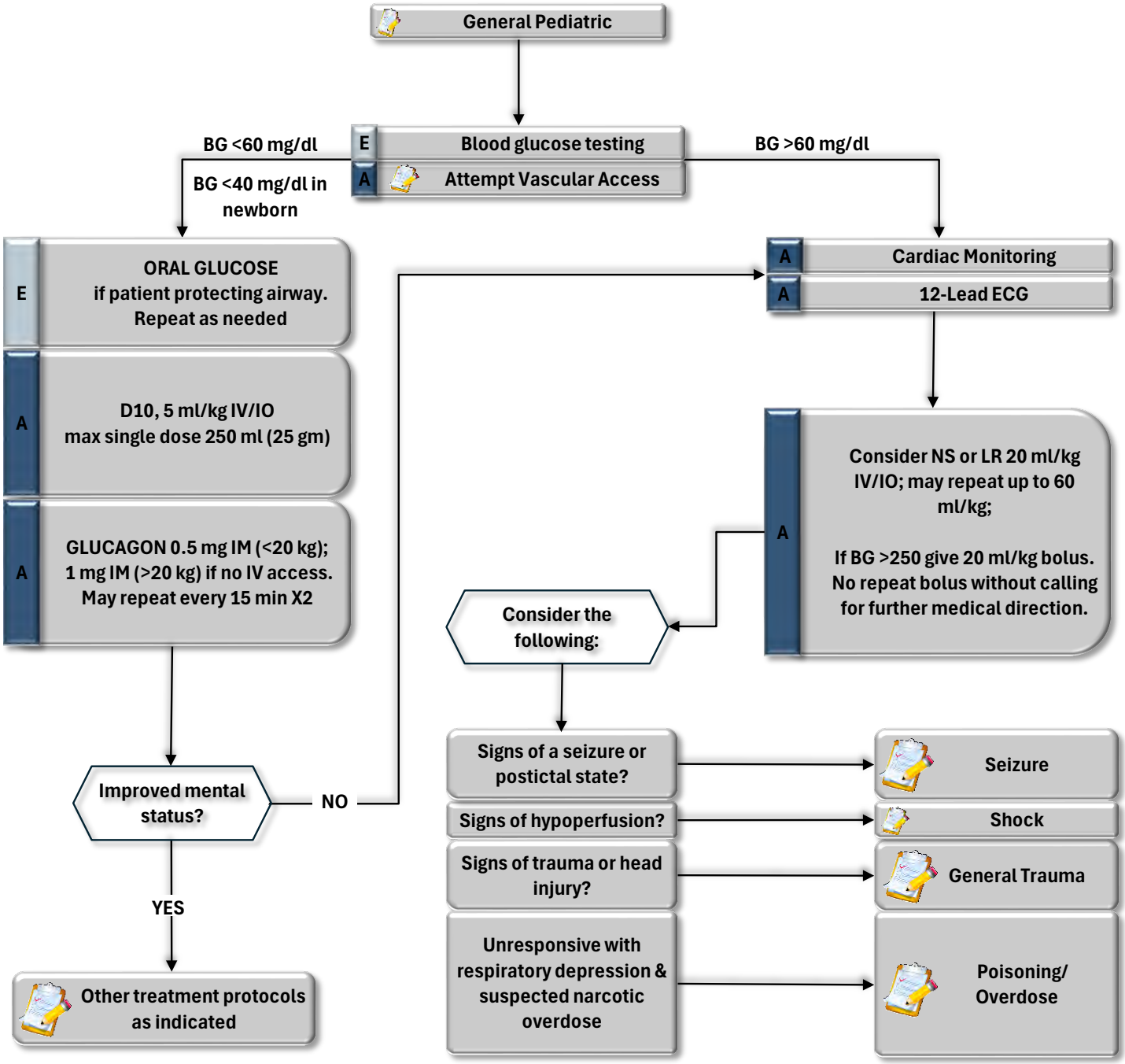
Differential
- Urticarial (rash only)
- Anaphylaxis (systemic reaction)
- Shock (vascular effect)
- Angioedema (may be drug induced)
- Aspiration/airway obstruction
- Asthma/COPD
- CHF

Pearls
- Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs.
- Anaphylaxis is an acute and potentially lethal multisystem allergic reaction.
- Epinephrine is a first-line drug that should be administered with airway involvement or in acute anaphylaxis (two body systems involved). IM Epinephrine (1:1,000) should be administered in priority before or during attempts at IV or IO access.
- Contact Medical Control for refractory anaphylaxis.

Special Considerations
- Always perform ECG monitoring when administering Epinephrine.
- Provide oxygen and airway support as needed.

Pediatric Allergic Reaction

Pediatric Altered Mental Status



Pediatric Altered Mental Status

Pediatric Altered Mental Status

Pediatric Altered Mental Status

History
- Past medical history
- Medications
- Vaccines
- Recent illness (fever)
- Irritability
- Changes in feeding
- Potential ingestion
- Trauma
- Allergies

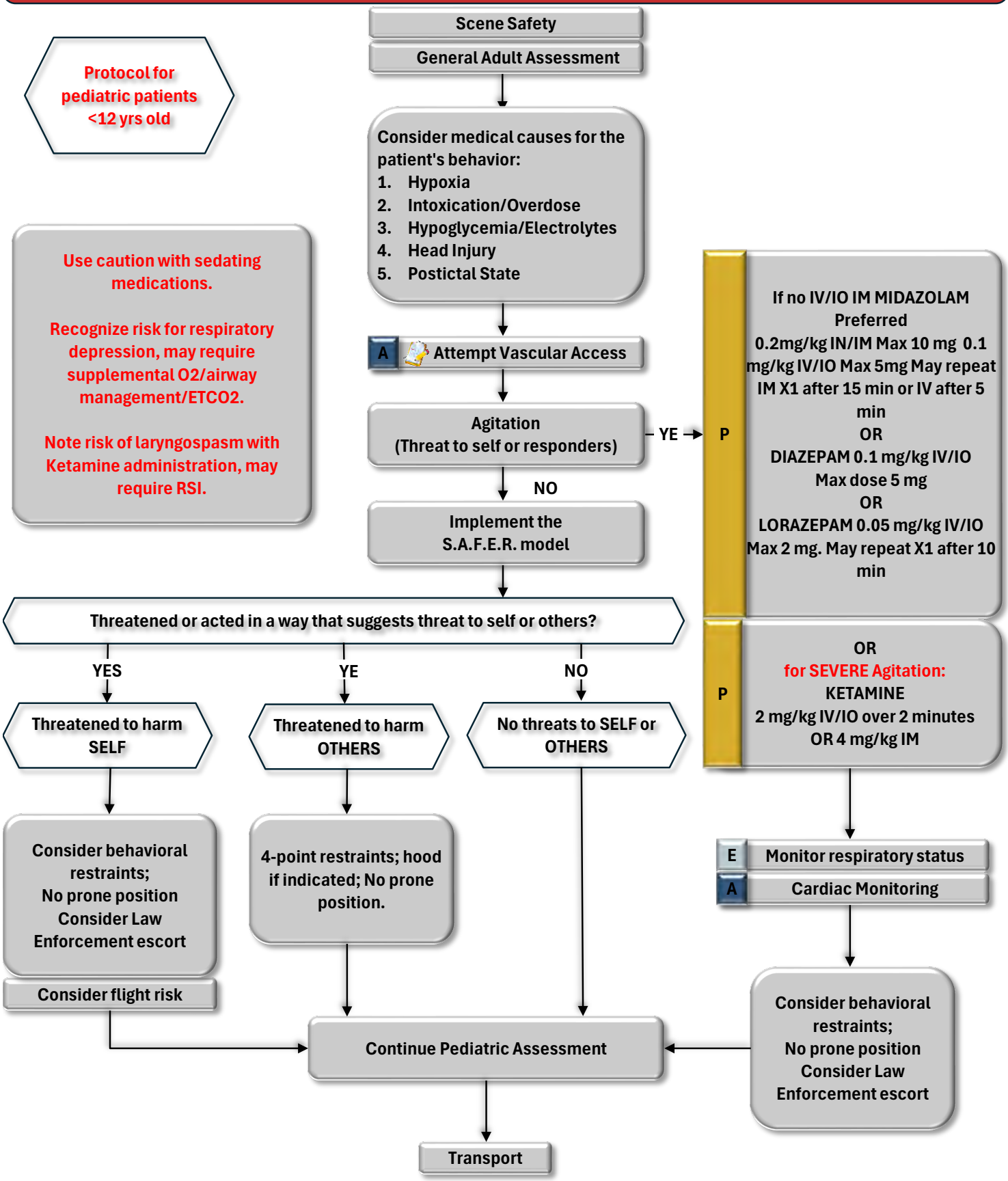
Signs and Symptoms
- Change in mentation
- Decreased activity
- Decrease/increase in blood sugar
- Cool, diaphoretic skin
- Warm, dry skin
- Kussmaul respirations
- Sunken or bulging fontanelle
- Signs of trauma

Differential
- Hypoxia
- Head injury
- Seizure
- Meningitis
- Shock
- DKA
- Hypoglycemia
- Toxic ingestion
- Electrolyte abnormalities

Pearls
- Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities and Neuro.
- Pay careful attention to the head exam for signs of injury.
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety and that of other responders.
- Consider alcohol, prescription drugs, illicit drugs and over the counter preparations as possible etiology.
- If narcotic overdose or hypoglycemia is suspected, administer Narcan 0.1 mg/kg or Glucose prior to advanced airway procedures.
- Narcan is not recommended for newborns (can precipitate seizures).

Pediatric Altered Mental Status

Pediatric Behavioral Emergency



Pediatric Behavioral Emergency

Pediatric Behavioral Emergency

History
- Situational crisis
- Psychiatric illness/medications
- Injury to self or threats to others
- Medic Alert tag
- Substance abuse/overdose
- Diabetes

Signs and Symptoms
- Anxiety, agitation, confusion
- Affect change, hallucinations
- Delusional thoughts, bizarre behavior
- Combative, violent
- Expression of suicidal/homicidal thoughts

Differential
- AMS differential
- Alcohol intoxication
- Toxin/substance abuse
- Medication effect or overdose
- Drug or alcohol withdrawal
- Depression
- Bipolar
- Schizophrenia
- Anxiety disorder

Pearls
- Children may have a paradoxical response to midazolam and become more agitated.
- Law enforcement assistance should be requested on all calls involving potentially violent patients.
- Under no circumstances are patients to be transported restrained in the prone position.
- Recommended Exam: Mental Status, Skin, Heart, Lungs, Neuro.
- Consider all possible medical/trauma causes for behavior.
- Do not irritate the patient with a prolonged exam.
- EMS providers are mandatory reporters in regard to suspected abuse of any vulnerable person.
- Consider ETCO2 monitoring.

S.A.F.E.R.
- Stabilize the situation by containing and lowering the stimuli.
- Assess and acknowledge the crisis.
- Facilitate the identification and activation of resources (chaplain, family, friends or police).
- Encourage patient to use resources and take actions in his/her best interest.
- Recovery or referral – leave patient in care of responsible person or professional, or

Pediatric Behavioral Emergency

Pediatric Bradycardia

General Pediatric Assessment

E Ventilation Management

Estimated Minimum Systolic BP Calculation
(Age in Years x 2) + 70

BP calculation applies up to age 10 years

Bradycardia causing:
- HYPOTENSION
- Altered mental status
- Poor perfusion
- Shock?

NO

E Identify underlying cause
E Treat hypoxia
E Blood Glucose Testing
A Attempt Vascular Access
A Cardiac Monitoring
E Consider Overdose/Poisoning

Monitor, Reassess and Transport

YES

E Identify underlying cause
E Treat hypoxia
E Blood Glucose Testing
A Attempt Vascular Access
A Cardiac Monitoring
E Consider Overdose/Poisoning

HR <60 bpm? Despite oxygenation and ventilation

YES

E CPR

A EPINEPHRINE
1:10,000 0.01 mg/kg IV/IO
1:1000 0.1 mg/kg via ETT (max 1 mg)
May repeat q 3-5 min

P ATROPINE
0.02 mg/kg IV/IO (min dose 0.1 mg, max dose 0.5 mg)
may repeat once after 5 min

A NS or LR bolus 20 ml/kg
May repeat up to 60 ml/kg

P Consider Transcutaneous Pacing

NO

A NS or LR bolus 20 ml/kg
May repeat up to 60 ml/kg

A EPINEPHRINE
1:10,000 0.01 mg/kg IV/IO
1:1000 0.1 mg/kg via ETT (max 1 mg)
May repeat q 3-5 min

P ATROPINE
0.02 mg/kg IV/IO (min dose 0.1 mg, max dose 0.5 mg)
may repeat once after 5 min

P Consider Transcutaneous Pacing

Reassess

Pulseless → Pediatric Cardiac Arrest

Notify Receiving Hospital and Transport

Pediatric Bradycardia

History
- Respiratory insufficiency
- Past medical history
- Medications
- Pacemaker

Signs and Symptoms
- HR <60/min with hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Respiratory distress

Differential
- Hypoxia
- Hypothermia
- Acidosis
- Hyperkalemia
- Head injury (elevated ICP)
- Overdose/toxins
- Heart block

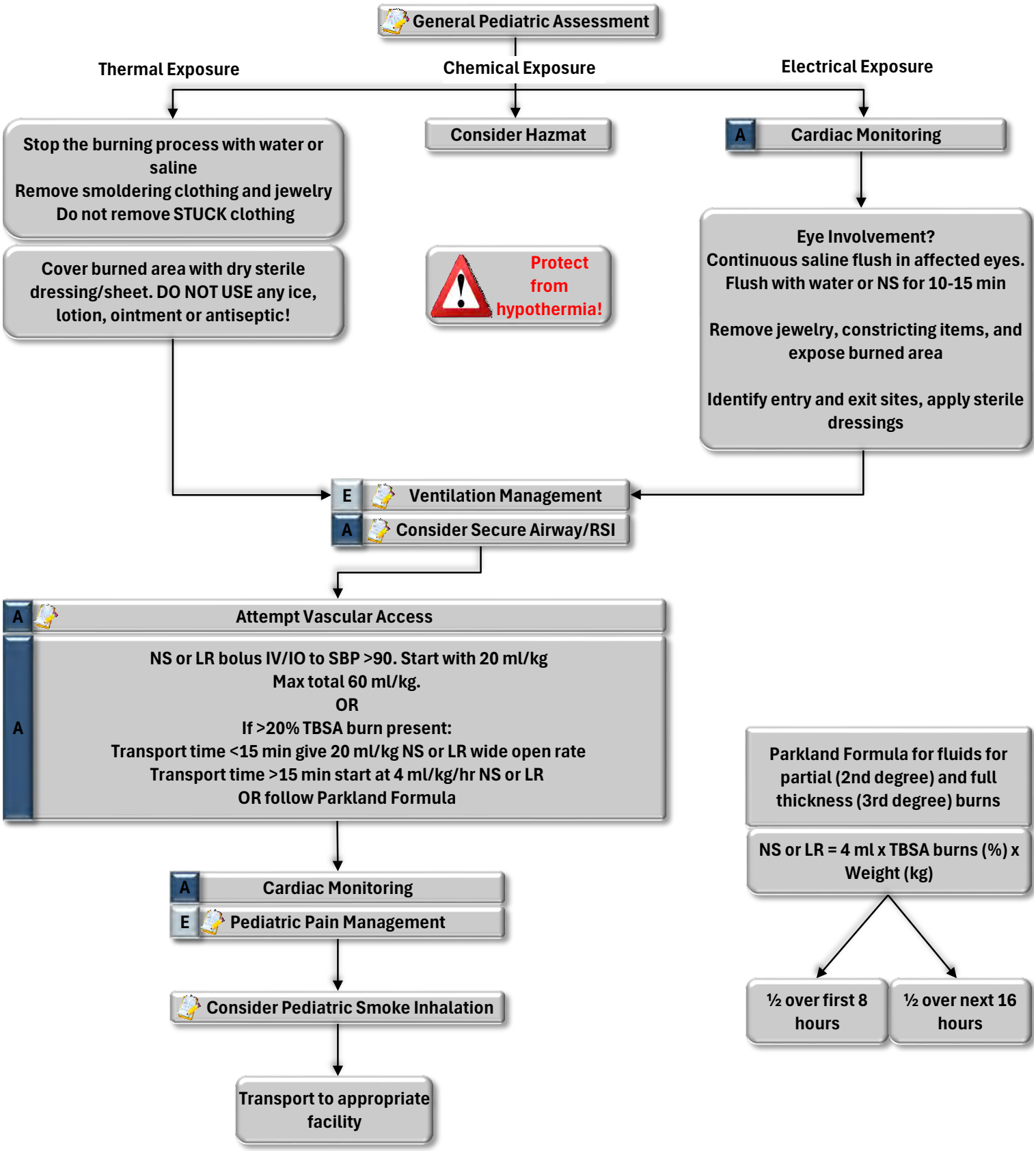
Pearls
- Pediatric pacing is by Telemetry Physician order only.
- Recommended Exam: Mental Status, HEENT, Heart, Lungs, Neuro.
- Bradycardia doesn't typically cause symptoms until HR is <50/minute. Rhythm should be interpreted in the context of symptoms and pharmacological treatment given only when symptomatic; otherwise, monitor and reassess.
- Identifying signs and symptoms of poor perfusion caused by bradycardia are paramount.
- Hypoxemia is a common cause of bradycardia; be sure to oxygenate the patient and provide ventilatory support as needed.

Age	Breaths/min
<1 year	30-53
1 to 3 years	22-37
4-5 years	20-28
6-12 years	18-25
13-18 years	12-20

Age	Awake Rate
Newborn	100-205
Infant	100-180
Toddler	98-140
Preschool	80-120
School-age	75-118
Adolescent	60-100

Age	Systolic BP (mm Hg)	Diastolic BP (mm Hg)	MAP (mm Hg) Mean Arterial Pressure
Birth (12 hrs, <1000g)	39-59	16-36	28-42
Birth (12 hrs, 3kg)	60-76	31-45	48-57
Neonate (96 hours)	67-84	35-53	45-60
1-12 months	72-104	37-56	50-62
1-2 years	86-106	42-63	49-62
3-5 years	89-112	46-72	58-69
6-7 years	97-115	57-76	66-72
10-12 years	102-120	61-80	71-79
12-15 years	110-131	64-83	73-84

Pediatric Burns



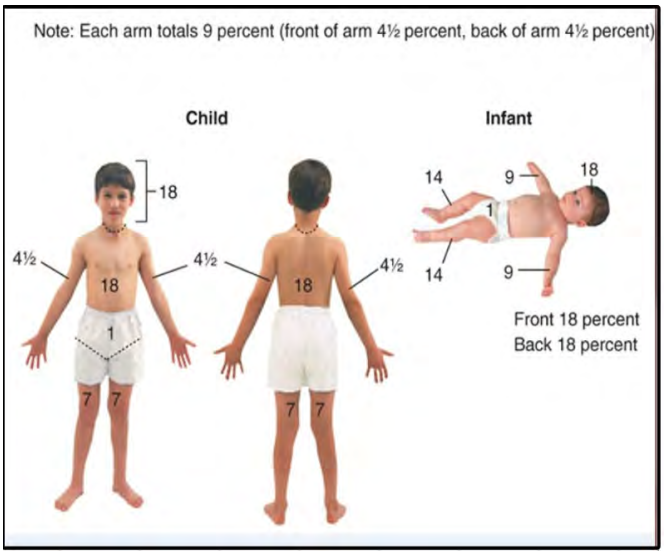
Pediatric Burns

History
- Type of exposure (heat, gas, chemical)
- Inhalational injury
- Time of injury
- Past medical history & medications
- Other trauma
- Loss of consciousness
- Tetanus immunization status

Signs and Symptoms
- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress
- Wheezing
- Singed facial or nasal hair
- Hoarseness or voice changes

Differential
- Superficial (1st degree) – red and painful
- Partial Thickness (2nd degree) – blistering
- Full Thickness (3rd degree) – painless/charred or leathery skin
- Thermal
- Chemical
- Electrical
- Radiation
- Lightning

Pearls
- Burn patients are trauma patients; evaluate for multisystem trauma.
- Assure whatever has caused the burn, is no longer contacting the injury. (Stop the burning process!)
- Recommended Exam: Mental Status, HEENT, Neck, Heart, Lungs, Abdomen, Extremities, Back, Neuro.
- Consider early intubation with patients experiencing significant inhalation injuries.
- Potential CO exposure should be treated with 100% oxygen. (For patients in which the primary event is CO inhalation, transport to a hospital equipped with a hyperbaric chamber is indicated [when reasonably accessible].)
- Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling. Elevate extremity.
- Burn patients are prone to hypothermia - never apply ice or cool burns; must maintain normal body temperature.
- Consider ETCO2 monitoring.
- Evaluate the possibility of child abuse with children and burn



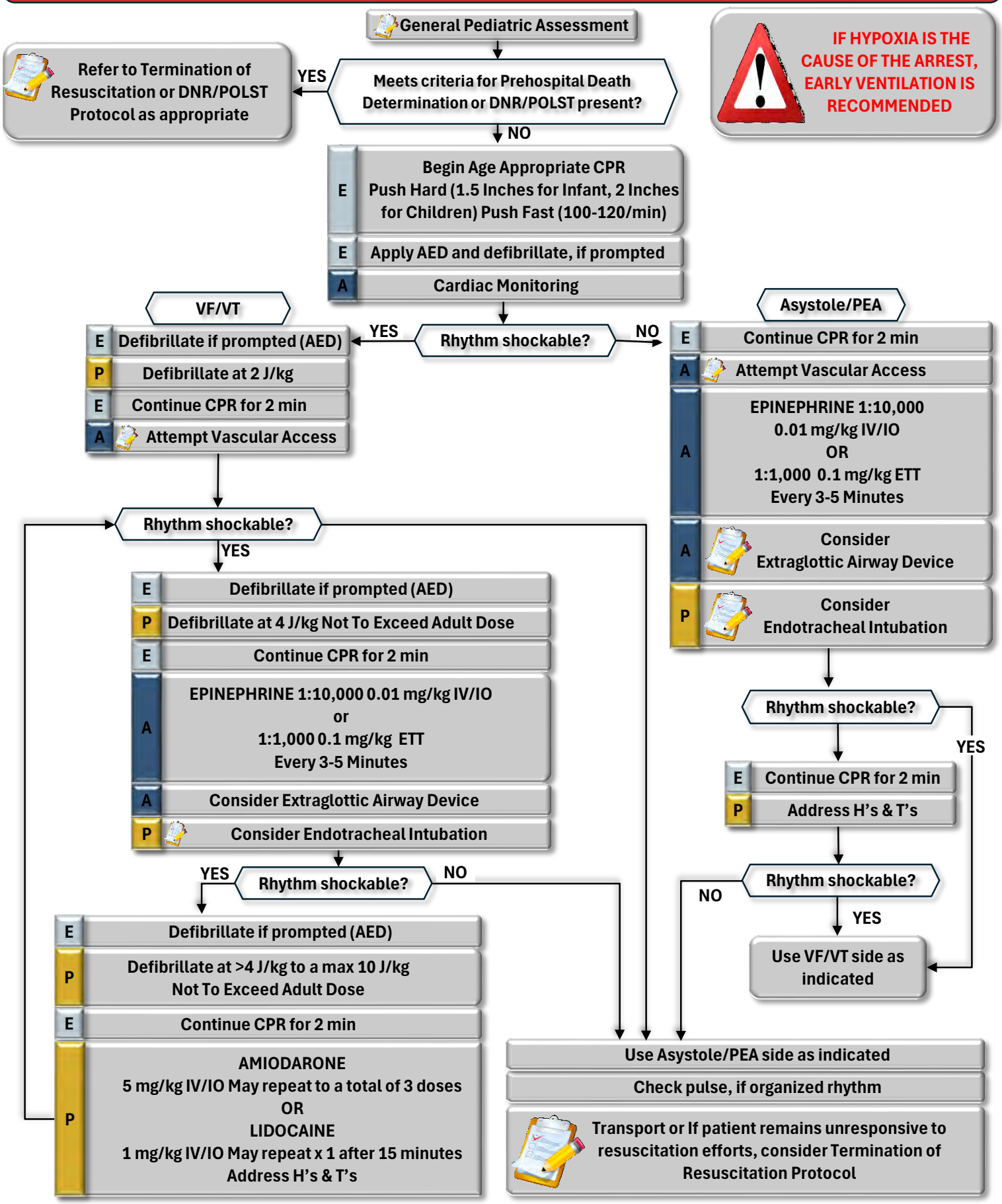
Early Intubation Indications
- Signs of Airway Obstruction
  - ➢Inability to Clear Secretions
  - ➢Poor Oxygenation
- Hoarseness, Stridor, Dysphagia
- Extensive Deep Facial Burns
- Signs of Respiratory Compromise
  - ➢Accessory Muscle Use
- Burns in Mouth
- Total BSA ≥ 40%
- Altered Mentation
- Significant Risk of Edema

Consider transport to closest appropriate Burn Care Center:
- Second degree burns >10% body surface area (BSA).
- Any Third degree burns.
- Burns that involve the face, hands, feet, genitalia, perineum, or major joints.
- Electrical burns including lightning injury.
- Chemical burns.
- Circumferential burns.
- Inhalation burns.
- Burn injury with concomitant trauma.

Pearls (Electrical)
- Do not contact the patient until you are certain the source of the electric shock has been disconnected.
- Attempt to locate contact points, (entry wound where the AC source contacted the patient; an exit at the ground point); both sites will generally be full thickness.
- Cardiac monitor; anticipate ventricular or atrial irregularity to include V-Tach, V-Fib, heart blocks, etc.
- Attempt to identify the nature of the electrical source (AC vs DC), the amount of voltage and the amperage the patient may have been exposed to during the

Pearls (Chemical)
- NS or Sterile Water is preferred for irrigation; however if it is not readily available, do not delay; use tap water for flushing the affected area or other immediate water sources. Flush the area as soon as possible with the cleanest, readily available water or saline solution using copious amounts

Pediatric Cardiac Arrest (Non-Traumatic)



Pediatric Cardiac Arrest (Non-Traumatic)

History
- Events leading to arrest
- Estimated down time
- Past medical history
- Medications
- Existence of terminal illness
- Signs of trauma
- Recent illness

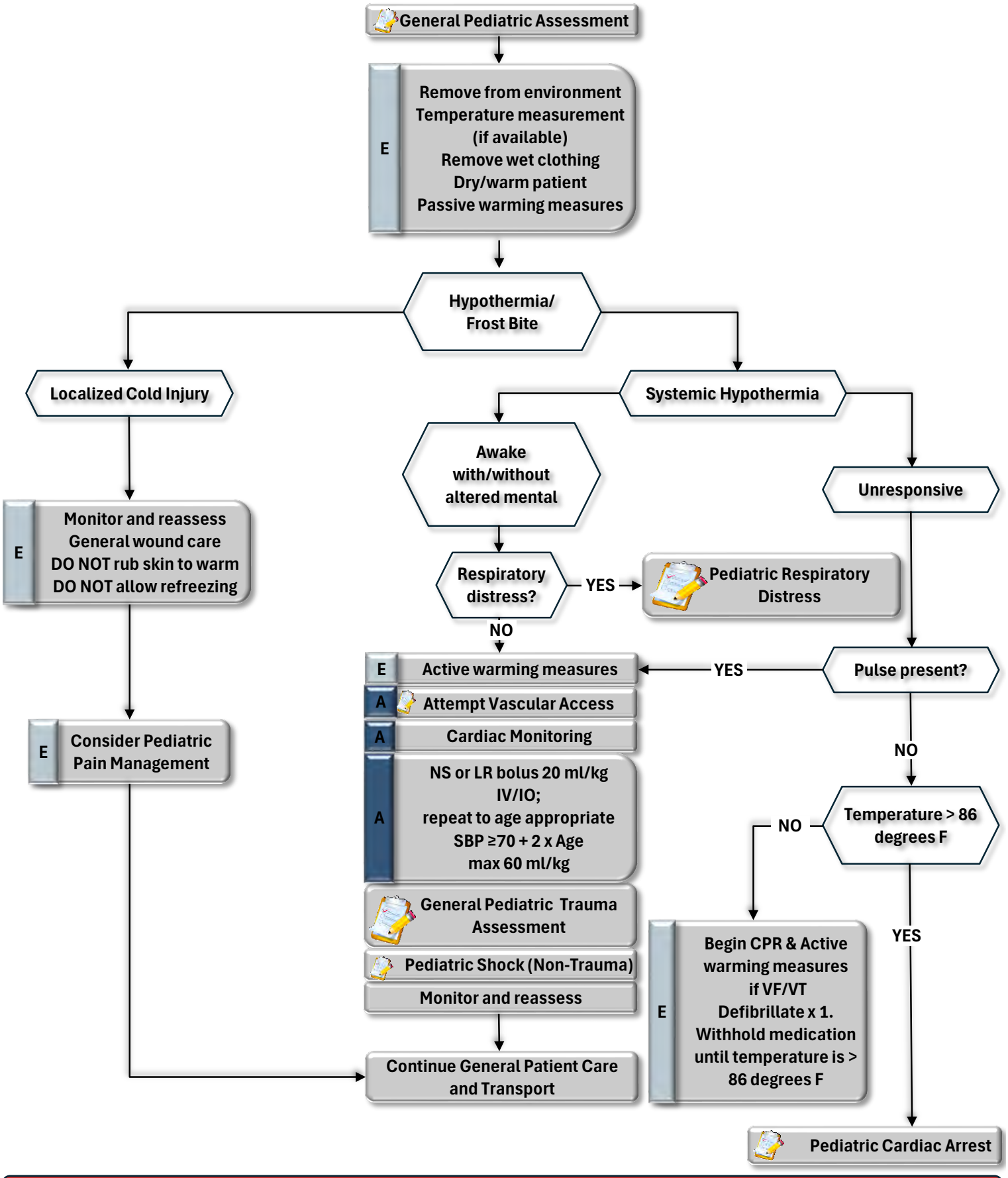
Signs and Symptoms
- Unresponsive
- Apneic
- Pulseless

Differential
- Medical vs. Trauma
- VF vs. Pulseless VT
- Asystole
- PEA
- Respiratory failure
- Overdose

Pearls
- Respiratory failure resulting in cardiac arrest should be addressed as it is identified.
- Efforts should be directed at high quality chest compressions with limited interruptions and early defibrillation when indicated.
- Consider early IO placement if IV is difficult.
- DO NOT HYPERVENTILATE.
- Reassess and document ETT placement using auscultation and ETCO2 capnography.
- Switch compressors every two minutes.
- Try to maintain patient modesty.
- Mechanical chest compression devices should be used if available and appropriate for patient age/size in order to provide for consistent uninterrupted chest compressions and crew safety.
- Adult paddles/pads may be used on children weighing greater than 10 kg.
- Pre-assignment of pit crew roles is recommended. When this is not possible, tasks may be assigned by order of arrival:
    1. Compressions
    2. Airway
    3. IV/IO access, medication administration
    4. Measure, Monitor/AED placement
    5. Family liaison/history gathering
- Pre-plan drug dosing based on weight estimations while en route and verify with a height based tape once reaching the patient
- Proper BVM selection: <5 kg = infant BVM. 5-30 kg = pediatric BVM. >30 kg = adult BVM.
- Pit Crew approach with assigned roles important for meeting timing goals

H's & T's (reversible causes)
- **Hypovolemia – Volume infusion**
- **Hypoxia – Oxygenation & ventilation, CPR**
- **Hydrogen ion (acidosis) – Ventilation, CPR**
- **Hypokalemia**
- **Hyperkalemia -Calcium chloride, sodium bicarbonate, albuterol**
- **Hypothermia - Warming**
- **Tension pneumothorax – Needle decompression**
- **Tamponade, cardiac – Volume infusion**
- **Toxins – Agent specific antidote**
- **Thrombosis, pulmonary – Volume infusion if hypovolemic**
- **Thrombosis, coronary – Emergent PCI**

Pediatric Cold-Related Illness



Pediatric Cold-Related Illness

History
- Age
- Past medical history/medications
- Drug or alcohol use
- Infections/sepsis
- Time of exposure/wetness/wind chill
- Temperature of exposure

Signs and Symptoms
- AMS/coma
- Cold, clammy
- Shivering
- Extremity pain
- Bradycardia
- Hypotension or shock

Differential
- Sepsis
- Environmental exposure
- Hypoglycemia
- Stroke
- Head injury
- Spinal cord injury

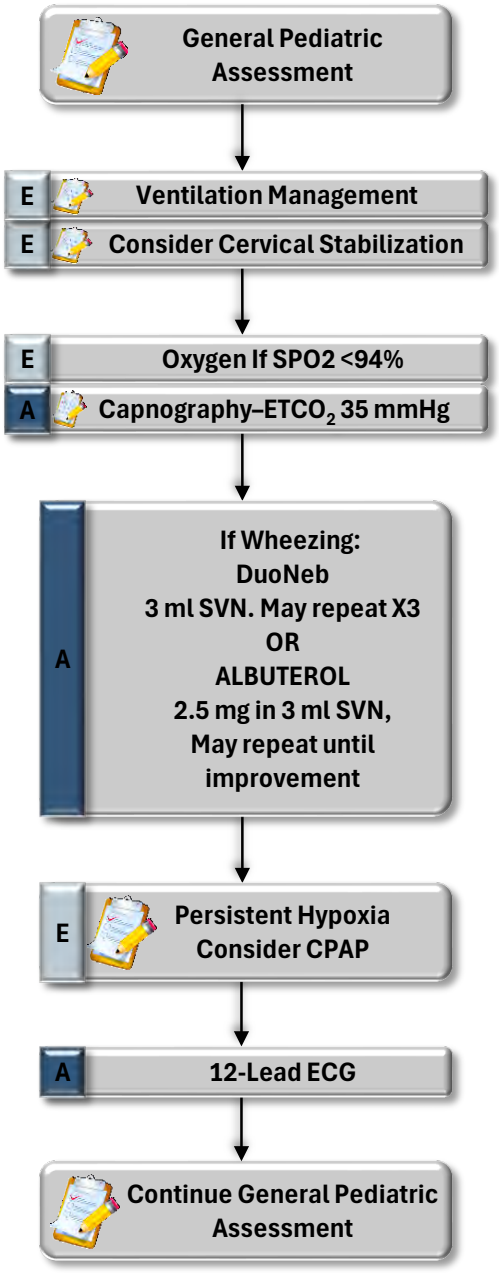
Pearls
- Recommended exam: Mental Status, Heart, Lungs, Abdomen, Extremities, Neuro.
- Extremes of age are more prone to cold emergencies.
- Obtain and document patient temperature.
- If temperature is unknown, treat the patient based on suspected temperature.
- Active warming includes hot packs that can be used on the armpit and groin; care should be taken not to place the packs directly on the skin.
- Warm saline or lactated ringers IV may be used.
- Recognize the cardiac arrest resuscitation guidelines for the hypothermic patient.

Hypothermia Categories
- Mild 90°- 95° F (33°- 35° C)
- Moderate 82°- 90° F (28°- 32° C)
- Severe <82 degrees F (<28° C)

Hypothermia Mechanisms
- Radiation
- Convection
- Conduction
- Evaporation

Active Heating Measures
- Hot packs to the armpits and groin (do not place directly onto skin)

Pediatric Drowning



CAVEATS:

1. **Adequate ventilation is KEY!**
2. **For patients breathing on their own, start Oxygen 15 L NRB; for patients not adequately breathing ➡BVM**
3. **Do not suction foam in airway, just bag through it initially.**
4. **For drowning victims in cardiac arrest, emphasis should be on good oxygenation/ventilation.**

Pediatric Drowning

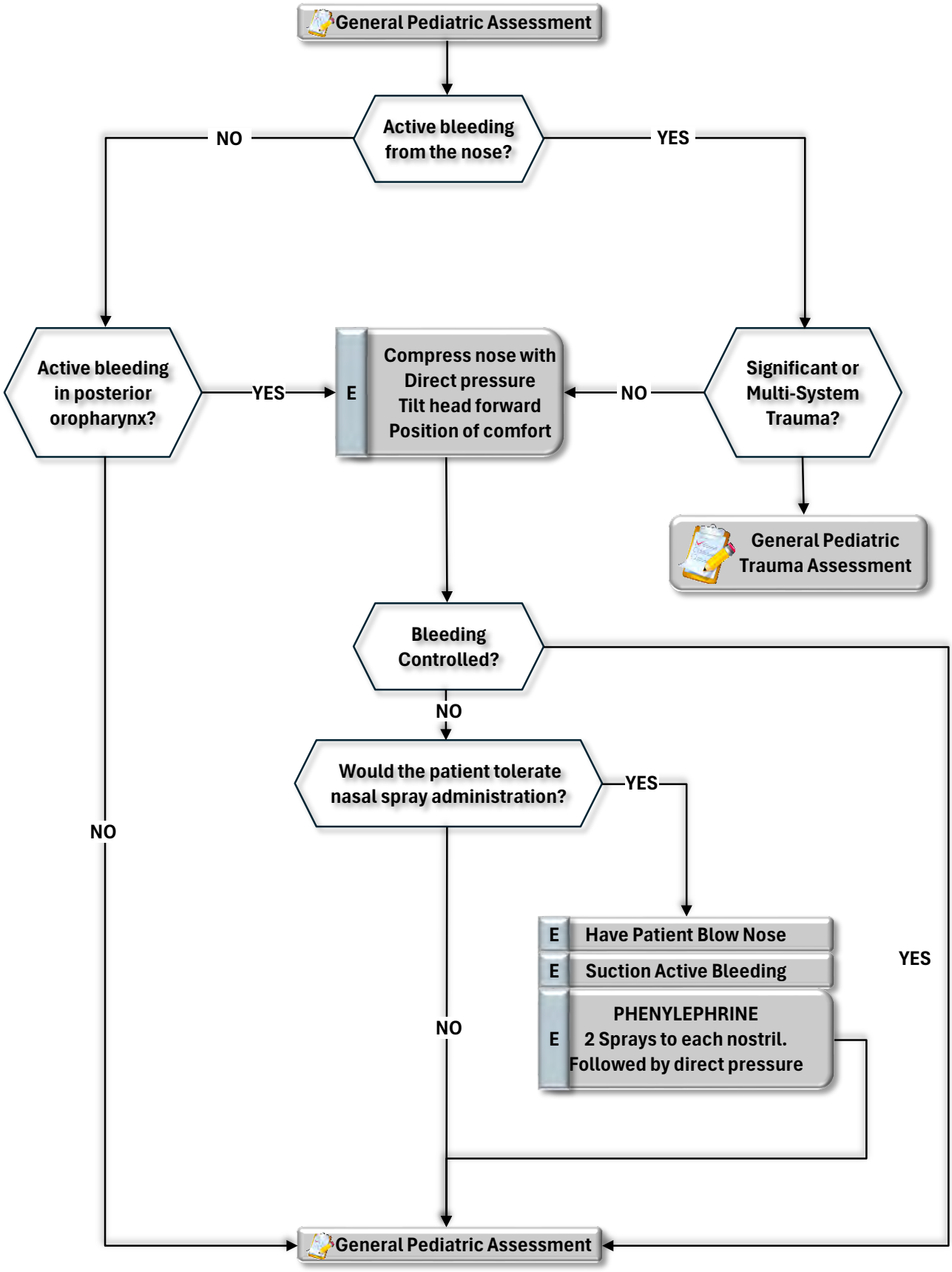
History
- Submersion in fluid, regardless of depth
- Possible history of trauma (dive)
- Duration of immersion
- Temperature of water or possibility of hypothermia
- Degree of water contamination

Signs and Symptoms
- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Vomiting
- Coughing, wheezing, rales, stridor, rhonchi
- Apnea

Differential
- Trauma
- Pre-existing medical condition
- Barotrauma
- Decompression illness
- Post-immersion syndrome

Pearls
- Recommended Exam: Trauma Survey, Head, Neck, Chest, Abdomen, Back, Extremities, Skin, Neuro.
- Ensure scene safety.
- Hypothermia is often associated with submersion incidents.
- All patients should be transported for evaluation because of potential for worsening over the next several hours.

Pediatric Epistaxis



Pediatric Epistaxis

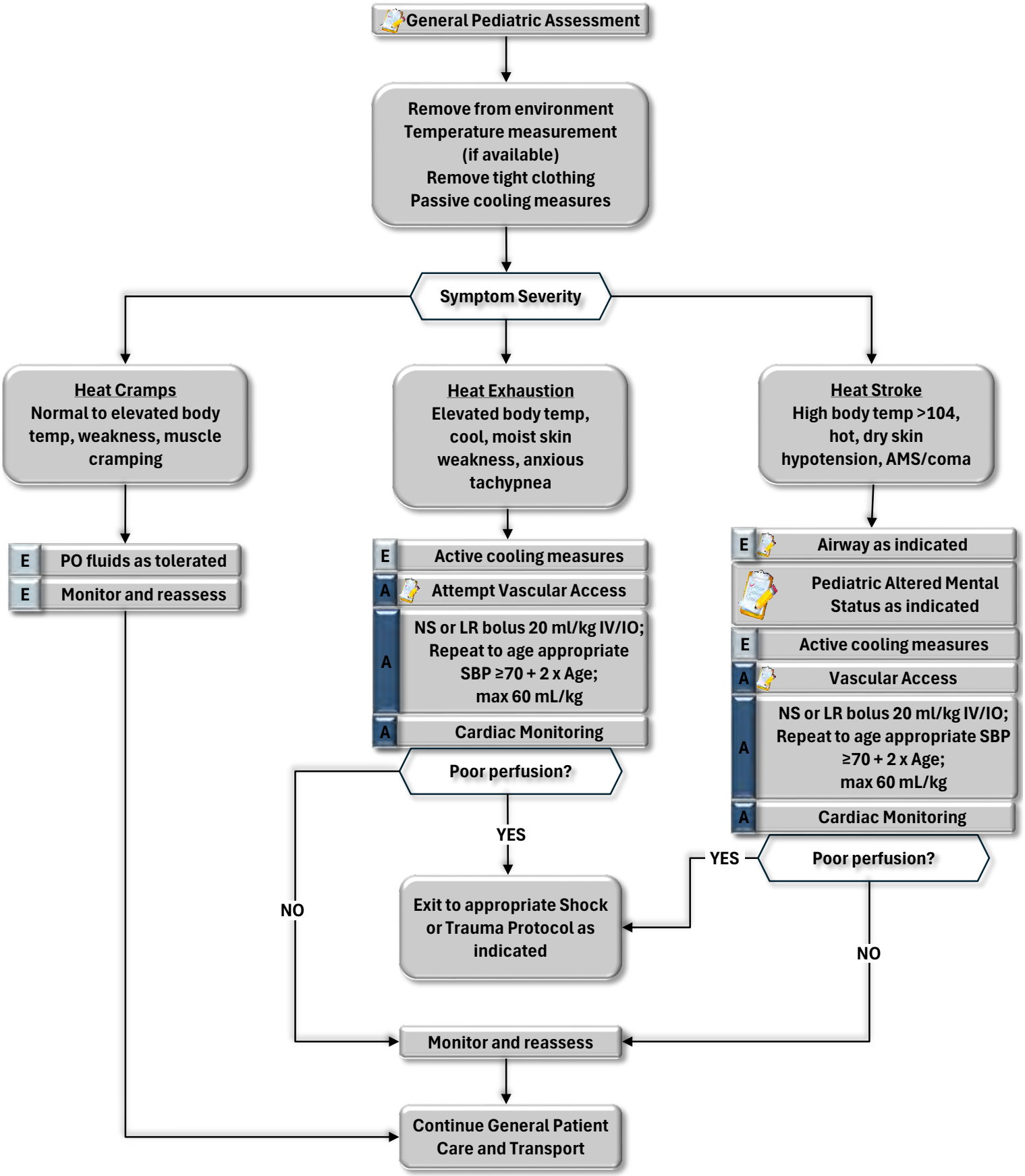
History
- Age
- Past Medical History
- Medications (HTN, Anticoagulants, aspirin, NSAIDS)
- Previous episodes of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding

Signs and Symptoms
- Bleeding from nasal passages
- Pain
- Nausea
- Vomiting
- Pallor

Differential
- Trauma
- Infection (viral URI or sinusitis)
- Allergic rhinitis
- Lesions (polyps, ulcers)
- Coagulopathy
- Nasal foreign body

Pearls
- Recommended exam: Mental Status, HEENT, Heart, Lungs, Skin, Neuro
- History should include any clotting disorders such as Hemophilia or Von Willebrand disease, as these can contribute to bleeding.
- Non-accidental trauma as well as foreign body should be considered in pediatric patients with epistaxis.
- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may be also occurring posteriorly. Evaluate for posterior blood loss by examining the posterior oropharynx.
- Detailed medication history should be obtained to assess for any NSAIDS, Antiplatelet agents or Anticoagulants that may contribute to bleeding.

Pediatric Heat-Related Illness



Pediatric Heat-Related Illness

History
- Exposures to increased temperatures and/or humidity
- Past medical history/medications
- Time and duration of exposure
- Poor PO intake, extreme exertion
- Fatigue and/or muscle cramping
- Decreased urination, dark urine

Signs and Symptoms
- AMS/coma
- Hot, dry, or sweaty skin
- Hypotension or shock
- Seizures
- Nausea

Differential
- Fever
- Dehydration
- Medication side effect/overdose
- Hyperthyroidism
- Heat cramps, heat exhaustion, heat stroke
- CNS lesions or tumors
- Rhabdomyolysis

Pearls
- Recommended exam: Mental Status, Skin, Heart, Lung, Abdomen, Extremities, Neuro.
- Extremes of age are more prone to heat emergencies.
- Cocaine, amphetamines, and salicylates may elevate body temperatures.
- Sweating generally disappears as body temperatures rise over 104° F (40° C).
- Intense shivering may occur as patient is cooled.
- Active cooling includes application of cold packs or ice (not directly on skin), fanning either by air conditioning or fanning.
- Cold Saline is not to be administered for the treatment of hyperthermia unless directed by telemetry physician.

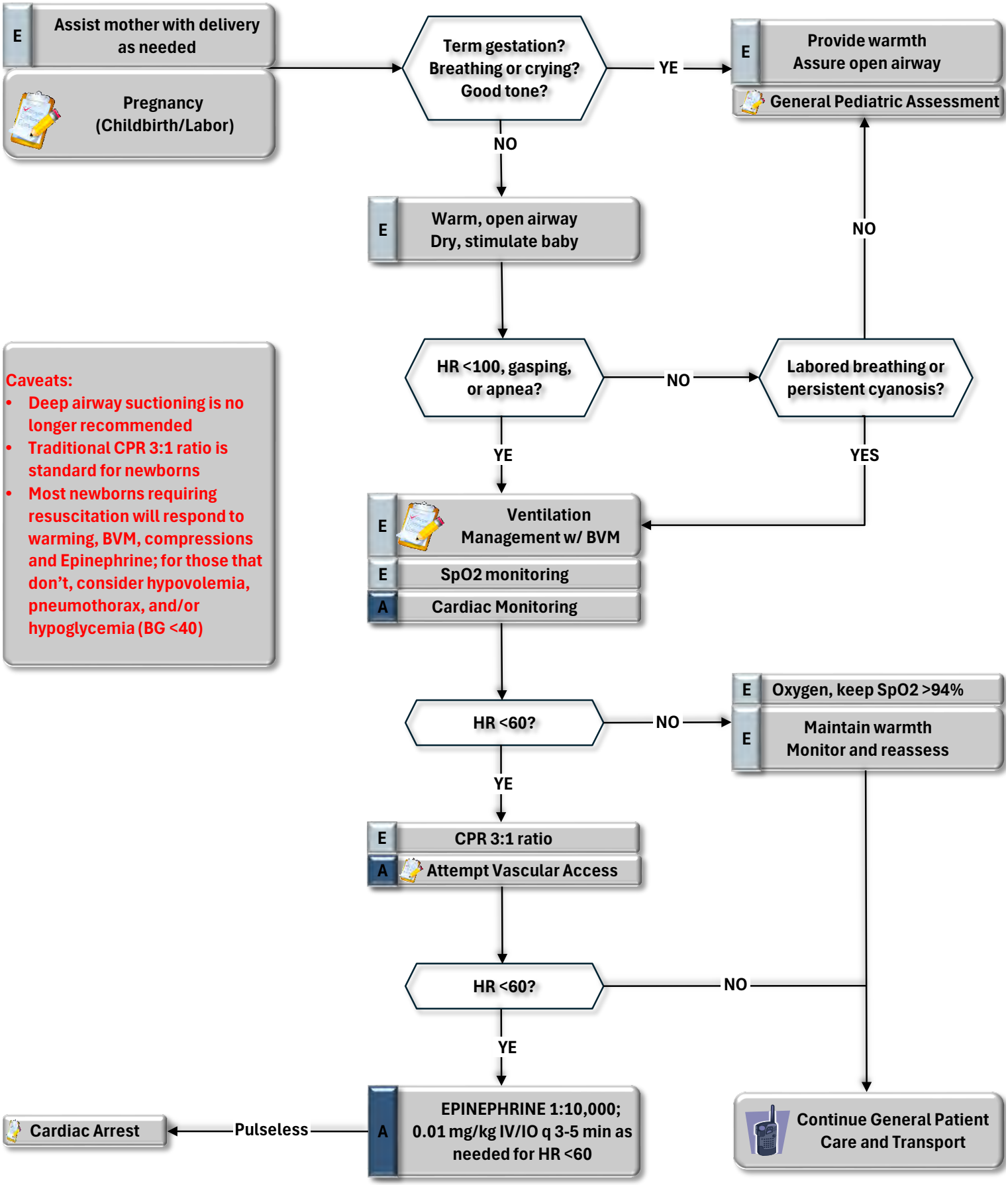
Heat Cramps
- Consist of benign muscle cramping caused by dehydration and is not associated with an elevated temperature.

Heat Exhaustion
- Consists of dehydration, salt depletion, dizziness, fever, AMS, headache, cramping, N/V. Vital signs usually consist of tachycardia, hypotension and elevated temperature.

Heat Stroke

Active Cooling Measures
- Cold packs
- Ice (do not place directly onto patient's skin)
- Fanning
- Air Conditioning

Neonatal Resuscitation



Neonatal Resuscitation

History
- Due date
- Time contractions started/duration/frequency
- Rupture of membranes (meconium)
- Time and amount of any vaginal bleeding
- Sensation of fetal movement
- Prenatal care
- Past medical and delivery history
- Medications
- Gravida/Para Status
- High risk pregnancy

Signs and Symptoms
- Spasmodic pain
- Vaginal discharge or bleeding
- Crowning or urge to push
- Meconium

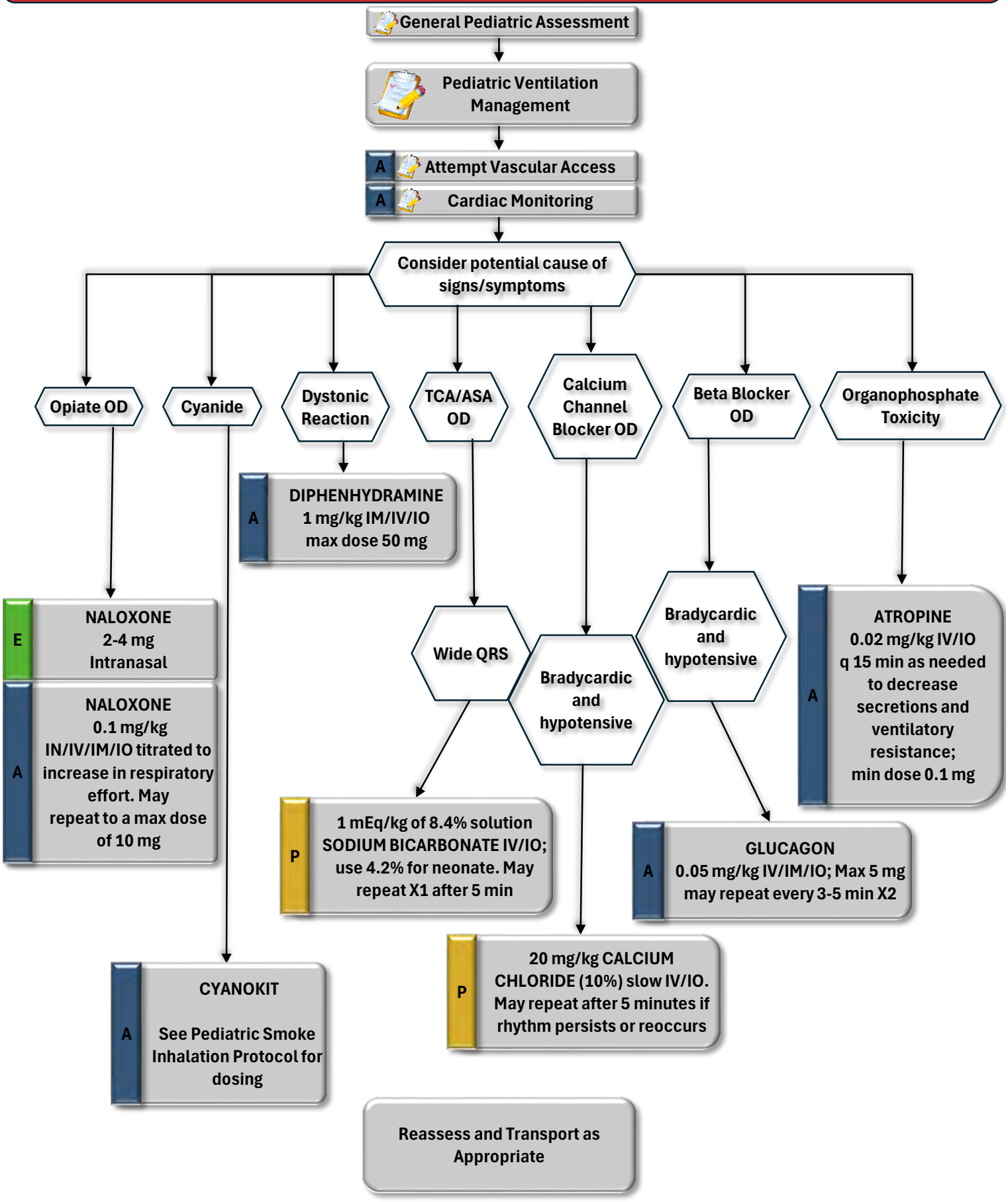
Differential
- Abnormal presentation (breech, limb)
- Prolapsed cord
- Placenta previa
- Abruptio placenta

Pearls
- Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Neuro.
- Document all times (delivery, contraction, duration, frequency).
- Some bleeding is normal; copious amounts of blood or free bleeding is abnormal.
- Record APGAR at one and five minutes after birth.
- APGAR of 7-10 is normal at 1 minute, while 4-7 require resuscitative measures.
- Transport mother and infant together whenever possible.

APGAR	Score=0	Score=1	Score=2
Activity/Muscle Tone	Absent	Arms/legs flexed	Active movement
Pulse	Absent	Below 100	Above 100
Grimace/Reflex Irritability	No response	Grimace	Sneeze, cough, pulls away
Appearance/Skin Color	Blue-Grey, pale all over body	Normal, except extremities	Normal over entire

Caveats:
- Deep airway suctioning no longer recommended.
- Traditional CPR 3:1 ratio is standard for newborns.
- Most newborns requiring resuscitation will respond to BVM, compressions and Epinephrine; for those that don't, consider hypovolemia, pneumothorax, and/or hypoglycemia (BG <40).

Pediatric Overdose / Poisoning



Pediatric Overdose / Poisoning

History
- Ingestion or suspected ingestion of a potentially toxic agent
- Substance ingested, route, quantity
- Time of ingestion
- Reason (suicidal, accidental, criminal)
- Available medications in home
- Past medical history, medications

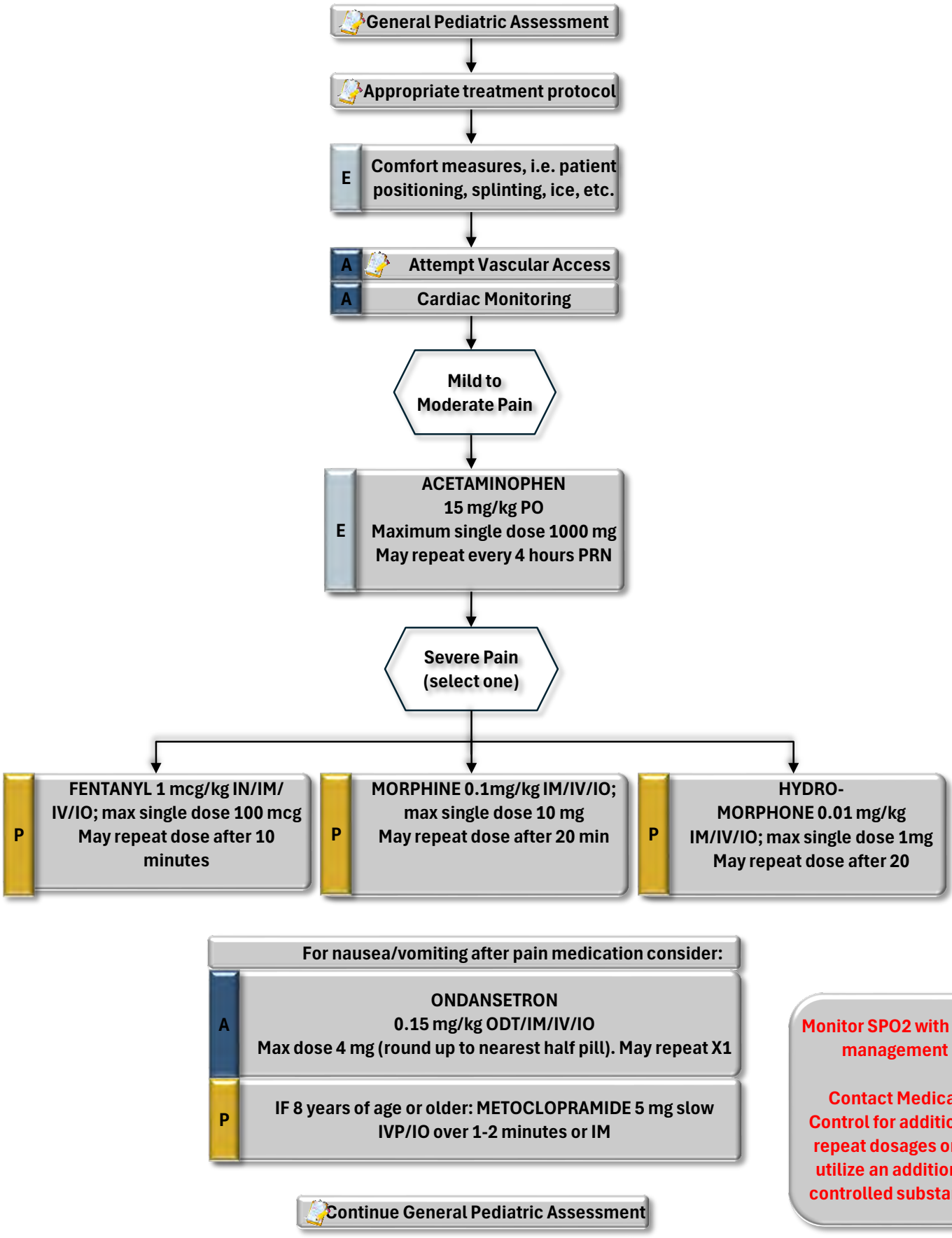
Signs and Symptoms
- Mental status changes
- Hypotension/hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures
- SLUDGE
- Malaise, weakness
- GI symptoms
- Dizziness
- Syncope
- Chest pain

Differential
- Overdose
- Hypoxia
- Seizure
- Meningitis
- Sepsis
- Behavioral
- Electrolyte abnormality

Pearls
- Pediatric patients should be evaluated by a physician if an overdose/poisoning is suspected regardless of agent, amount or time.
- Recommended exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro.
- Narcan should be administered in small increment doses IV to address respiratory depression and ensure adequate ventilation. Monitor patient to watch for any signs of respiratory depression reoccurring. IV/IM are preferred routes for predictability.
- Overdose or toxin patients with significant ingestion/exposure should be closely monitored and aggressively treated. Do not hesitate to contact medical control if needed.
- Poison Control: 1-800-222-1222

Exam findings by specific agent:
- Acetaminophen: Initially normal or N/V. Tachypnea and AMS may occur later. Concerns for liver failure leading to cerebral edema
- Anticholinergic: Tachycardia, hot dry skin, dilated pupils and AMS
- Cyanide: N/V, dyspnea, tachycardia, hypotension, AMS
- Depressants: bradycardia, hypotension, slow respirations, low temperature
- Insecticides/Organophosphate poisoning: SLUDGE (Salivation, Lacrimation, Urination, Defecation, Gastric upset, Emesis)
- Solvents: N/V, cough, hypoxia, AMS
- Stimulants: Tachycardia, hypertension, hyperthermia, dilated pupils, seizures, agitation
- TCA: Drowsiness, tachycardia, dilated pupils, dysrhythmias, seizures, hypotension

Pediatric Pain Management



Pediatric Pain Management

History
- Age
- Location, duration
- Severity (1-10)
- Past medical history
- Pregnancy status
- Drug allergies and medications

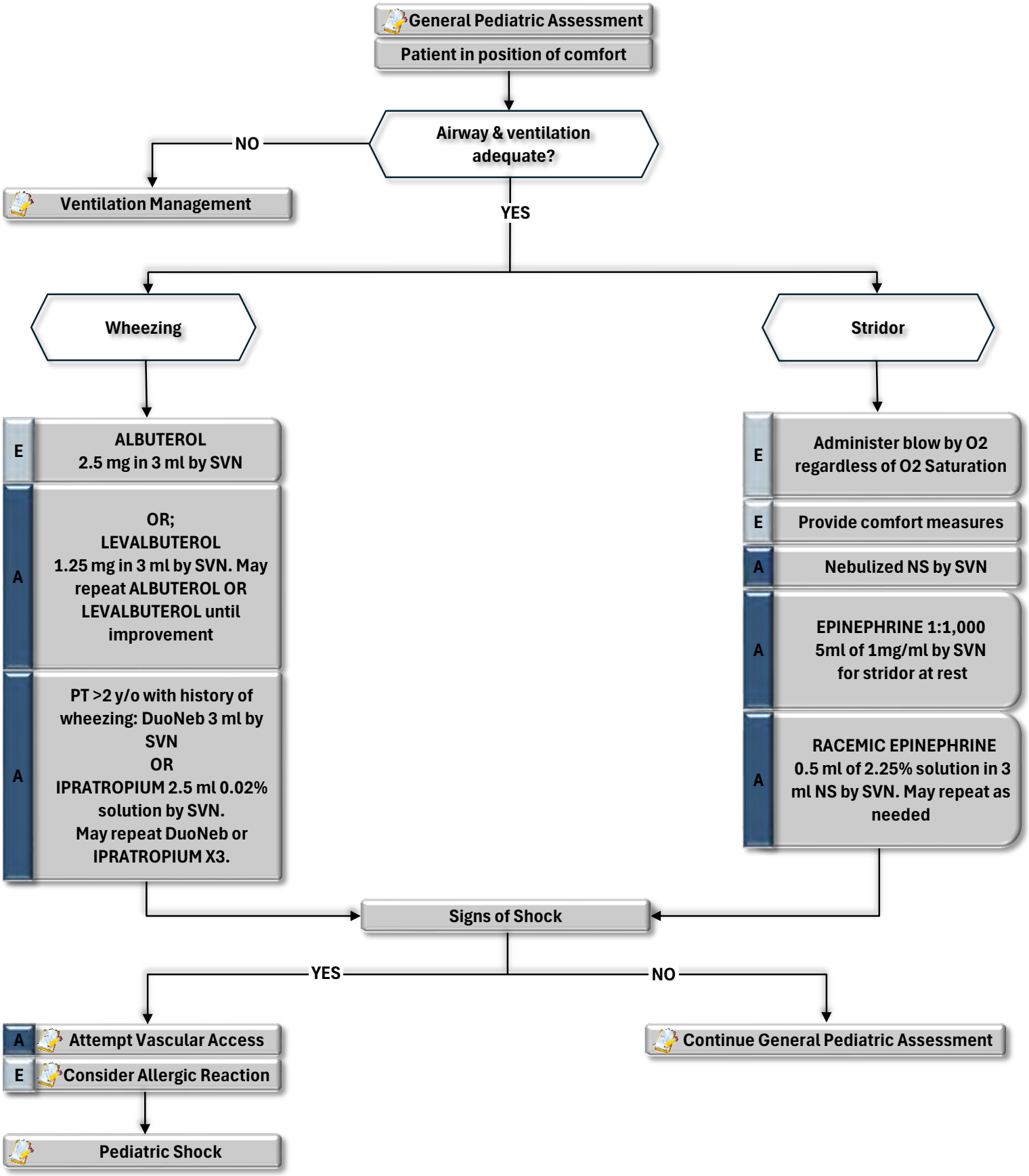
Signs and Symptoms
- Severity (pain scale)
- Quality
- Radiation
- Relation to movement, respiration
- Increased with palpation of area

Differential
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural, respiratory
- Neurogenic
- Renal (colic)

Pearls
- Recommended exam: Respiratory Status, Mental Status, Area of pain, Neuro.
- Pain severity (1-10) is to be recorded before and after medication administration and patient hand off.
- Monitor BP and respirations closely as sedative and pain control agents may cause hypotension and/or respiratory depression.
- Consider patient's age, weight, clinical condition, use of drugs/alcohol, exposure to opiates when determining initial opiate dosing. Weight based dosing may provide a standard means of dosing calculation, but it does not predict response.
- Consider starting opiate at a lower initial dose and titrating to effect is recommended. Patients may not exceed listed maximum dose without Medical Control orders.
- Exercise care when administering opiates and benzodiazepines; this combination results in deeper anesthesia with significant risk of respiratory compromise.
- Burn patients may require more aggressive dosing. Consider early Medical Control for additional doses.
- Acetaminophen is not to be used as the primary pain management medication for Chest Pain/Suspected ACS or STEMI patients.
- Acetaminophen should be considered the primary treatment for severe pain for patients that do not wish to receive narcotic analgesia.
- Consider fentanyl as the preferred opioid agent for traumatic pain.

QI Metrics
- Vital signs with O2 sats recorded.
- Pain scale documented before and after intervention.
- Vital signs repeated after intervention.
- If considering repeat administration of pain medications, nasal cannula capnography must be utilized.

Pediatric Respiratory Distress



Pediatric Respiratory Distress

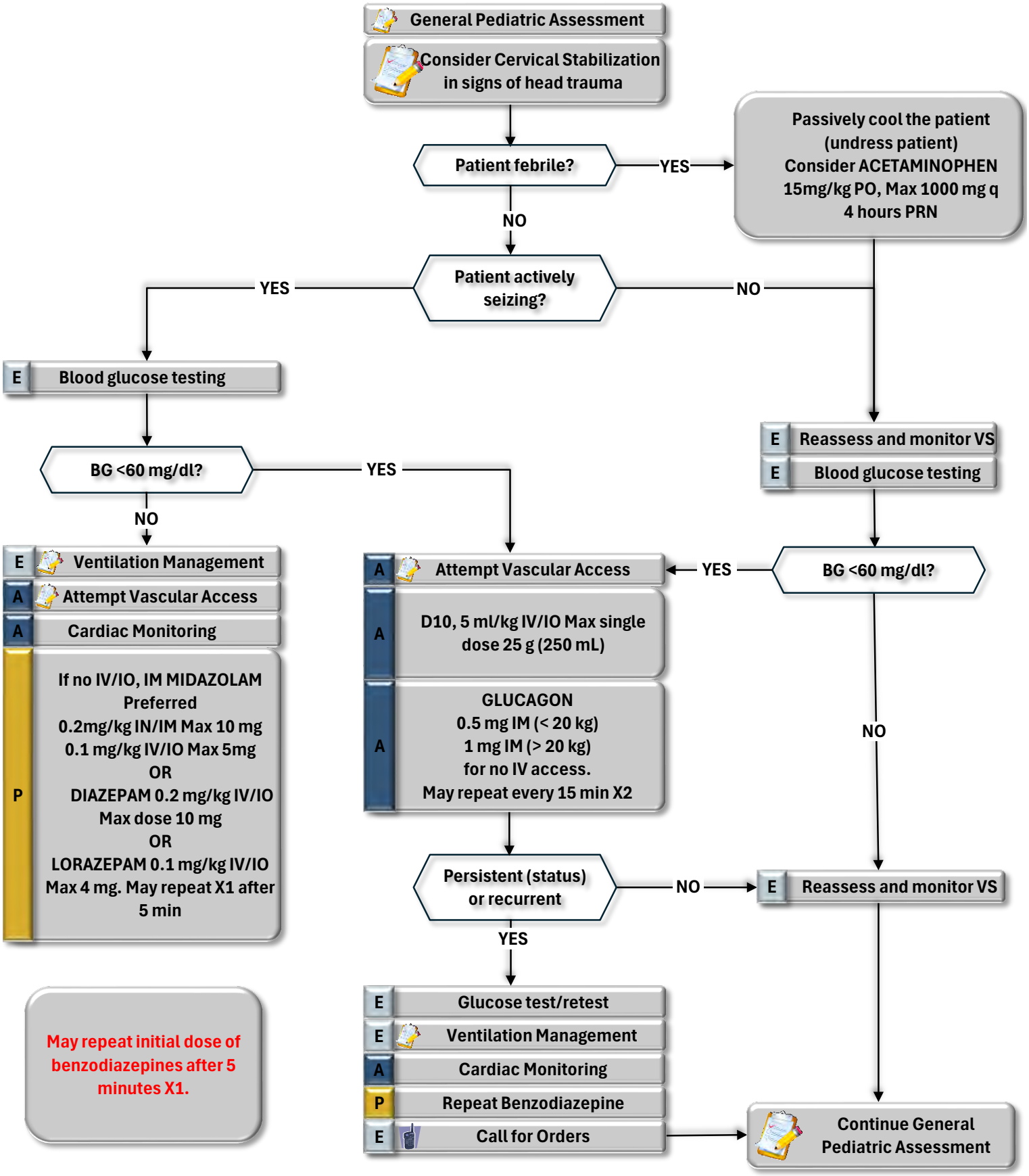
History
- Asthma
- Home treatment (oxygen, nebulizers)
- Medications
- Vaccine history
- Fever or recent illness
- Choking episode
- Toxic exposure

Signs and Symptoms
- Shortness of breath
- Pursed lip breathing
- Decreased ability to speak
- Increased respiratory rate and effort
- Stridor, wheezing, rhonchi
- Use of accessory muscles
- Fever, cough
- Tachycardia

Differential
- Asthma
- Anaphylaxis
- Aspiration
- Croup
- Pleural effusion
- Pneumonia
- Pneumothorax
- Pericardial tamponade (trauma)
- Hyperventilation
- Inhaled toxin

Pearls
- Be prepared to assist ventilations as needed.
- Recommended exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro.
- Pulse oximetry and end tidal continuous waveform capnography must be monitored.
- Allow the patient to assume a position of comfort.

Pediatric Seizure



Pediatric Seizure

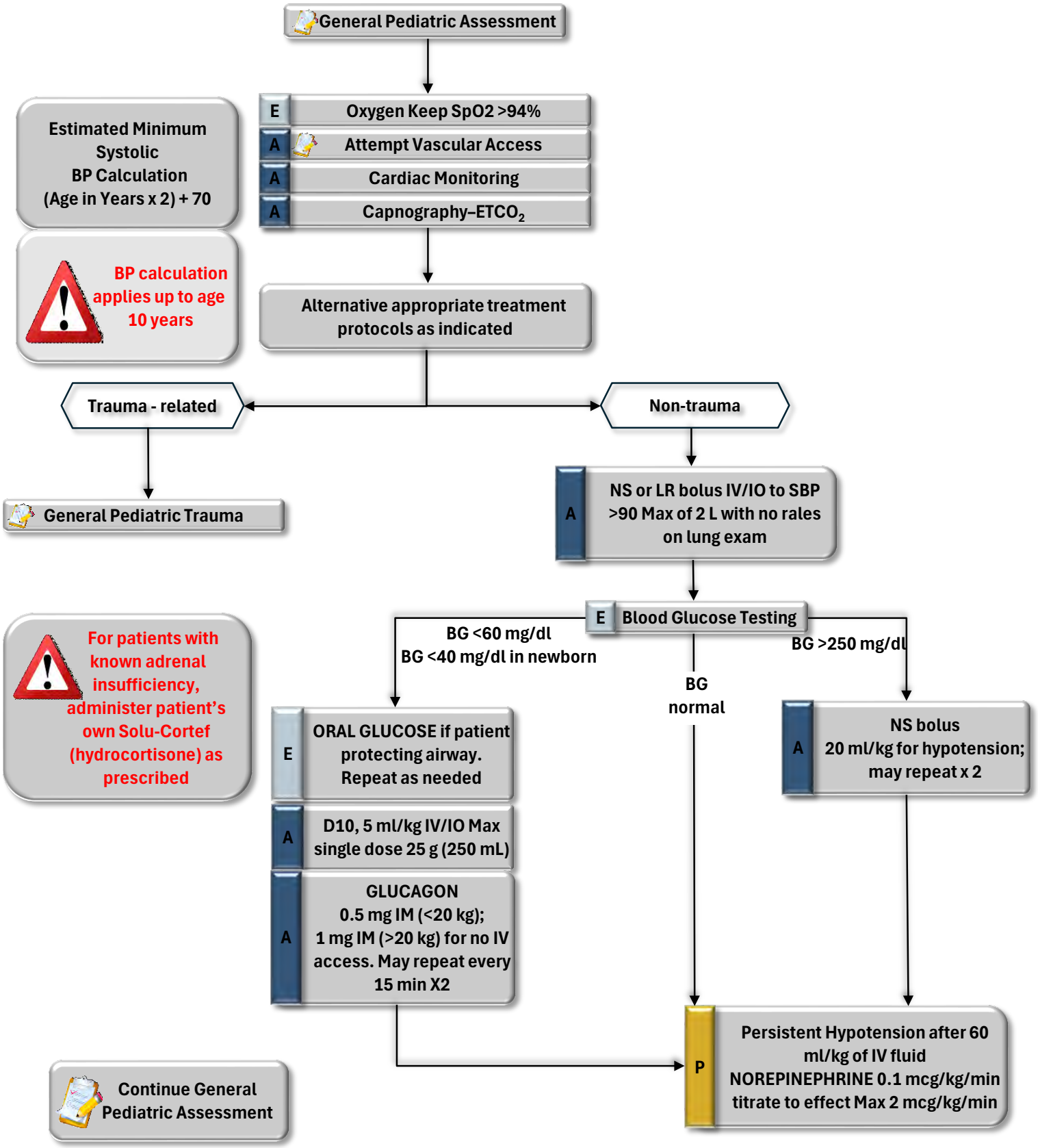
History
- Reported or witnessed seizure activity
- Previous seizure history
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy
- Time of seizure onset
- Number of seizures
- Alcohol use, abuse, or abrupt cessation
- Fever

Signs and Symptoms
- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconsciousness

Differential
- Head injury
- Hypoxia
- Electrolyte abnormality (Na, Ca, Mg)
- Drugs, medication non-compliance
- Infection, fever
- Alcohol withdrawal
- Benzodiazepine withdrawal
- Eclampsia
- Stroke
- Hyperthermia
- Hypothermia

Pearls
- Recommended exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro.
- Benzodiazepines are effective in terminating seizures; do not delay IM/IN administration while initiating an IV.
- Status epilepticus is defined as two or more seizures successively without an intervening lucid period, or a seizure lasting over five minutes.
- Grand mal seizures (generalized) are associated with loss of consciousness, incontinence and oral trauma.
- Focal seizures affect only part of the body and are not usually associated with a loss of consciousness.
- Be prepared to address airway issues and support ventilations as needed.
- Consider cardiac and ETCO2 monitoring.

Pediatric Shock



Pediatric Shock

History
- Medical history
- Blood loss-trauma, rectal bleeding, vaginal bleeding
- Fluid loss-vomiting, diarrhea, fever, poor PO intake
- Medications
- Allergies

Signs and Symptoms
- Restlessness, confusion
- Weakness, dizziness
- Weak rapid pulse
- Pale, cool, clammy skin
- Delayed capillary refill
- Hypotension
- Coffee-ground emesis
- Tarry stools
- Fever

Differential
- Hypovolemia
- Heart failure
- Sepsis
- Neurogenic shock
- Anaphylaxis
- Ectopic pregnancy
- Dysrhythmia
- Pulmonary embolism
- Tension pneumothorax
- Cardiac tamponade
- Medication effect or overdose

Pearls
- Recommended exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Hypotension can be defined as a systolic BP <Estimated Minimum Systolic BP. This is not always reliable and should be interpreted in context and patient's typical BP, if known. Shock may present with a normal BP initially.
- Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.

For patients with known adrenal insufficiency, administer patient's own Solu-Cortef (hydrocortisone) as prescribed.

Causes of Adrenal Insufficiency:
Addison's Disease
Congenital Adrenal Hyperplasia
Long term administration of steroids

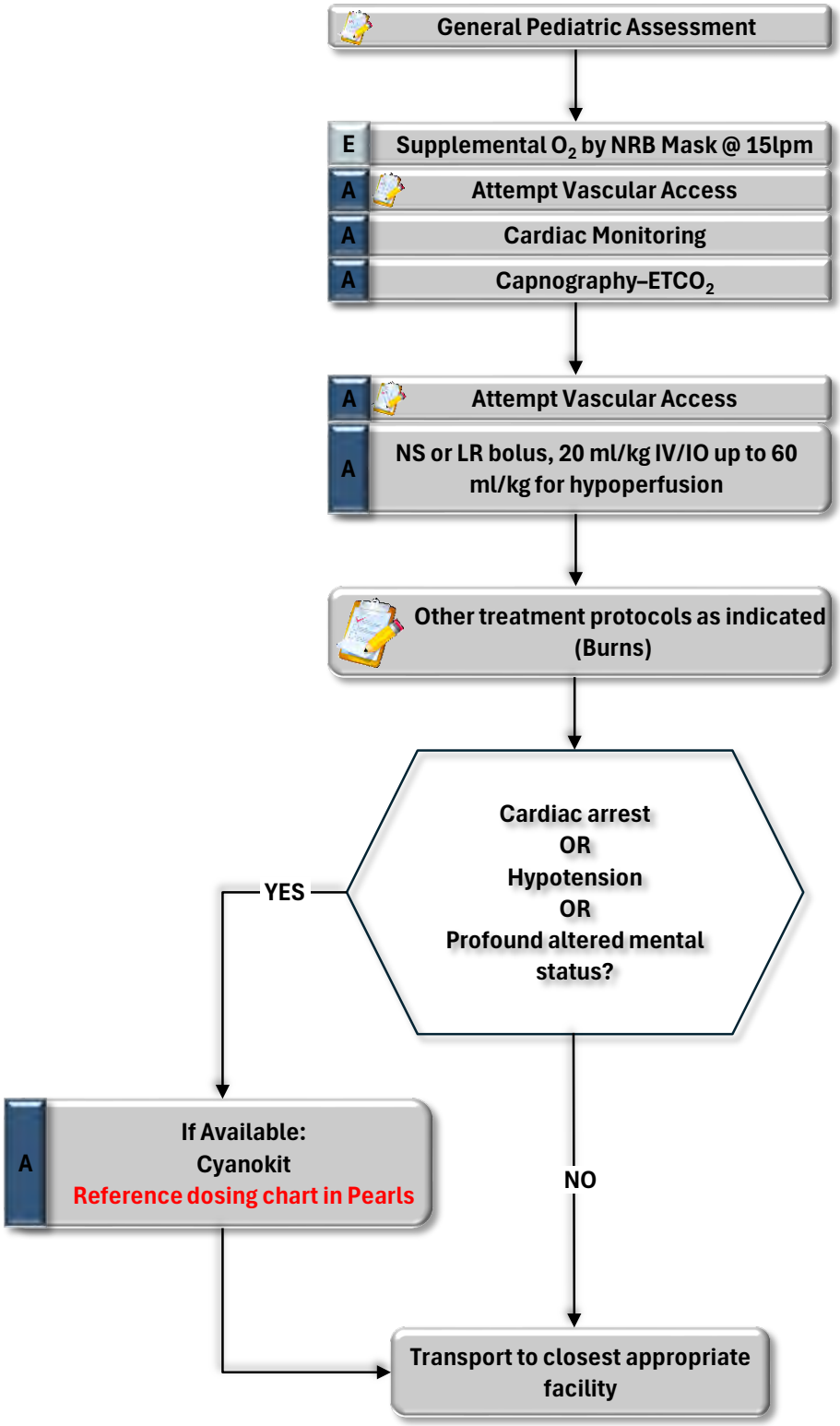
Hypovolemic shock
- Hemorrhage, trauma, GI bleeding, ruptured aortic aneurysm or pregnancy-related bleeding

Cardiogenic shock
- Heart failure, MI, cardiomyopathy, myocardial contusion, toxins

Distributive shock
- Sepsis, anaphylaxis, neurogenic, toxins

Obstructive shock
- Pericardial tamponade, pulmonary embolus, tension pneumothorax

Pediatric Smoke Inhalation



Pediatric Smoke Inhalation

History
- Exposed to smoke in a structure fire
- Exposed to smoke in a vehicle fire
- Exposed to smoke from other sources (Industrial, confined space, wilderness fire, etc.)

Signs and Symptoms
- Facial burns
- Singed nasal hairs or facial hair
- Shortness of breath
- Facial edema
- Stridor
- Grunting respirations
- Altered Mental Status

Differential
- Asthma
- Anaphylaxis
- COPD
- CHF
- Toxic inhalation injury
- Caustic inhalation injury

Pearls
- Protect yourself and your crew.
- Have a high index of suspicion when treating patients at the scene of a fire.
- If the medication is not available on scene do not delay transport waiting for it.
- Carefully monitor respiratory effort and correct life threats immediately.
- Decide early on if you want to intubate as burned airways swell, making intubation difficult.
- Profound altered mental status can be defined as a deficit that include disorientation,

Pediatric Cyanokit Instructions and Dosing

1. Reconstitute Cyanokit vial per the Instructions. The new vial concentration will be 25mg/ml.
2. See chart below to find the appropriate reconstituted dose.

APPROXIMATE AGE	NB–1 m	2 m	4–6 m	8–10 m	1–1.5 y	2–2.5 y	3–3.5 y	4–5 y	5.5–7 y	7.5–8 y	8.5–10 y
WEIGHT IN LBS	7–9 lb	11 lb	13–15 lb	18–20 lb	22–24 lb	26–31 lb	33–40 lb	42–48 lb	53–62 lb	66–70 lb	71–80 lb
WEIGHT IN KGS	3–4 kg	5 kg	6–7 kg	8–9 kg	10–11 kg	12–14 kg	15–18 kg	19–22 kg	24–28 kg	30–32kg	34–36 kg
RECONSTITUTED SYRINGE AMOUNT	10 ml	15 ml	20 ml	25 ml	30 ml	40 ml	50 ml	60 ml	75 ml	85 ml	100 ml
TOTAL DOSAGE OF MEDICATION	250mg	375mg	500mg	625mg	750mg	1000mg	1250mg	1500mg	1875mg	2125mg	2500mg
gtts / sec	1	1	1	5	5	5	5	5	5	6	6
	GIVE DOSE IN **50ml NS BAG**			GIVE DOSE IN **250ml NS BAG**							

3. Withdraw and waste the equivalent volume of Normal Saline from the bag size indicated.
4. Draw the appropriate dose from the vial referencing the chart, using the appropriate syringe size.
5. Inject the reconstituted medication into the appropriate sized bag of Normal Saline, below the Chart.
6. Spike the bag with 15 gtts/ml IV tubing.
7. Piggyback line into an IV/IO line and Infuse over ~15 minutes using the gtts/second noted above.

(Stable) Pediatric Tachycardia

(Normal Mental Status, No Signs of Shock, Child HR >180, Infant HR >220)

General Adult Assessment

A Cardiac Monitoring

A 4-Lead and Defib Pads

A Attempt Vascular Access

A 12-Lead ECG

Narrow QRS Complex
≤ 0.11 Sec SVT

P Vagal Maneuvers

Rhythm change? — YES

NO

P ADENOSINE
0.1 mg/kg
rapid IV/IO push
not to exceed 6 mg

Rhythm change? — YES

NO

P ADENOSINE
0.2 mg/kg
rapid IV/IO push
not to exceed 12 mg

Wide QRS Complex
> 0.12 sec

Regular
Monomorphic VT

P ADENOSINE
0.1 mg/kg
rapid IV/IO push
not to exceed 6 mg

Rhythm change? — YES

NO

P If stable, call for orders.
Discuss AMIODARONE
(5 mg/kg in 50 ml NS over 20 min)
OR Synchronized Cardioversion.
Start at 0.5 to 1 J/kg; may use 2 J/kg If unsuccessful.
CONSIDER SEDATION.

If unstable proceed to Unstable Pediatric Tachycardia Protocol

Consider Sedation for Cardioversion:

ETOMIDATE 0.15 mg/kg IV/IO Max 20 mg.
OR
MIDAZOLAM 0.2mg/kg IN/IM Max 10 mg
0.1 mg/kg IV/IO Max 5mg

Torsades
De Pointes (Irregular, Polymorphic)

P MAGNESIUM SULFATE
25 mg/kg IV/IO in 50 ml NS over 10 min.
2 gm max

Continue General Patient Care

Call For Orders

Do NOT use synchronized cardioversion on stable Torsades as this can trigger V fib.

Continue General Patient Care

(Stable) Pediatric Tachycardia

History
- Medications
- Diet (caffeine)
- Drugs (cocaine, methamphetamines)
- Past medical history
- Syncope/near syncope
- History of palpitations/racing heart
- Fever

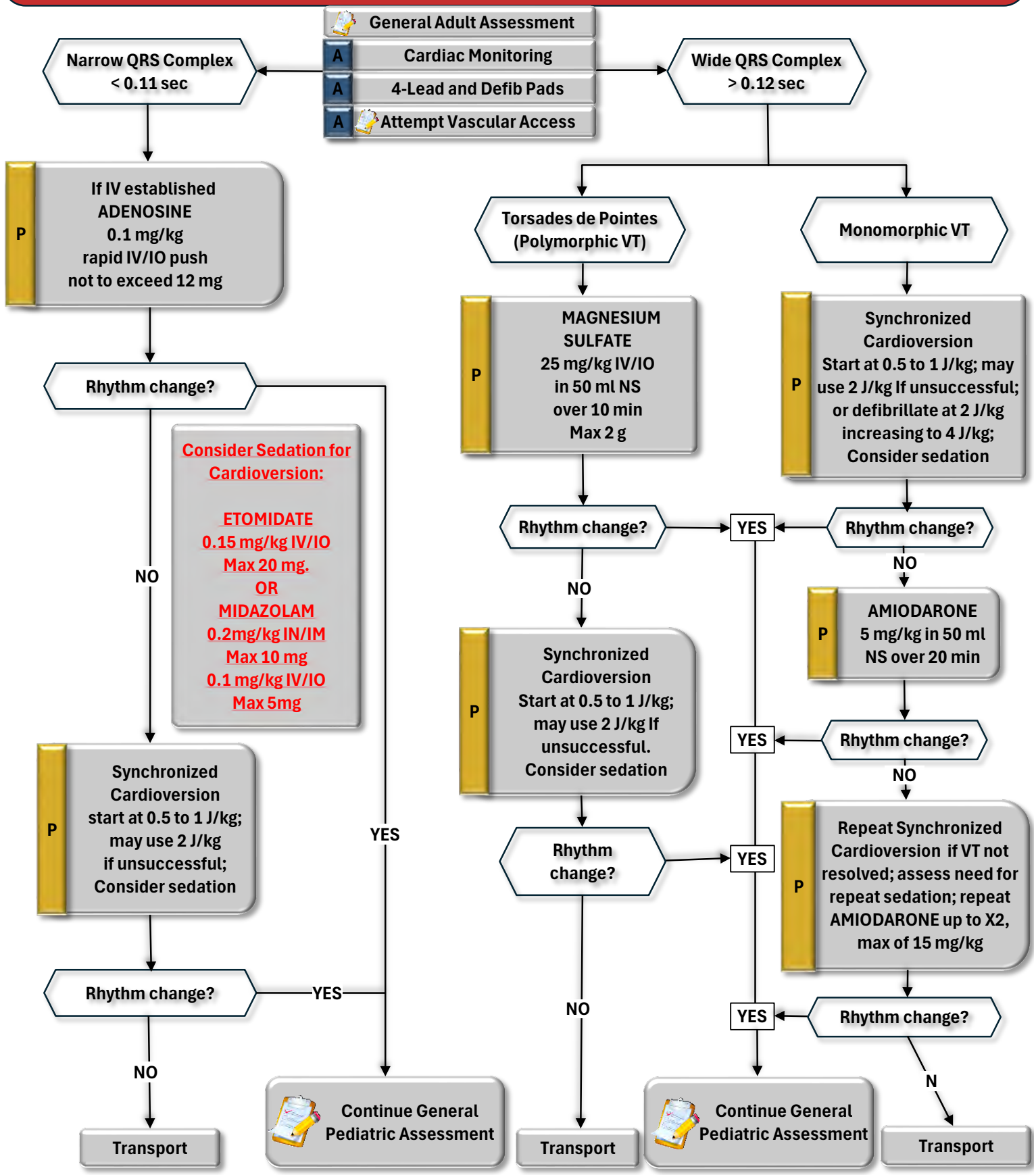
Signs and Symptoms
- Heart rate ≥ 180 in children
- Heart rate ≥ 220 in infants
- Dizziness, CP, SOB
- Diaphoresis

Differential
- Heart disease (WPW, valvular)
- Sick sinus syndrome
- Electrolyte imbalance
- Exertion, fever, pain, emotional stress
- Hypoxia
- Hypovolemia
- Drug effect, overdose
- Hyperthyroidism

Pearls
- Recommended exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Carefully monitor patients as you treat them; stable tachycardias may convert to unstable rhythms/conditions quickly.
- Sedate patients prior to cardioversion, if time allows.
- The most common tachyarrhythmia in children is sinus.

(Unstable) Pediatric Tachycardia

(Mental Status Changes, Signs of Shock , Child HR >180, Infant HR >220)



(Unstable) Pediatric Tachycardia

(Unstable) Pediatric Tachycardia

History
- Medications
- Diet (caffeine)
- Drugs (cocaine, methamphetamines)
- Past medical history
- Syncope/near syncope
- History of palpitations/racing heart
- Fever

Signs and Symptoms
- Cardiac Arrest
- Heart rate ≥ 180 in children
- Heart rate ≥ 220 in infants
- Dizziness, CP, SOB
- Diaphoresis

Differential
- Heart disease (WPW, valvular)
- Sick sinus syndrome
- Electrolyte imbalance
- Exertion, fever, pain, emotional stress
- Hypoxia
- Hypovolemia
- Drug effect, overdose
- Hyperthyroidism

Pearls
- Recommended exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- If patient is in arrest, efforts should focus on quality chest compressions and rhythm correction.
- Administer Adenosine at a proximal IV site, rapidly followed by a saline flush.
- The most common tachyarrhythmia in children is sinus

Pediatric Ventilation Management

Use supplemental oxygen to maintain an oxygen saturation of >94%
or >90% for patients on home oxygen for chronic

E Basic Airway Maneuvers
-Open Airway Chin Lift/Jaw Thrust
-NPA or OPA as needed
-Suction as needed

→ Respiratory Distress and/or Tracheostomy Tube Replacement Protocol if needed

E Consider Cervical Stabilization

E Consider Altered Mental Status/Syncope

E Administer

E BVM as needed

Intervention effective?

NO

A Extraglottic Airway with Capnography

A Attempt Vascular Access

A Cardiac Monitoring

P Endotracheal Intubation with Capnography

P Consider Rapid Sequence Intubation (RSI)

YES

P

Post-Intubation Sedation and Analgesia:
Opioid (Fentanyl/Hydromorphone) and Benzodiazepine (Midazolam/Lorazepam/Diazepam) or Ketamine.

Fentanyl 1 mcg/kg IV/IO Max of 100 mcg. May repeat every 10 minutes as needed for analgesia.
OR
Hydromorphone 0.01 mg/kg IV/IO Max of 1 mg. May repeat every 20 minutes as needed for analgesia.
PLUS
Midazolam 0.1 mg/kg IV/IO Max 10 mg. May repeat every 5 minutes as needed for sedation.
OR
Lorazepam 0.1 mg/kg IV/IO Max 4mg. May repeat every 10 minutes as needed for sedation.
OR
Diazepam 0.2 mg/kg IV/IO Max 5mg. May repeat every 5 minutes as needed for sedation.
OR
Ketamine: Initial dose is 1 mg/kg slow IV/IO push if not used for induction. If used for induction, initial dose is 0.5 mg/kg slow IV/IO push. May repeat 0.5 mg/kg every 15 minutes as necessary to maintain analgesia and sedation.
Ketamine should not be used for sedation following ROSC in cardiac arrest patients.

Extraglottic/ETT placement successful?

NO

Able to ventilate without Extraglottic/ETT in place?

NO

P Needle Cricothyroidotomy

YES

Continue Care and Transport as Appropriate

Pediatric Ventilation Management

Always weigh the risks and benefits of endotracheal intubation in the field against transport. All prehospital endotracheal intubations are considered high risk. Consider Extraglottic airway. If ventilation/oxygenation is adequate, transport may be the best option. The most important airway device and the most difficult to use correctly and effectively is the Bag Valve Mask (not the laryngoscope). Few prehospital airway emergencies cannot be temporized or managed with proper BVM techniques.

DIFFICULT AIRWAY ASSESSMENT:

Difficult BVM Ventilation-MOANS: Difficult Mask seal due to facial hair, anatomy, blood or secretions/trauma; Obese or late pregnancy; Age >55; No teeth (roll gauze and place between gums and cheeks to improve seal); Stiff or increased airway pressures (asthma, COPD, obese, pregnant).

Difficult Laryngoscopy-LEMON: Look externally for anatomical distortions (small mandible, short neck, large tongue); Evaluate 3-3-2 Rule (Mouth open should accommodate 3 patient fingers, mandible to neck junction should accommodate 3 patient fingers, chin-neck junction to thyroid prominence should accommodate 2 patient fingers); Mallampati (difficult to assess in the field); Obstruction / Obese or late pregnancy; Neck mobility.

Difficult Extraglottic Device Placement-RODS: Restricted mouth opening; Obstruction / Obese or late pregnancy; Distorted or Disrupted airway; Stiff or increased airway pressures (asthma, COPD, obese, pregnant).

Pearls

- Consider preoxygenation/lung denitrogenation with a non-rebreather, a nasal cannula at 15 LPM, or CPAP prior to intubation (as patient condition allows).
- Severe hypotension (SBP<90) should be addressed with IV fluids and/or pressors (as appropriate) prior to intubation in order to reduce the likelihood of post-intubation cardiovascular decline.
- Capnometry (Color) or capnography is mandatory with all methods of intubation. Document results.
- Continuous capnography (ETCO2) is mandatory for the monitoring of all patients with an ET tube.
- If an effective airway is being maintained by BVM and/or basic airway adjuncts (e.g. nasopharyngeal airway) with continuous pulse oximetry values of ≥90% or values expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. pulse oximetry of 85% with otherwise normal vitals in a post-drowning), it is acceptable to continue with basic airway measures instead of using an Extraglottic airway device or intubation. Consider CPAP as indicated by protocol and patient condition.
- For the purposes of this protocol, a secure airway is achieved when the patient is receiving appropriate oxygenation and ventilation.
- An intubation attempt is defined as passing the laryngoscope blade or endotracheal tube past the teeth or inserted into the nasal passage.
- An appropriate ventilatory rate is one that maintains an ETCO2 of 35 - 45. Avoid hyperventilation.
- Paramedics should use an Extraglottic airway device if oral-tracheal intubation is unsuccessful.
- Maintain C-spine stabilization for patients with suspected spinal injury.
- Gastric tube placement should be considered in all intubated patients, if time allows.
- It is important to secure the endotracheal tube well.

OPERATIONS PROTOCOLS

Telemetry contact should be established by radio.

TELEMETRY CONTACT SHOULD BE ESTABLISHED:

1. For patients who meet Trauma Field Triage Criteria, telemetry reports should include:
   - A. ETA
   - B. Patient age
   - C. Gender
   - D. Mechanism of injury
   - E. Ambulatory at scene
   - F. Suspected injuries
   - G. Vital signs
   - H. Airway status
   - I. Neurologic status
   - J. An incident identifier if multiple patients are involved (e.g. fire department command code “Main Street Command”)
2. Notify/meet with the receiving facility prior to transfer of care with suspected need for Contact Isolation Preparation
   - A. State the general type of agent involved (insect, chemical, biological, radiation, nuclear, explosive)
   - B. State the type of agent if known.
   - C. If unknown state the general type with patient symptoms. Example – "Unknown chemical substance causing respiratory distress with secretions".
3. For all other patients, telemetry reports should include, at a minimum:
   - A. Attendant/vehicle identification
   - B. Nature of call: INFORMATION ONLY or REQUEST FOR PHYSICIAN ORDERS
   - C. Patient information (i.e. number, age, sex)
   - D. Patient condition (i.e. stable, full arrest)
   - E. History
     - a) Basic problem or chief complaint
     - b) Pertinent associated symptoms
     - c) Time since onset
     - d) Past history, if pertinent
   - F. Objective findings
     - a) General status of patient
     - b) Level of responsiveness
     - c) Vital signs
     - d) Pertinent localized findings
     - e) Working impression of patient’s problem
   - G. Treatment
     - a) In progress
     - b) Requests for drugs or procedures
   - H. Estimated time of arrival, including any special circumstances that may cause a delay in transport.
   - I. For patients meeting “Stroke Alert” or “STEMI Alert” criteria, a preliminary telemetry report should be made to notify the receiving facility of the type of activation, and an estimated arrival time. An “Information Only" telemetry should follow once transport has been initiated.
4. Patient confidentiality must be maintained at all times.
5. All patients should be treated with dignity and respect in a calm and reassuring manner.

Do Not Resuscitate (DNR/POLST)

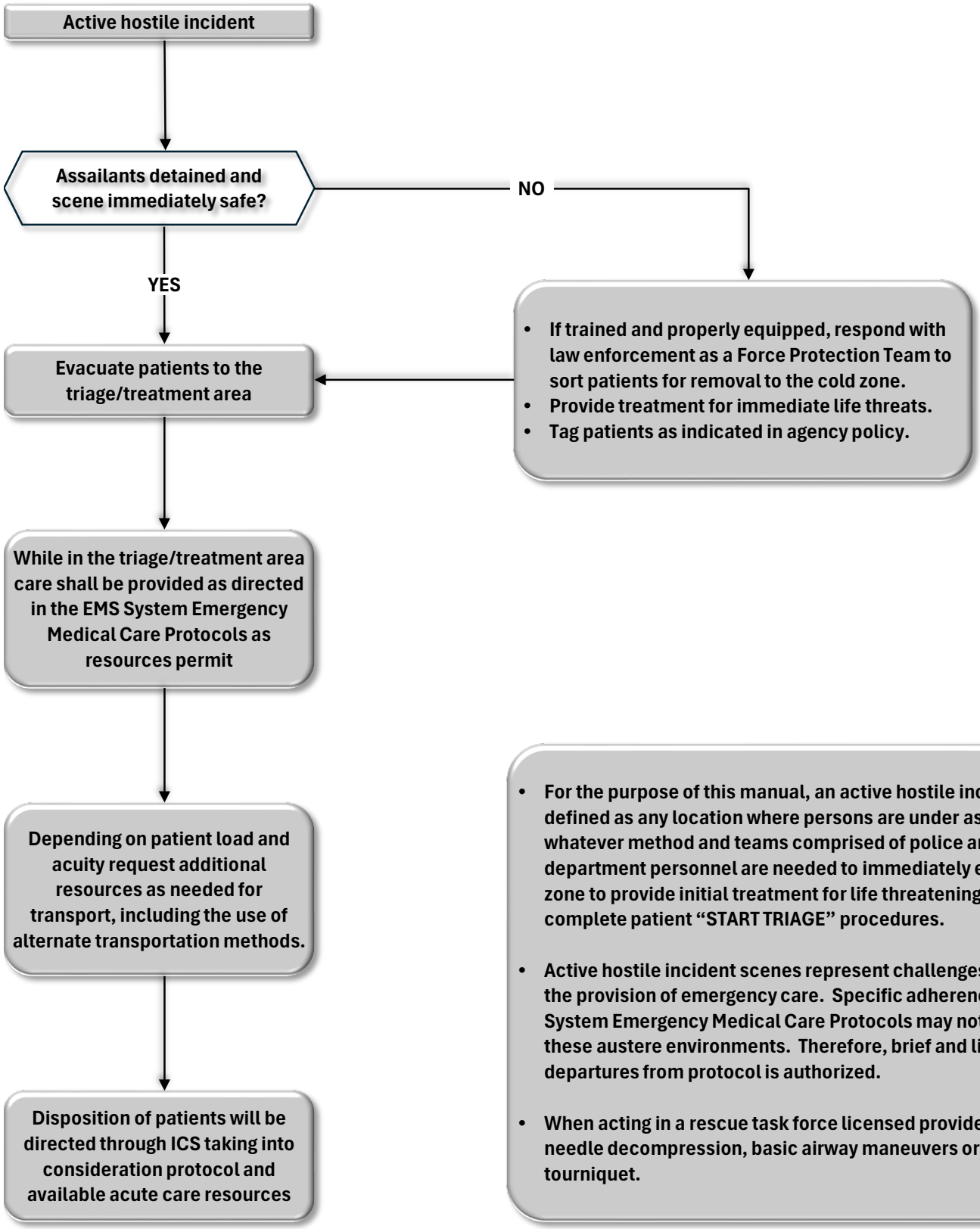
1. All patients with absent vital signs who do not have conclusive signs of death (refer to Prehospital Death Determination protocol) shall be treated with life-resuscitating measures unless EMS personnel are presented with a valid Do-Not-Resuscitate (DNR)/Physician Order for Life-Sustaining Treatment (POLST) Identification/Order.
    A. A valid DNR Identification is a form, wallet card, or medallion,
    B. A valid DNR Order is a written directive issued by a physician licensed in this state that life-resuscitating treatment is not to be administered to a qualified patient.
    C. The term also includes a valid Do-Not-Resuscitate order issued under the laws of another state.
    D. A valid POLST form signed by a physician that records the wishes of the patient and directs a healthcare provider regarding the provision of life-resuscitating treatment and life-sustaining treatment.

    Note: Verbal instructions from friends or family members DO NOT constitute a valid DNR/POLST.
2. In preparation for, or during a inter-facility transfer, a valid DNR Order/POLST in the qualified patient's medical record shall be honored in accordance with this protocol.
3. If the EMS provider is presented with a DNR/POLST Order or Identification, he shall attempt to verify the validity of the Order or Identification by confirming the patient's name, age, and condition of identification.
4. The DNR/POLST Order or Identification shall be determined INVALID if at any time the patient indicates that he/she wishes to receive life-resuscitating treatment. The EMS provider shall document the presence of the DNR/POLST Order or Identification, and how the patient indicated that he/she wanted the Order or Identification to be revoked. EMS personnel shall relay this information to any subsequent medical providers, including but not limited to, flight crews and staff at the receiving medical facility.
5. Once the DNR/POLST Order or Identification is determined to be valid and has not been revoked by the patient, the emergency care provider shall provide ONLY supportive care and withhold life-resuscitating treatment.
6. Faxed, copied or electronic versions of the DNR Identification/POLST are legal and valid.
7. Supportive Care:
    - Suction the airway
    - Administer oxygen
    - Position for comfort
    - Splint
    - Control bleeding
    - Provide pain/sedation medication (ALS only)
    - Provide emotional support
    - Contact hospice, home health agency, attending physician or hospital as appropriate

8. Withhold Life-Resuscitating Treatment:
    - CPR and its components including:
        - Chest compressions
        - Defibrillation
        - Cardioversion
        - Assisted ventilation
        - Airway intubation
        - Administration of cardiotonic drugs
9. EMS personnel will document on the PCR the presence of the DNR/POLST Order or Identification. Documentation should include the patient's name, and the physician's name and identification number, which are found on the DNR/POLST Order or Identification.

Do Not Resuscitate (DNR/POLST)

Hostile Mass Casualty Incident



- For the purpose of this manual, an active hostile incident can be defined as any location where persons are under assault by whatever method and teams comprised of police and fire department personnel are needed to immediately enter the warm zone to provide initial treatment for life threatening injuries and to complete patient "START TRIAGE" procedures.
- Active hostile incident scenes represent challenges in regard to the provision of emergency care. Specific adherence to the EMS System Emergency Medical Care Protocols may not be feasible in these austere environments. Therefore, brief and limited departures from protocol is authorized.
- When acting in a rescue task force licensed providers may perform needle decompression, basic airway maneuvers or apply a tourniquet.

Hostile Mass Casualty Incident

Inter-Facility Transport of Patients By Ambulance

- Ambulance attendants shall only transport patients whose required care during transfer is within the attendants' level of licensure, training, and authorized scope of practice, unless appropriately trained and authorized personnel accompany the patient for the duration of the transport.
- Ambulance attendants may administer or monitor medications listed on the Nevada EMS Program–approved drug formulary as authorized for their level of licensure and in accordance with agency protocols and medical direction. Intravenous medications initiated at the transferring facility may be continued during transport when ordered by the transferring physician and approved by agency medical direction.
- Advanced Emergency Medical Technicians and Paramedic ambulance attendants are authorized to initiate, administer, and monitor crystalloid intravenous solutions during transport.
- Emergency Medical Technician ambulance attendants are authorized to monitor locked peripheral intravenous lines during transport, including saline locks and other vascular access devices, provided they are trained and the activity is approved by agency policy. Emergency Medical Technicians shall not initiate or adjust intravenous infusions unless authorized by protocol and medical direction.
- Arterial lines shall be discontinued prior to transport unless appropriately trained and authorized personnel accompany the patient and assume responsibility for monitoring and management during transport.
- Heparin locks and implantable vascular access devices may remain in place during transport. If use of the device is required during transport, intravenous therapy shall be maintained only as ordered by the transferring physician and within the ambulance attendant's authorized scope of practice.
- Intravenous infusion pump systems shall be discontinued prior to transport unless appropriately trained and authorized personnel accompany the patient and are responsible for pump operation and monitoring throughout the transport.
- Orogastric and nasogastric tubes may remain in place during transport and shall be clamped or maintained on suction in accordance with the transferring physician's orders and agency policy.
- Orthopedic devices may remain in place during transport when the ambulance attendants determine the device can be safely managed within their level of training, scope of practice, and available resources.
- Patients requiring mechanical ventilation shall be accompanied by personnel trained and authorized to manage the ventilator and airway throughout the transport. If manual ventilatory assistance is required, a minimum of two qualified personnel shall be present to ensure continuous patient care and monitoring.
- Prior to release of the patient, the transferring physician or facility shall provide the transporting agency with the name of the receiving facility and receiving physician, relevant medical records, available diagnostic test results, imaging reports, patient code status, DNR, POLST, or advance directive documentation as applicable, isolation or infection control precautions, and any required EMTALA documentation.
- Any agency providing patient care prior to the arrival of the transporting agency shall provide, at a minimum, a verbal patient care report detailing assessments, interventions, and patient response. This report shall be documented in the transporting agency's patient care report.

Inter-Facility Transport of Patients By Ambulance

Prehospital Death Determination

For all emergency scenes where patient needs exceed available EMS resources, initial assessment and treatment shall be in accordance with the START triage methodology.

1. **Patients who appear to have expired will not be resuscitated or transported by EMS personnel if any of the following obvious signs of death are present:**

   A. **Body decomposition**
   B. **Decapitation**
   C. **Transection of thorax (Hemicorporectomy)**
   D. **Incineration**
   E. **Dependent lividity**
   F. **Rigor mortis**
   G. **For other traumatic injuries suspected to be incompatible with life, medical control must be contacted for medical direction.**

   If no obvious signs of death are present, resuscitative measures should be immediately initiated or continued.

2. **Once it has been determined that the patient has expired and resuscitation will not be attempted:**
   A. **Immediately notify the appropriate authority;**
   B. ***DO NOT*** **leave a body unattended. You may be excused once a responsible person (i.e. Coroner's investigator, or police) is present;**
   C. ***DO NOT*** **remove any property from the body or the scene for any purpose;**
   D. ***NEVER*** **transport/move a body without permission from the Coroner's office except for assessment or its protection.**

   If the body is in the public view and cannot be isolated, screened, or blocked from view, and is creating an unsafe situation with citizens/family, the body can be covered with a clean sheet obtained from the EMS vehicle.

Prehospital Death Determination

Termination of Resuscitation

1. Licensed EMS personnel are not obligated to continue resuscitation efforts that have been started by other persons at the scene if the patient meets the criteria listed in the Prehospital Death Determination protocol. This includes telephone CPR initiated by Emergency Medical Dispatchers.
2. Resuscitation should be terminated/ not initiated without telemetry contact if a valid DNR/POLST or physician written order is provided.
3. Resuscitation started in the field may be discontinued only by a telemetry physician order when the following conditions have been met:
    1. For medical arrest, contact closest hospital for telemetry physician order:
        A. The patient remains in persistent asystole or agonal rhythm after twenty (20) minutes or three (3) rounds of appropriate resuscitation, to include:
            a) CPR
            b) Effective ventilation with 100% oxygenation
            c) Administration of appropriate ACLS medications, if available.
            d) Confirm no organized rhythm or PEA, or a "No Shock Advised" on AED
    2. For traumatic arrest, contact Hospital for telemetry physician order:
        A. Open airway with basic life support measures
        B. Provide CPR and effective ventilations with 100% oxygenation for two (2) minutes
        C. Perform bilateral needle thoracentesis if tension pneumothorax suspected
        D. Confirm no organized rhythm or PEA, or a "No Shock Advised" on AED
    3. The patient develops, or is found to have one of the following conclusive signs of death at any point during the resuscitative effort:
        A. Lividity
        B. Rigor mortis
4. When resuscitation has been terminated in the field, all medical interventions shall be left in place.
5. If possible, do not leave a body unattended. Once a responsible person (i.e. Coroner's investigator, police) is present at the scene, you may be excused.
6. NEVER transport/move a body without permission from the Coroner's office, except for assessment or its protection.

If the body is in the public view and cannot be isolated, screened, or blocked from view, and is creating an unsafe situation with citizens/family, the body can be covered with a clean sheet obtained from the EMS vehicle.

NOTES: In wilderness situations, EMS providers must make every effort to contact medical control, but resuscitation may be term e field without medical control when any of the following have occurred:

A. There has been no return of pulse despite greater than 20 minutes or three (3) rounds of appropriate resuscitation. (consider extending in the case of hypothermia or drowning)
B. Transport to an emergency department will take greater than 40 minutes (consider extending in the case of hypothermia or drowning)
C. The EMS providers are exhausted and it is physically impossible to continue the resuscitation.

Termination of Resuscitation

PROCEDURES
PROTOCOLS

Cervical Stabilization

LEVEL: E A P

Cervical stabilization is indicated in any patient who meets the indications (A-E) below:

Indications:

This procedure may be performed on any patient with potential for spinal injury and any of the following (NEXUS) criteria:

A. Midline cervical spinal tenderness
B. Focal neurologic deficit
C. Altered mental status
D. Evidence of drug and/or alcohol intoxication
E. Any painful, distracting injury

Contraindications:

Cervical stabilization is NOT performed in the following conditions:

A. Penetrating trauma to the head and/or neck and no evidence of spinal injury
B. Injuries where placement of the collar might compromise patient assessment, airway management, ventilation and/or hemorrhage control
C. Patients in cardiac arrest

Key procedural considerations:

A. If (A-E) above are ALL NEGATIVE, cervical stabilization is not required.
B. If required, cervical stabilization is the placement of an approved, properly-sized cervical collar before the patient is moved.
C. Backboard, tape, head straps, wedges, and head and/or neck support devices are not recommended.
D. Patients found in motor vehicles should be asked if they are able to exit the motor vehicle on their own. If so, they should be assisted to a soft stretcher and secured for transport. Patients unable to exit the vehicle on their own accord should be removed by the appropriate extrication method.
E. Once on the stretcher, the patient may be moved to a semi-Fowler's or high-Fowler's position for comfort.
F. If a backboard is used for extrication or movement, backboard should be removed and the patient should be immediately moved to a soft mattress, if possible.
G. In special situations, alternate stabilization devices (e.g. vacuum mattress, KED, etc. may be used as indicated).
H. Pediatric patients may be stabilized in an approved car seat or with a commercial pediatric stabilization device.

Continuous Positive Airway Pressure

LEVEL: E A P

Indications:

This procedure may be performed on any patient 18 years old or older in CHF, Respiratory Distress with Bronchospasm, and pneumonia, who has TWO of the following:

A. Retractions or accessory muscle use
B. Respiratory rate >25 per minute
C. SpO2 ≤94%

Contraindications:

A. Apnea
B. Vomiting or active GI bleed
C. Major trauma/pneumothorax

Use device per manufacturer instructions

Key procedural considerations:

A. Assess patient and document VS, SpO2 and ETCO2 if available prior to applying oxygen.
B. Select the appropriate size face mask for the patient.
C. Inform patient about procedure process.
D. Gradually increase the flow rate, slowly reaching the desired CPAP pressure.
E. Secure face mask onto patient face using the head harness.
F. Check the mask and tubing for leaks.
G. Reassess patient and document every five minutes.
H. If patient develops any of the contraindications or requires definitive airway control, discontinue CPAP and provide necessary airway control.

P

Consider Sedation for CPAP:
Ketamine
0.3 mg/kg IM/IN/IV/IO Max 35 mg

Cricothyrotomy

LEVEL: P

Indications:

This procedure may be performed on any patient with:

A. Inability to adequately ventilate or intubate
B. Children under 8 years of age – Needle Cricothyrotomy only

Contraindications:

A. Inability to identify landmarks (cricothyroid membrane)

Key procedural considerations:

A. Position patient supine (if possible), hyperextending the head.
B. Locate cricothyroid membrane and clean site thoroughly.
C. Stabilize cricoid cartilage with one hand.
D. For Needle Cricothyrotomy:
   - Use a 14 gauge over-the-needle catheter attached to a 10 cc syringe or commercial cricothyroidotomy device (*Please follow Manufacturer's Instructions*).
   - Puncture needle/catheter at a 90° angle and then change insertion angle to 45°up to the stopper; gently aspirate with attached syringe.
   - When syringe is able to aspirate air, stop advancing needle, advance catheter until hub is flush with patients neck.
   - Remove the syringe and metal needle from the catheter.
   - Attach 3.0 mm ET hub to catheter.
   - Secure the catheter to patient.
   - Attach to BVM and ventilate patient.
E. For Surgical Cricothyrotomy:
   - Using a scalpel make a vertical incision over cricothyroid membrane.
   - Puncture cricothyroid membrane with scalpel and extend incision laterally in both directions.
   - If available insert cric hook, remove scalpel and insert finger or bougie.
   - Insert ET tube over bougie or along finger and hook.
   - Remove bougie/hook/finger, inflate cuff of ET tube, attach BVM and ventilate patient.
   - Secure ET tube to patient.

Electrical Therapy/Defibrillation

LEVEL: P

Indications:

This procedure may be performed on any patient experiencing:

A. Ventricular fibrillation
B. Pulseless ventricular tachycardia
C. Torsades de Pointes

Contraindications: None

Use device per manufacturer instructions

Key procedural considerations:

A. The initial and subsequent attempts shall be at the energy level(s) suggested by the device manufacturer and/or the agency's medical director.
B. Defibrillation should be immediately provided in an arrest WITNESSED by EMS personnel. In an arrest that is UNWITNESSED by EMS personnel, two minutes of CPR should be provided prior to defibrillation.
C. Patients with automatic implantable cardioverter-defibrillators (AICD) will need external defibrillation if the AICD is ineffective.
D. If defibrillation is needed on a patient with a permanent implanted pacemaker, the defibrillator paddles or self adhesive electrodes should be placed at least one inch from the pulse generator of the pacemaker.

Initial attempt at pediatric defibrillation shall be at 2 J/kg. If unsuccessful, defibrillation should be attempted at 4 J/kg. Repeated defibrillations should be at >4 J/kg to 10 J/kg until conversion occurs. Adult paddles/pads may be used in children weighing more than 10 kg.

Electrical Therapy/Defibrillation

Electrical Therapy/Synchronized Cardioversion

LEVEL: P

The patient MUST be on a cardiac monitor and SHOULD have Vascular Access

Indications:

This procedure may be performed on any patient experiencing:

A. Unstable Tachycardia

Adjunctive therapy:

In the conscious patient with a systolic blood pressure of >90mmHg consider:

<u>Sedation:</u>

ETOMIDATE 20 mg IV/IO. Pediatric dose 0.15 mg/kg IV/IO 20 mg max

OR

MIDAZOLAM 2.5-5 mg IM/IN/IV/IO. Pediatric dose 0.2 mg/kg IN/IM; 10 mg max, 0.1 mg/kg IV/IO, 5 mg max

OR

DIAZEPAM 5 mg IV/IO; May repeat x 1 after 5 min

OR

LORAZEPAM 0.05 mg/kg IM/IV/IO Max 2 mg

<u>Analgesia:</u>

MORPHINE up to 0.1 mg/kg slow IV/IO to a maximum single dose of 10 mg. May repeat dose after 20 minutes;

OR

FENTANYL up to 1 mcg/kg IN/IM/IV/IO to a maximum single dose of 100 mcg. May repeat X1 after 10 minutes;

OR

HYDROMORPHONE up to 1 mg IV/IO. May repeat dose after 20 minutes

Contraindications: None

Key procedural considerations:

A. Biphasic device: The initial and subsequent attempts shall be at the energy level(s) suggested by the device manufacturer and/or Initial 100J, subsequent 120J, 150J, 200J

Initial attempt at pediatric cardioversion shall be at 0.5 J/kg.
If unsuccessful, cardioversion should be attempted at 2 J/kg.
Adult paddle/pads may be used in children weighing more than 10 kg.

Electrical Therapy/Synchronized Cardioversion

Electrical Therapy/Transcutaneous Pacing

LEVEL: P

Indications:

This procedure may be performed on any patient experiencing:

A. Hemodynamically unstable bradycardia
B. Unstable clinical condition that is likely because of bradycardia
C. For pacing readiness (i.e. standby mode) in the setting of MI with bradycardia, second degree type II AV block, third degree AV block, new left or right alternating BBB or bifascicular block
D. Overdrive pacing of tachycardias refractory to drug therapy or electrical cardioversion

Contraindications: None

Adjunctive therapy:

In the conscious patient with a systolic blood pressure of >90mmHg consider:

Sedation:

MIDAZOLAM 2.5-5 mg IM/IN/IV/IO. Pediatric dose 0.2 mg/kg IN/IM; 10 mg max, 0.1 mg/kg IV/IO, 5 mg max

OR

LORAZEPAM 0.05 mg/kg IM/IV/IO Max 2 mg

Analgesia:

MORPHINE up to 0.1 mg/kg slow IV/IO to a maximum single dose of 10 mg. May repeat dose after 20 minutes;

OR

FENTANYL up to 1 mcg/kg IN/IM/IV/IO to a maximum single dose of 100 mcg. May repeat dose after 10 minutes;

OR

HYDROMORPHONE up to 1 mg IV/IO. May repeat dose after 20 minutes

Key procedural considerations:

A. Apply pacing pads, begin pacing at a rate of 60 beats per minute at the lowest available current.
B. Increase current by 20 milliamp increments until electrical capture.

Pediatric pacing is by telemetry physician order only

Endotracheal Intubation

LEVEL: P

1. All intubations have en-route, and at transfer of care End-Tidal CO2 detection/capnography performed and recorded on the PCR.
2. All intubation attempts MUST be documented on the PCR.

Indications:

This procedure may be performed on any patient in whom attempts at basic airway and ventilatory support are unsuccessful AND who has at least one of the following:

A. Hypoxia
B. Respiratory arrest/failure
C. Inability to maintain airway patency
D. Expected decline in clinical course

Contraindications:

Absolute Contraindications: None

Relative Contraindications:

A. Presence of gag reflex
B. Suspected narcotic overdose/hypoglycemia prior to administration of Naloxone/Glucose

Check and prepare the endotracheal airway device prior to insertion

Key procedural considerations:

A. Position head properly.
B. Insert blade while displacing tongue and elevate mandible with laryngoscope.
C. Introduce ET tube and advance to proper depth.
D. Inflate cuff to proper pressure and disconnect syringe.
E. Ventilate patient and confirm proper placement.
F. Verify proper tube placement by secondary confirmation such as capnography or colorimetric device.
G. Secure device or confirm that the device remains properly secured.

Rapid Sequence Intubation (RSI)

LEVEL: P

Indication:

Difficulty achieving SpO2 >90% for at least 3 minutes due to physiological conditions
OR
Inability to maintain airway patency and/or protection
OR
Expected rapid deterioration in respiratory status
OR
Expected decline in clinical course

Positioning:

- Ensure patient is positioned ear to sternal notch with head of bed/backboard elevated > 15 degrees.
- Maintain C-Spine precautions in patients with suspected Injury

Preoxygenation:

- If ***Breathing adequately***, administer oxygen via NRB
- If ***Breathing inadequately***, use a BVM with OPA/NPA.

Maintain apneic O2 via NC at 15lpm throughout

Administer Induction Agent:

- Etomidate 0.3 mg/kg IV/IO Max of 30 mg ***OR***
- Ketamine 2 mg/kg IV/IO slow push over 60 seconds

Paralysis

Immediately following induction agent, administer one of the following paralytics:

- Succinylcholine 1.5 mg/kg IV/IO OR
- Rocuronium 1 mg/kg IV/IO

Preform Endotracheal Intubation

Continued on next page

Rapid Sequence Intubation (RSI) (Cont.)

LEVEL: P

After successful airway placement, administer Fentanyl or Hydromorphone PLUS Midazolam or Lorazepam or Diazepam, OR Ketamine for analgesia and sedation:

Fentanyl/Dilaudid and midazolam/lorazepam/Diazepam:

Fentanyl 1 mcg/kg IV/IO Max of 100 mcg. May repeat every 10 minutes as needed for analgesia.

OR

Hydromorphone 0.01 mg/kg IV/IO Max of 1 mg. May repeat every 20 minutes as needed for analgesia.

PLUS

Midazolam 0.1 mg/kg IV/IO Max 10 mg. May repeat every 5 minutes as needed for sedation.

OR

Lorazepam 0.1 mg/kg IV/IO Max 4mg. May repeat every 10 minutes as needed for sedation.

OR

Diazepam 0.2 mg/kg IV/IO max 5mg. May repeat every 5 minutes as needed for sedation.

Analgesia should be addressed first. Opioids are typically the first line agents before benzodiazepines.

OR

Ketamine: Initial dose is 1 mg/kg slow IV/IO push if not used for induction. If used for induction, initial dose is 0.5 mg/kg slow IV/IO push. May repeat 0.5 mg/kg every 15 minutes as necessary to maintain analgesia and sedation.

Ketamine should not be used for sedation following ROSC in cardiac arrest patients.

Persistent bradycardia:

Atropine 1 mg IV/IO. May repeat every 3-5 minute. Max 3 mg. Pediatric patients: 0.02 mg/kg IV/IO. Minimum dose 0.1 mg maximum single dose 0.5 mg. Do not exceed adult dose. May repeat once after 5 minutes

- If unable to achieve SpO2 ≥ 94%, consider failed airway plan, including use of a supraglottic airway.
- Perform intubation approximately 60 seconds after succinylcholine or rocuronium, and 2 - 3 minutes after vecuronium.
- Use of the bougie is encouraged to facilitate first pass success.
- If SpO2 drops to < 94% during intubation attempt, ventilate with BVM using 100% oxygen before next attempt.
- If intubation unsuccessful, consider use of BVM and/or backup supraglottic airway device.
- If unable to ventilate with BVM or backup airway, proceed to surgical airway (cricothyrotomy).
- If bradycardia occurs, first ensure adequate ventilation, and if persistent, administer atropine 1 mg IV/IO may repeat every 3-5 minutes to a maximum of 3 mg (Pediatric patients: 0.02 mg/kg IV/IO. Minimum dose 0.1 mg maximum single dose 0.5 mg. Do not exceed adult dose. May repeat once after 5 minutes)
- Verify placement of ET tube using waveform EtCO2 and auscultation of lungs and epigastrium.
- Continue cardiac, waveform EtCO2, and pulse oximetry monitoring at all times.
- Following intubation, titrate PEEP down to lowest setting to maintain SpO2 ≥ 94%.
- Insert an oral airway or compatible bite-block device if needed.
- Secure the endotracheal tube and record the depth at the teeth/gums.
- Recheck and document ET tube placement after every patient movement or change in vital signs. For sudden hypoxia, consider DOPE:
  - Dislodgement
  - Obstruction
  - Pneumothorax
  - Equipment

Rapid Sequence Intubation (RSI) (Cont.)

Extraglottic Airway Device

LEVEL: A P

Indications:

This procedure may be performed on any patient in which attempts at basic airway and ventilatory support are unsuccessful AND who has at least one of the following:

A. Hypoxia
B. Respiratory arrest/failure
C. Obtundation
D. Failed endotracheal intubation

Contraindications:

A. Gag reflex
B. History of esophageal trauma, or known esophageal disease
C. Recent ingestion of a caustic substance
D. Tracheostomy or laryngectomy
E. Suspected foreign body obstruction

Check and prepare the Extraglottic airway device prior to insertion

Key procedural considerations:

A. Pre-oxygenate the patient.
B. Position the patient's head in a neutral or slightly flexed position if no suspected spinal injury (if a spine injury is suspected, maintain a neutral, in-line head position).
C. Perform a tongue-jaw lift.
D. Insert device to proper depth. NEVER force. If device does not advance, readjust the insertion.
E. Secure device in the patient (inflate cuff(s) with proper volume(s) and immediately remove syringe).
F. Ventilate patient and confirm proper ventilation (correct lumen and proper insertion depth) by auscultation bilaterally over lungs and over epigastrium.
G. Adjust ventilation as necessary (ventilate through additional lumen or slightly withdraw tube until ventilation is optimized).
H. Verify proper tube placement by secondary confirmation such as capnography or colorimetric device.

Hemorrhage Control

LEVEL: E A P

Hemorrhage:

This procedure may be performed on any patient that has bleeding from an extremity, junctional hemorrhage or torso hemorrhage.

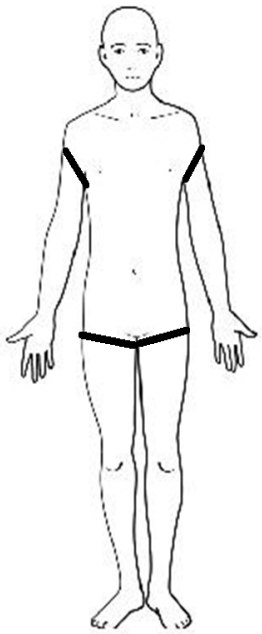
Extremity Hemorrhage – Tourniquet Application:

A. Apply tourniquet 2-3 inches proximal to the bleeding site.
B. Absolute contraindication:
    a) Bleeding has stopped
C. If bleeding is not controlled, consider additional tightening or applying a second tourniquet proximal side by side to the first.
D. Wound packing does not preclude you from placing a tourniquet.

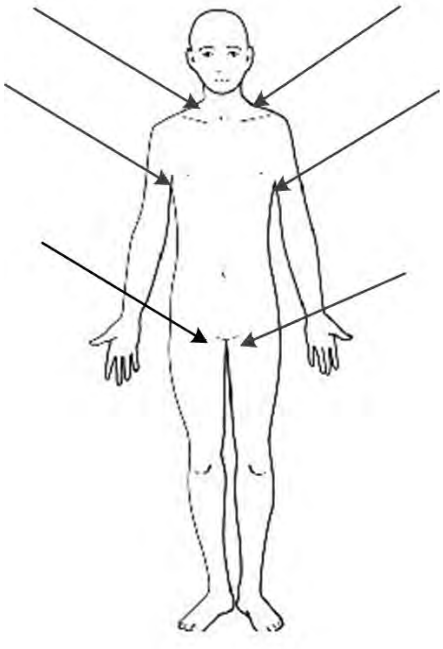
Junctional Hemorrhage – Wound Packing:

A. Junctional Hemorrhage Defined: hemorrhage occurring at the junction of an extremity with the torso, and/or the base of the neck.
B. Use direct pressure and an appropriate pressure dressing with deep wound packing (plain gauze or, if available, hemostatic gauze).
C. Absolute Contraindication: Hemostatic gauze use on hemorrhaging abdominal wounds.

Tourniquet



Junctional Hemorrhage



Medication Administration

LEVEL: E A P **(Based on Medication)**

Indications:

This procedure may be performed on any patient that requires the administration of a medication.

Key procedural considerations (GENERAL):

A. Inquire about allergies and previous medication reactions
B. Check and verify medication with partner
C. Check solution clarity and expiration date
D. Check the "Rights"
   1. Right drug
   2. Right patient
   3. Right dose
   4. Right time
   5. Right route
   6. Right documentation
E. Dispose of syringe and other material in proper container

Intravenous and Intraosseous Bolus Medications

Key procedural considerations:

A. Identify and cleanse injection site
B. Administer correct dose at proper push rate
C. Turn IV on and adjust drip rate to TKO/KVO

Intramuscular and Subcutaneous Drug Administration

Key procedural considerations:

A. Needle should be 20 gauge or smaller
B. Locate administration site
   1. Deltoid muscle
   2. Vastus lateralis muscle (lateral thigh)
   3. Ventrogluteal or dorsogluteal muscles (buttocks)

IM	
Pull skin tight	Pinch to lift skin slightly
Insert needle at a 90° angle to the skin	Insert needle at a 45° angle to the skin
Advance into muscle layer	Advance into subcutaneous layer

Mucosal Atomizer Device (MAD) Administration

Medications: Fentanyl, Ketamine, Midazolam, Naloxone Hydrochloride

Key procedural considerations:

A. Using the free hand, hold the crown of the head stable.
B. Place the tip of the MAD snugly against the nostril, aiming slightly up and outward (toward the top of the ear).
C. Briskly compress the syringe to deliver half the medication into the nostril.
D. Move the device over to the opposite nostril and administer the remaining medication.

Needle Thoracentesis

LEVEL: P

Indications:

This procedure may be performed on any patient who has evidence of a tension pneumothorax, demonstrated by the presence of:

A. Progressive respiratory distress and/or increased resistance to bagging
B. Unilateral diminished/absent breath sounds.

Contraindications: None

Needle Thoracentesis is permitted in pediatric patients.

Key procedural considerations:

A. Sites are the 2nd intercostal space mid-clavicular line OR the 4th- 5th intercostal space in the mid-axillary line of the affected side.
B. Use a site specific, appropriate length needle to decompress the chest.
C. Prep site with iodine and/or alcohol.
D. Place tip of needle on top of appropriate rib and insert over top of rib into intercostal space.
E. Advance catheter and remove needle.
F. Consider attaching a flutter valve assembly.

Tracheostomy Tube Replacement

LEVEL: P

Indications:

This procedure may be performed on any patient that has A TRACHEOSTOMY TUBE and WHO HAS:

A. Hypoxia
B. Respiratory arrest/failure
C. Obtundation
D. Secretions unable to be cleared by suctioning

Contraindications: None

Key procedural considerations:

A. If the patient or family has a replacement tube available, it may be used. If a replacement tube is not available, an endotracheal tube of a similar outer diameter may be used.
B. Premoisten the tube with water soluble lubricant.
C. Extend the neck and, if necessary, place a roll between the patient's shoulder to aid in visualizing the stoma.
D. If the tube cannot be placed easily, withdraw the tube; administer oxygen and positive pressure ventilation. NEVER force the tube.
E. Secure the device to the patient.
F. If the tube cannot be easily placed, a suction catheter or bougie may be used as a guide.

Traction Splint

LEVEL: E A P

Indications:

This procedure may be performed on any patient with an isolated midshaft femur fracture.

Contraindications:

A. Pelvic fracture or instability
B. Knee, lower leg, or ankle instability

Key procedural considerations:

A. Assess motor, sensory, and circulatory function in the involved extremity.
B. Apply traction splint per the manufacturer's guidelines.
C. Initiate mechanical traction to match manual traction.
D. Reassess motor, sensory, and circulatory function in the involved extremity.

Vagal Maneuvers

LEVEL: P

The patient *MUST* be attached to a cardiac monitor and *MUST* have vascular access prior to performing the procedure

Indications:

This procedure may be performed on any patient who is experiencing Narrow Complex Tachycardia with adequate perfusion.

Contraindications: None

Key procedural considerations:

A. Approved methods include:

- **A. Valsalva maneuver**
- **B. Head-down tilt with deep inspiration**
- **C. Activation of the "diving reflex" by facial immersion in ice water (unless ischemic heart disease is present)**
- **D. Carotid massage (only on patients under 40 years of age)**

B. In infants and young children, the most effective vagal maneuver is the application of ice to the face. IV access is not mandatory prior to vagal maneuvers in children.

Vascular Access

LEVEL: A P

Peripheral Vascular Access

Indications:

A. Intravenous drug administration
B. Need to administer IV fluids for volume expansion

Contraindications: None

Key procedural considerations:

A. Saline locks may be used when appropriate and flushed with a 3 cc bolus of NS as needed.
B. Extension tubing should be used on all IV lines.

Intraosseous Access

Indications:

Critically ill or injured patient who requires IV drugs/fluids and in whom a peripheral line cannot be immediately established.

Contraindications:

A. Placement in, or distal to a fractured bone.
B. Previous significant orthopedic procedure at the site; prosthetic limb or joint; IO catheter use in past 48 hours of the target bone.
C. Infection at the area of insertion.
D. Absence of adequate anatomical landmarks.

Site options:

A. Proximal Tibia
B. Humeral Head
C. Distal Femur

Paramedic may administer lidocaine 1% or 2% preservative-free for anesthetic in a patient responsive to pain.

A. Prime IO extension tubing set with lidocaine (EZ IO, EZ Connect priming volume is 1ml)
B. Slowly infuse lidocaine 40mg (PEDIATRIC dose: 0.5 mg/kg not to exceed 40 mg) IO over 2 minutes.
C. Allow lidocaine to dwell in IO space for 1 minute.
D. Flush IO with 5-10 ml normal saline.
E. Slowly administer an additional dose of lidocaine IO (20mg) over 60 seconds. (Pediatric dose: 0.25 mg/kg, not to exceed 20 mg)
F. Consider systemic pain medication for patients not responding to IO lidocaine.

Key procedural considerations: Only 1 (one) attempt is permitted per bone

Previously Established Central Line Access (Implantable Ports, Port-A-Caths, Medports)

Indications:

A. Any critically ill or injured patient who requires IV drugs or IV fluids AND in whom a peripheral line cannot be established.

Contraindications:

A. Inability to freely aspirate blood out of the catheter.

Key procedural considerations:

A. May only be used if the device has already been accessed and IV fluid set-up has been established and running.
B. These devices require special needles (non-coring type) for access. The device may be damaged if standard jumper (conventional) needles are used to access the ports.

Formulary

E = EMT A = Advanced EMT P = Paramedic

Acetaminophen 

Class: Anti-pyretic, Analgesic

Action: Reduces COX pathway activity, which inhibits synthesis of prostaglandins in the CNS, stimulates serotonergic and cannabinoid receptors

Contraindications: Hypersensitivity, last dose within 4 hours, 4g of acetaminophen within a 24-hour period, liver disease/failure, hyperthermia with environmental etiology, difficulty swallowing

Adverse Reactions: None

Protocol	Pg	Dose/Route	May Repeat
Pediatric Pain Management	**102**	**15 mg/kg PO – max 1000 mg**	**q 4 hours**
Pediatric Seizure	**106**	**15 mg/kg PO – max 1000 mg**	**q 4 hours**

E = EMT, A = Advanced EMT, P = Paramedic

Medication

Class:

Action:

Contraindications:

Adverse Reactions:

Protocol	Pg	Dose/Route	May Repeat

Adenosine P

Class: Class V antidysrhythmic

Action: Dilates coronary vessels, depresses both SA and AV node activity

Contraindications: 2nd/3rd degree AV block or sick sinus syndrome, atrial flutter, atrial fibrillation

Adverse Reactions: Arrhythmia

Protocol	Pg	Dose/Route	May Repeat	Notes
Tachycardia - Stable	**65**	**6 mg rapid IVP/IO**	**Once at 12 mg for persistent symptoms**	**Follow IV/IO push with rapid NS flush**
Tachycardia - Unstable	**67**	**6 mg rapid IVP/IO**	**No**	**Follow IV/IO push with rapid NS flush**
Pediatric Tachycardia – Stable	**112**	**0.1 mg/kg rapid IVP/IO max 6 mg**	**Once at 0.2mg/kg max 12 mg for persistent symptoms**	**Follow IV/IO push with rapid NS flush**
Pediatric Tachycardia – Unstable	**114**	**0.1 mg/kg rapid IVP/IO max 12 mg**	**No**	**Follow IV/IO push with rapid NS flush**

Albuterol 

Class: Bronchodilator.

Action: Beta-2 adrenergic receptor agonist, relaxes airway smooth muscle.

Contraindications: Hypersensitivity.

Adverse Reactions: Tachycardia, palpitations, headache, abdominal pain.

Protocol	Pg	Dose/Route	May Repeat
Allergic Reaction	**17**	**2.5 mg SVN**	**PRN**
Drowning	**33**	**2.5 mg SVN**	**PRN**
Hyperkalemia	**39**	**2.5 mg SVN**	**Continuous**
Respiratory Distress	**51**	**2.5 mg SVN**	**PRN**
Pediatric Allergic Reaction	**78**	**2.5 mg SVN**	**PRN**
Pediatric Drowning	**92**	**2.5 mg SVN**	**PRN**
Pediatric Respiratory	**104**	**2.5 mg SVN**	**PRN**

Amiodarone 

Class: Class III antidysrhythmic.

Action: Suppresses ventricular ectopy and increases ventricular fibrillation threshold by prolonging cardiac action potential.

Contraindications: Hypersensitivity, cardiogenic shock, high grade AV block, marked sinus bradycardia, or bradycardia with ventricular escape beats.

Adverse Reactions: Seizures, respiratory depression, dizziness, restlessness, confusion, tinnitus, blurred vision, numbness, muscle twitching, hypotension, bradycardia, heart block, nausea, vomiting.

Protocol	Pg	Dose/Route	May Repeat	Notes
Cardiac Arrest	**27**	**300 mg IV/IO**	**Once at 150 mg IV/IO after 5 min for refractory VF/VT**	
Tachycardia – Stable	**65**	**150 mg over 10 min IV/IO**	**PRN, max dose 2.2 g in 24 hrs**	**Drip rate of 1 mg/min**
Tachycardia – Unstable	**67**	**150 mg over 10 min IV/IO**	**PRN, max dose 2.2 g in 24 hrs**	**Drip rate of 1 mg/min**
Pediatric Cardiac Arrest (Non- traumatic)	**88**	**5 mg/kg IV/IO**	**Twice (total of 3 doses) for refractory VF/VT**	
Pediatric Tachycardia– Stable	**112**	**5 mg/kg in 50mL NS over 20 min**	**Twice (to max of 15 mg/kg)**	
Pediatric Tachycardia – Unstable	**114**	**5 mg/kg in 50mL NS over 20 min**	**Once after synchronized cardioversion**	

Aspirin 

Class: Salicylate, Nonsteroidal anti-inflammatory.

Action: Inhibits platelet aggregation.

Contraindications: Hypersensitivity, AAA, aortic dissection, GI bleed.

Adverse Reactions: Bleeding.

Protocol	Pg	Dose/Route
Chest Pain and Suspected Acute Coronary Syndrome	**29**	**324 mg PO**
STEMI	**61**	**324 mg PO**

Atropine 

Class: Anticholinergic agent.

Action: Reduces secretions, blocks parasympathetic action of the heart increasing heart rate.

Contraindications: Hypersensitivity.

Adverse Reactions: Can cause increased bradycardia at a low dose.

Protocol	Pg	Dose/Route	May Repeat
Bradycardia	**23**	**1 mg IV/IO**	**q 3-5 min, max total of 3 mg**
Overdose/Poisoning	**41**	**2 mg IV/IO**	**q 15 min**
Pediatric Bradycardia	**84**	**0.02 mg/kg IV/IO min. dose 0.1 mg, max single dose 0.5 mg**	**Once after 5 min**
Pediatric overdose/poisoning	**100**	**0.02 mg/kg IV/IO min. dose 0.1 mg**	**q 15 min**
RSI (persistent bradycardia)	**133**	**1 mg IV/IO**	**q 3-5 min, max total of 3 mg**
Pediatric RSI (persistent bradycardia)	**133**	**0.02 mg/kg IV/IO, minimum single dose 0.1 mg, max single dose 0.5 mg min**	**Once after 5 min**

Calcium Chloride 10% 

Class: Electrolyte.

Action: Stabilizes cardiac membrane, translates electrical excitation into cardiac muscle contraction.

Contraindications: None.

Adverse Reactions: Vasodilation, bradycardia, cardiac arrhythmia, tissue necrosis with extravasation.

Protocol	Pg	Dose/Route	May Repeat
Bradycardia	**23**	**1 g IV/IO**	**If EKG rhythm persists or reoccurs, may repeat once after 5 mins**
Hyperkalemia	**39**	**1 g SIVP/IO**	**If EKG rhythm persists or reoccurs, may repeat once after 5 mins**
Overdose/Poisoning	**41**	**1 g SIVP/IO**	**If EKG rhythm persists or reoccurs, may repeat once after 5 mins**
Pediatric Overdose/Poisoning	**100**	**20 mg/kg SIVP/IO**	**If EKG rhythm persists or reoccurs, may repeat once after 5 mins**

Cyanokit (Hydroxocobalamin) A P

Class: Cyanide antidote (synthetic Vitamin B12).

Action: Vitamin B12 with hydroxyl group complexed to cobalt which can be displaced by cyanide resulting in cyanocobalamin that is renally excreted.

Contraindications: None in an emergent setting.

Adverse Reactions: Vasodilation.

Protocol	Pg	Dose/Route
Overdose/Poisoning	**41**	**5 g IV/IO over 15 min**
Smoke Inhalation	**59, 60**	**5 g IV/IO over 15 min**
Pediatric Smoke Inhalation	**110**	**Reference image below**
Pediatric Overdose/poisoning	**100**	**Reference image below**

1. Reconstitute Cyanokit vial per the Instructions. **The new vial concentration will be 25mg/ml.**
2. See chart below to find the appropriate reconstituted dose.

APPROXIMATE AGE	NB–1 m	2 m	4–6 m	8–10 m	1–1.5 y	2–2.5 y	3–3.5 y	4–5 y	5.5–7 y	7.5–8 y	8.5–10 y
WEIGHT IN LBS	7–9 lb	11 lb	13–15 lb	18–20 lb	22–24 lb	26–31 lb	33–40 lb	42–48 lb	53–62 lb	66–70 lb	71–80 lb
WEIGHT IN KGS	3–4 kg	5 kg	6–7 kg	8–9 kg	10–11 kg	12–14 kg	15–18 kg	19–22 kg	24–28 kg	30–32kg	34–36 kg
RECONSTITUTED SYRINGE AMOUNT	10 ml	15 ml	20 ml	25 ml	30 ml	40 ml	50 ml	60 ml	75 ml	85 ml	100 ml
TOTAL DOSAGE OF MEDICATION	250mg	375mg	500mg	625mg	750mg	1000mg	1250mg	1500mg	1875mg	2125mg	2500mg
gtts / sec	1	1	1	5	5	5	5	5	5	6	6
	GIVE DOSE IN **50ml NS BAG**			GIVE DOSE IN **250ml NS BAG**							

3. Withdraw and waste the equivalent volume of Normal Saline from the bag size indicated.
4. Draw the appropriate dose from the vial referencing the chart, using the appropriate syringe size.
5. Inject the reconstituted medication into the appropriate sized bag of Normal Saline, below the Chart.
6. Spike the bag with 15 gtts/ml IV tubing.
7. Piggyback line into an IV/IO line and **Infuse over ~15 minutes** using the gtts/second noted above.

Medication

Class:

Action:

Contraindications:

Adverse Reactions:

Protocol	Pg	Dose/Route	May Repeat

Dextrose (5%) 

Class: Carbohydrate.

Action: Increases blood glucose level.

*****Can be used for bolus mix medications**

Contraindications: None.

Adverse Reactions: Hyperglycemia.

Dextrose (10%) 

Class: Carbohydrate.

Action: Increases blood glucose level.

Contraindications: None.

Adverse Reactions: Hyperglycemia.

Protocol	Pg	Dose/Route	May Repeat
AMS / Syncope	**19**	**Titrate to effect IV/IO**	**Once in 5 min**
Seizure	**53**	**25 g IV/IO**	**Once in 5 min**
Stroke	**63**	**Titrate to effect IV/IO**	**Once in 5 min**
Pediatric AMS	**80**	**5 ml/kg IV/IO, 25 g max**	
Pediatric seizure	**106**	**5 ml/kg IV/IO, 25 g max**	
Pediatric Shock	**108**	**5 ml/kg IV/IO, 25 g max**	

Diazepam (Valium) 

Class: Benzodiazepine.

Action: Interacts with GABA receptor causing sedation, reduction in seizure activity and anxiolysis.

Contraindications: Hypersensitivity, hypotension.

Adverse Reactions: Respiratory depression, CNS depression, N/V.

Common Adult Dosing: Initial 2-5 mg, repeat 2 mg increments.

Protocol	Pg	Dose/Route	May Repeat
Pregnancy (Eclampsia/Preeclampsia)	**49**	**5 mg IV/IO**	**Once after 5 mins**
Seizure	**53**	**5 mg IV/IO**	**Once after 5 mins**
Pediatric Behavioral Emergency	**82**	**0.1 mg/kg IV/IO, 5 mg max**	
Pediatric Seizure	**106**	**0.2 mg/kg IV/IO, 10 mg max**	
Pediatric Ventilation Management	**116**	**0.2 mg/kg IV/IO, 5 mg max**	**q 5 mins PRN sedation**
Electrical Therapy	**130**	**5 mg IV/IO**	**Once after 5 mins**
Rapid Sequence Intubation	**133**	**0.2 mg/kg IV/IO, 5mg max**	**q 5 mins PRN sedation**

Diltiazem (Cardizem) P

Class: Calcium Channel Blocker

Action: Inhibits calcium influx into cardiac and smooth muscle cells, slowing heart rate and reducing cardiac workload.

Contraindications: Hypersensitivity, WPW, Lown-Ganong-Levine syndrome, Sick sinus syndrome, Complete heart block

Adverse Reactions: Hypotension, syncope, facial flushing, N/V, chest pain, dyspnea, sweating and dizziness

Protocol	Pg	Dose/Route	May Repeat
Tachycardia– Stable	**65**	**(if SBP > 110) 0.25 mg/kg over 2 min, 20mg max**	**Once after 15 min at 0.35 mg/kg, 25 mg max**
SVT	**65**	**(if SBP >110) 0.25 mg/kg over 2 min, 20 mg max**	**Once after 15 min at 0.35 mg/kg, 25 mg max**

Diphenhydramine (Benadryl) 

Class: Antihistamine.

Action: Blocks histamine receptors, has anticholinergic and sedative effects.

Contraindications: Hypersensitivity.

Adverse Reactions: Sedation, palpitations, decreased blood pressure, headache, dries (thickens) bronchial secretions, blurred vision.

Protocol	Pg	Dose/Route
Allergic Reaction	**17**	**50 mg IM/IV/IO/PO**
Behavioral Emergency	**21**	**25-50 mg IV/IO/IM**
Dystonic Reactions/ Overdose	**22, 41**	**50 mg IV/IM/IO**
Pediatric Allergic Reaction	**78**	**1 mg/kg IM/IV/IO, 50 mg max**
Pediatric Overdose	**100**	**1 mg/kg IM/IV/IO, 50 mg max**

Dopamine P

Class: Sympathomimetic.

Action: Positive inotrope with dose-related vascular effects.

Contraindications: Hypovolemic shock is a relative contraindication. Hypotension due to hypovolemia or distributive shock should be addressed with a fluid bolus before administering Dopamine.

Adverse Reactions: Ventricular tachycardia, ectopic beats, nausea, vomiting, dyspnea, hypertension and extreme vasoconstriction may occur with high infusion rates, hypotension may occur with low infusion rates.

Protocol	Pg	Dose/Route	Note
Bradycardia	**23**	**5-20 mcg/kg/min IV/IO**	**Maintain SBP >90**

Epinephrine 1:1,000 

Class: Sympathomimetic.

Action: Bronchodilation, positive chronotrope, positive inotrope.

Contraindications: None.

Adverse Reactions: Palpitations due to tachycardia or ectopic beats may produce arrhythmia if cardiac disease is present, hypertension, headache, anxiousness.

Protocol	Pg	Dose/Route	May Repeat
Allergic Reaction	**17**	**0.3-0.5 mg IM**	**q 5 min, 1.5 mg max**
Respiratory Distress	**51**	**5 mL of 1 mg/mL SVN**	
Pediatric Allergic Reaction	**78**	**0.01 mg/kg IM, 0.3mg max single dose**	**q 5 min, 1.5 mg max**
Pediatric Bradycardia	**84**	**0.1 mg/kg ETT**	**q 5 min, 1 mg max**
Pediatric Cardiac Arrest (Non-traumatic)	**88**	**0.1 mg/kg ETT**	**q 3-5 min**
Pediatric Respiratory Distress	**104**	**5mL of 1mg/mL SVN**	

Epinephrine 1:10,000

Class: Sympathomimetic.

Action: Bronchodilation, positive chronotrope, positive inotrope.

Contraindications: None.

Adverse Reactions: Palpitations due to tachycardia or ectopic beats may produce arrhythmia if cardiac disease is present, hypertension, headache, anxiousness.

Protocol	Pg	Dose/Route	May Repeat
Cardiac Arrest (Non-Traumatic)	**27**	**1 mg IV/IO**	**q 3-5 min**
Pediatric Bradycardia	**84**	**0.01 mg/kg, IV/IO**	**q 3-5 min, 1 mg max**
Pediatric Cardiac Arrest (Non-traumatic)	**88**	**0.01 mg/kg, IV/IO**	**q 3-5 min**
Neonatal Resuscitation	**98**	**0.01 mg/kg, IV/IO**	**q 3-5 min**

Epinephrine 1:100,000

Class: Sympathomimetic.

Action: Bronchodilation, positive chronotrope, positive inotrope.

Contraindications: None.

Adverse Reactions: Palpitations due to tachycardia or ectopic beats may produce arrhythmia if cardiac disease is present, hypertension, headache, anxiousness.

To make: Waste 1 ml out of a 10 ml NS flush. Put 1 ml of 1:10,000 Epi back into the remaining 9 mls of NS for a total of 10 mls in flush. The flush will now contain 1:100,000 Epi (10 mcg of epinephrine/ 1 ml).

Protocol	Pg	Dose/Route	May Repeat
Allergic Reaction Protocol	**17**	**10 mcg IV/IO**	**q 2-5 min; to maintain SBP >90**
Bradycardia	**23**	**10 mcg IV/IO**	**q 2-5 min; to maintain SBP >90**
Sepsis	**55**	**10 mcg IV/IO**	**q 2 min; to maintain SBP >90**
Shock	**57**	**10 mcg IV/IO**	**q 2 min; to maintain SBP >90**
Pediatric Allergic Reaction	**78**	**5-10 mcg IV/IO**	**q 2 min PRN**

Epinephrine drip P

Class: Sympathomimetic.

Action: Bronchodilation, positive chronotrope, positive inotrope.

Contraindications: None.

Adverse Reactions: Palpitations due to tachycardia or ectopic beats may produce arrhythmia if cardiac disease is present, hypertension, headache, anxiousness.

***To make:** mix 1 mg of Epi (1 ml Epi 1:1,000 or 10 ml of Epi 1:10,000) into a 1 L bag of NS. This will result in a concentration of 1 mcg/ml.

Protocol	Pg	Dose/Route	Note
Adult Allergic Reaction	**17**	**2-10 mcg/min**	
Bradycardia	**23**	**1-10 mcg/min**	**To maintain SBP > 90**
Sepsis	**55**	**2-10 mcg/min**	**To maintain SBP > 90**
Shock	**57**	**2-10 mcg/min**	**To maintain SBP > 90**
Pediatric Allergic Reaction	**78**	**2-10 mcg/min**	**Call for orders if Pt is less than 4 Kg**

Epinephrine, Racemic / Nebulized A P

Class: Sympathomimetic.

Action: Bronchodilation, positive chronotrope, positive inotrope.

Contraindications: None.

Adverse Reactions: Palpitations due to tachycardia or ectopic beats may produce arrhythmia if cardiac disease is present, hypertension, headache; anxiousness.

Protocol	Pg	Dose/Route	May Repeat
Respiratory Distress	**51**	**0.5 mL of 2.25% solution in 3 mL NS SVN**	**PRN**
Pediatric Respiratory Distress	**104**	**0.5 mL of 2.25% solution in 3 mL NS SVN**	**PRN**

Etomidate (Amidate) P

Class: Hypnotic, Anesthetic

Action: Enhances the effects of GABA causing CNS depression

Contraindications: Hypersensitivity

Adverse Reactions: Transient skeletal movements, N/V, hypoventilation, hypotension.

Common Adult Dosing: 20 mg.

Protocol	Pg	Dose/Route
Tachycardia – Stable	**65**	**20 mg IV/IO**
Tachycardia – Unstable	**67**	**20 mg IV/IO**
Pediatric Tachycardia – Stable	**112**	**0.15 mg/kg IV/IO 20 mg max**
Pediatric Tachycardia – Unstable	**114**	**0.15 mg/kg IV/IO 20 mg max**
Pediatric Ventilation Management	**116**	**0.3 mg/kg IV/IO 20 mg max**
Electrical therapy - cardioversion	**130**	**Adult dose: 20 mg IV/IO**
		Pediatric dose: 0.15 mg/kg IV/IO 20 mg max
RSI	**133**	**0.3 mg/kg IV/IO**

Fentanyl P

Class: Analgesic

Action: Binds opioid receptors

Contraindications: Hypersensitivity, respiratory depression

Adverse Reactions: Respiratory depression, rapid infusion of high dose may produce chest wall rigidity, N/V

Common Adult Dosing: Initial 50-100 mcg. Repeat 25-50 mcg

Protocol	Pg	Dose/Route	May Repeat
Pain Management	**43**	**1 mcg/kg IN/IM/IV/IO; 100 mcg max single dose**	**q 10 min PRN**
Ventilation Management	**69**	**1 mcg/kg IV/IO; 100 mcg max**	**q 10 min PRN**
Pediatric Pain Management	**102**	**1 mcg/kg IN/IM/IV/IO; 100 mcg max single dose**	**Once after 10 min**
Pediatric Ventilation Management	**116**	**1 mcg/kg IV/IO; 100 mcg max**	**q 10 min PRN**
Electrical Therapy - cardioversion	**130**	**1 mcg/kg IN/IM/IV/IO; 100 mcg max single dose**	**Once after 10 min**
Electrical Therapy - pacing	**131**	**1 mcg/kg IN/IM/IV/IO; 100 mcg max single dose**	**Once after 10 min**
RSI	**133**	**1 mcg/kg IV/IO; 100 mcg max**	**q 10 min PRN**

Glucagon 

Class: Glycogenolytic.

Action: Causes the liver to release stored glucose by breaking down glycogen to glucose.

Contraindications: Hypersensitivity.

Adverse Reactions: N/V.

Protocol	Pg	Dose/Route	May Repeat
Altered Mental Status / Syncope	**19**	**1.0 mg IM (no IV access)**	**q 15 min x 2**
Bradycardia	**23**	**1 mg IV/IO**	**q 3-5 min x2**
Overdose	**41**	**1 mg IM/IV/IO**	**q 3-5 min x 2**
Seizure	**53**	**1 mg IM (no IV access)**	**q 15 min x 2**
Stroke	**63**	**1 mg IM (no IV access)**	**q 15 min x 2**
Pediatric AMS	**80**	**0.5 mg IM (<20kg); 1 mg IM (>20kg) (no IV access)**	**q 15 min x 2**
Pediatric Overdose	**100**	**0.05 mg/kg IV/IM/IO; 5 mg max**	**q 3-5 min x 2**
Pediatric Seizure	**106**	**0.5 mg IM (no IV access)**	**q 15 min x 2**
Pediatric Shock	**108**	**0.5 mg IM (<20kg); 1 mg IM (>20kg) (no IV access)**	**q 15 min x 2**

Glucose – oral 

Class: Carbohydrate.

Action: Increases blood glucose level.

Contraindications: Obtunded patient unable to protect airway.

**** Patient must be able to protect their own airway. ****

Adverse Reactions: Hyperglycemia, aspiration.

Protocol	Pg	Dose/Route	May Repeat
AMS / Syncope	**19**	**15 g PO**	**PRN**
Stroke	**63**	**15 g PO**	**PRN**
Pediatric AMS	**80**	**15 g PO**	**PRN**
Pediatric Shock	**108**	**15 g PO**	**PRN**

Haloperidol (Haldol) P

Class: Antipsychotic.

Action: Blocks dopamine D2 receptors in the brain.

Contraindications: Hypersensitivity, Parkinson's disease.

Adverse Reactions: Extrapyramidal symptoms, respiratory depression, hypotension, QT prolongation, arrhythmia.

Protocol	Pg	Dose/Route
Behavioral Emergency	**21**	**5 mg IM/IV/IO**

Hydromorphone (Dilaudid) P

Class: Analgesic.

Action: Binds opioid receptors.

Contraindications: Hypersensitivity, hypotension, respiratory depression.

Adverse Reactions: N/V, itching, loss of appetite, hypotension, and respiratory depression.

Common Adult Dosing: Initial 1-2 mg, repeat at 0.5-1 mg.

Protocol	Pg	Dose/Route	May Repeat
Pain Management	**43**	**0.01 mg/kg IM/IV/IO; 1 mg max single dose**	**Once after 20 min**
Pediatric Pain Management	**102**	**0.01 mg/kg IM/IV/IO; 1 mg max single dose**	**Once after 20 min**
Electrical Therapy – cardioversion	**130**	**1 mg IV/IO**	**Once after 20 min**
Electrical Therapy – pacing	**131**	**1 mg IV/IO**	**Once after 20 min**
RSI	**133**	**0.01 mg/kg IM/IV/IO; 1 mg max single dose**	**q 20 min PRN**

Ipratropium Bromide 

Class: Bronchodilator.

Action: Blocks acetylcholine in bronchial smooth muscle, decreases seromucous gland secretions.

Contraindications: Hypersensitivity.

Adverse Reactions: dry mouth, headache, N/V.

Protocol	Pg	Dose/Route	May Repeat
Respiratory Distress	**51**	**2.5 mL SVN**	**x 3**
Pediatric Respiratory Distress	**104**	**2.5 mL SVN**	**x 3**

Ipratropium Bromide & Albuterol Sulfate (DuoNeb)

Class: Bronchodilators.

Action: Ipratropium: Blocks acetylcholine in bronchial smooth muscle, decreases seromucous gland secretions.
Albuterol: Beta-2 adrenergic receptor agonist, relaxes airway smooth muscle.

Contraindications: Hypersensitivity.

Adverse Reactions: Tachycardia, palpitations, anxiousness, headache, N/V.

Protocol	Pg	Dose/Route	May Repeat
Drowning	**33**	**3 mL SVN**	**x 3**
Respiratory Distress	**51**	**3 mL SVN**	**x 3**
Pediatric Drowning	**92**	**3 mL SVN**	**x 3**
Pediatric Respiratory Distress	**104**	**3 mL SVN**	**x 3**

Ketamine 

Class: Dissociative anesthetic hallucinogen.

Action: NMDA receptor antagonist.

Contraindications: Hypersensitivity, open eye injury.

Adverse Reactions: Respiratory depression, laryngospasm.

Common Adult Dosing: Pain management 15-30 mg, repeat 15-30 mg. Sedation 100-200 mg, repeat 50-100 mg.

*****NOT TO BE USED FOR CHEST PAIN/ SUSPECTED ACS or STEMI protocols*****

Protocol	Pg	Dose/Route	May Repeat
Behavioral Emergency	**21**	**2 mg/kg IV/IO or 4 mg/kg IM**	
Pain Management	**43**	**0.3 mg/kg IM/ IN/IV/IO, 35 mg max**	**once after 20 min**
Pulmonary Edema/CHF	**45**	**0.3 mg/kg IM/IN/IV/IO, 35 mg max**	**q 20 min x 3**
Respiratory Distress	**51**	**0.3 mg/kg IM/IN/IV/IO, 35 mg max**	**q 20 min x 3**
Ventilation Management	**69**	**2 mg/kg IV/IO or 4 mg/kg IM**	**0.5 mg/kg IV/IO q 15 min PRN for sedation**
Pediatric Behavioral Emergency	**82**	**2 mg/kg IV/IO or 4 mg/kg IM**	
Pediatric Ventilation Management	**116**	**Induction: 2 mg/kg IV/IO max 200 mg Post-intubation sedation: 1 mg/kg IV/IO (0.5 mg/kg IV/IO if ketamine used for induction)**	**0.5 mg/kg IV/IO q 15 min PRN for sedation**
Continuous Positive Airway Pressure (CPAP)	**127**	**0.3 mg/kg IM/IN/IV/IO, 35 mg max**	
RSI	**133**	**Induction: 2 mg/kg IV/IO. Post-intubation sedation: 1 mg/kg IV/IO (0.5 mg/kg IV/IO if ketamine used for induction)**	**0.5 mg/kg IV/IO q 15 min PRN for sedation**

Ketorolac (Toradol) 

Class: Nonsteroidal anti-inflammatory.

Action: Blocks production of prostaglandins, decreasing inflammation, fever and pain.

Contraindications: Hypersensitivity, pregnancy, bleeding (GI hemorrhage, intracranial hemorrhage, trauma, recent or expected surgery).

Adverse Reactions: None.

Protocol	Pg	Dose/Route
Pain Management	**43**	**15 mg IV or 30 mg IM**

Labetalol 

Class: Beta blocker.

Action: Blocks both the beta[1] and beta[2] receptors and alpha[1] receptors in vascular smooth muscle.

Contraindications: Hypersensitivity, cardiogenic shock, sinus bradycardia, hypotension.

Adverse Reactions: Blurred vision, cold sweats, dizziness, shortness of breath. May cause tremors in patients taking tricyclic antidepressants.

Protocol	Pg	Dose/Route	May Repeat
Pregnancy (Eclampsia/Preeclampsia)	**49**	**20 mg IV/IO over 2 min**	**q 10 min until BP is ~ 140/90**
Stroke	**63**	**10-20 mg IV/IO to SBP of 220**	**q 10 min until SBP <220**

Lactated Ringer's 

Class: Isotonic, crystalloid solution.

Action: Restores intravascular fluid, provides electrolytes and acts as an alkalizing agent (reduces acidity).

Contraindications: None

Adverse Reactions: Pulmonary edema, IV incompatibility with many medications (LR should have its own tubing line, be cautious when administering other medications through the line).

Protocol	Pg	Dose/Route	May Repeat
Adult	**13, 15, 17, 19, 25, 3, 37, 47, 55, 57, 59, 63, 65**	**Bolus IV/IO to SBP >90**	**2L total**
Pediatric	**74, 76, 78, 80, 84, 86, 90, 96, 108, 110**	**20 ml/kg bolus IV/IO**	**x2**

Levalbuterol (Xopenex) 

Class: Bronchodilator.

Action: Relaxation of the bronchial wall smooth muscle. Beta-2 agonist.

Contraindications: Hypersensitivity.

Adverse Reactions: tachycardia, palpitations, anxiousness, tremors, N/V.

Protocol	Pg	Dose/Route	May Repeat
Allergic Reaction	**17**	**1.25 mg in 3 ml SVN**	**PRN**
Hyperkalemia	**39**	**1.25 mg in 3 ml SVN**	**Continuous**
Respiratory Distress	**51**	**1.25 mg in 3 ml SVN**	**PRN**
Pediatric Allergic Reaction	**78**	**1.25 mg in 3 ml SVN**	**PRN**
Pediatric Respiratory Distress	**104**	**1.25 mg in 3 ml SVN**	**PRN**

Lidocaine 2% 

Class: Anesthetic, Class 1b antiarrhythmic.

Action: Blocks sodium channels on nerve cell membranes, decreases automaticity of pacemaker tissue.

Contraindications: Hypersensitivity.

Adverse Reactions: Seizures, respiratory depression, dizziness, restlessness, confusion, tinnitus, blurred vision, numbness, muscle twitching, hypotension, bradycardia, heart block, N/V.

Protocol	Pg	Dose/Route	May Repeat
Cardiac Arrest (non-traumatic)	**27**	**1 mg/kg IV/IO**	**0.5 mg/kg q 5 mins to 300 mg max total**
Pediatric Cardiac Arrest (non-traumatic)	**88**	**1 mg/kg IV/IO**	**Once after 15 min**
Vascular Access	**142**	**Adult: 40 mg over 2 min IO**	**Once at 20 mg over 1 min**
		Pediatric: 0.5 mg/kg over 2 min, 40 mg max IO	**Once at 0.25 mg/kg over 1 min, 20 mg max**

Lorazepam (Ativan) P

Class: Benzodiazepine.

Action: Interacts with GABA receptor causing sedation, reduction in seizure activity and anxiolysis.

Contraindications: Hypersensitivity.

Adverse Reactions: Sedation, respiratory depression, confusion.

Common Adult Dosing: Initial 1-2 mg, repeat 0.5-1 mg.

Protocol	Pg	Dose/Route	May Repeat
Behavioral Emergency	**21**	**0.05 mg/kg IV/IO, 2 mg max**	**Once after 10 min**
Seizure	**53**	**2 mg IV/IO**	**Once after 5 min**
Tachycardia- stable	**65**	**0.05 mg/kg IM/IV/IO, 2 mg max**	
Pediatric Behavioral Emergency	**82**	**0.05 mg/kg IV/IO, 2 mg max**	**Once after 10 min**
Pediatric Seizure	**106**	**0.1 mg/kg IV/IO, 4 mg max**	**Once after 5 min**
Pediatric Tachycardia- stable		**0.05 mg/kg IM/IV/IO, 2 mg max**	
Electrical Therapy	**130**	**0.05 mg/kg IM/IV/IO, 2 mg max**	
RSI	**133**	**0.1 mg/kg IV/IO, 4 mg max**	**q 10 min PRN**

Magnesium Sulfate 

Class: Electrolyte.

Action: Stabilizes cardiac cell membranes, relaxes smooth muscle, raises seizure threshold.

Contraindications: Hypersensitivity, heart block, renal failure (administer 50% of usual indication-specific dose if known renal failure).

Adverse Reactions: Hypotension, asystole, respiratory depression, weakness.

Protocol	Pg	Dose/Route
Pregnancy – Preeclampsia	**49**	**4 g in NS over 20 min IV/IO**
Pregnancy – Eclampsia	**49**	**4 g in NS over 5 min IV/IO**
Respiratory Distress	**51**	**2 g in 50mL NS over 20 min IV/IO**
Tachycardia – Stable	**65**	**2 g in 50mL over 10 min IV/IO**
Tachycardia – Unstable	**67**	**2 g in 50mL over 10 min IV/IO**
Pediatric Tachycardia – Stable	**112**	**25 mg/kg in 50 mL over 10 min IV/IO, 2 g max**
Pediatric Tachycardia – Unstable	**114**	**25 mg/kg in 50 mL over 10 min IV/IO. 2 g max**

Methylprednisolone (Solu-Medrol) 

Class: Corticosteroid.

Action: decreases inflammation by slowing down an overactive immune system or by replacing cortisol normally made in the body.

Contraindications: Hypersensitivity.

Adverse Reactions: Can increase blood glucose level.

Protocol	Pg	Dose/Route
Allergic reaction	**17**	**125 mg IV/IO**
Respiratory Distress	**51**	**125 mg IV/IO**

Metoclopramide (Reglan) P

Class: Antiemetic, Prokinetic.

Action: Dopamine antagonist that blocks the CNS vomiting chemoreceptor trigger zone (CRT) and increases gastric emptying.

Contraindications: Hypersensitivity, recent bowel surgery, bowel obstruction.

Adverse Reactions: Anxiety and restlessness with rapid IV administration, extra-pyramidal symptoms, sedation, increased GI motility.

Protocol	Pg	Dose/Route	Note
Abdominal Pain	**15**	**10 mg slow IV/IO/IM**	**IVP over 1-2 min or IO/IM**
Chest Pain (Non- traumatic) / ACS	**29**	**10 mg slow IV/IO/IM**	**IVP over 1-2 min or IO/IM**
Pain Management	**43**	**10 mg slow IV/IO/IM**	**IVP over 1-2 min or IO/IM**
STEMI	**61**	**10 mg slow IV/IO/IM**	**IVP over 1-2 min or IO/IM**
Pediatric Abdominal Pain	**76**	**5 mg slow IV/IO/IM**	**For 8 years of age and older only. IVP over 1-2 min or IO/IM**
Pediatric Pain Management	**102**	**5 mg slow IV/IO/IM**	**For 8 years of age and older only. IVP over 1-2 min or IO/IM**

Midazolam (Versed) P

Class: Benzodiazepine.
Action: Interacts with GABA receptor causing sedation, reduction in seizure activity and anxiolysis.
Contraindications: Hypersensitivity, hypotension, clinical signs of shock.
Adverse Reactions: Sedation, hypotension, respiratory depression.
Common Adult Dosing: Initial 2.5-5 mg, repeat at 2.5 mg.

Protocol	Pg	Dose/Route	May Repeat	Note
Behavioral Emergency	**21**	**0.1 mg/kg IN/IM /IV/IO, 5 mg max**	**Once after 5 min IV or 15 min IM**	
Pregnancy (Eclampsia/Preeclampsia)	**49**	**5 mg IN/IM/IV/IO**	**Once after 5 min**	**if refractory to MAGNESIUM SULFATE**
Seizure	**53**	**0.1 mg/kg IV/IO, 5 mg max OR** **0.2 mg/kg IM/IN, 10 mg max**	**Once after 5 min**	
Tachycardia – (Stable)	**65**	**2.5-5 mg IM/IN/IV/IO**		
Tachycardia – (unstable)	**67**	**2.5-5 mg IM/IN/IV/IO**		
Ventilation Management	**69**	**0.1 mg/kg IN/IV/IM/IO; 10 mg max**	**q 5 mins PRN for sedation**	
Pediatric Behavioral Emergency	**82**	**0.2 mg/kg IN/IM; 10 mg max** **0.1 mg/kg IV/IO, 5 mg max**	**Once after 15 min IM or 5 min IV**	**If no IV/IO MIDAZOLAM preferred**
Pediatric Seizure	**106**	**0.2 mg/kg IN/IM; 10 mg max** **0.1 mg/kg IV/IO, 5 mg max**	**Once after 5 min**	**If no IV/IO MIDAZOLAM preferred**
Pediatric Tachycardia – Stable	**112**	**0.2 mg/kg IN/IM; 10 mg max** **0.1 mg/kg IV/IO, 5 mg max**		
Pediatric Tachycardia – Unstable	**114**	**0.2 mg/kg IN/IM; 10 mg max** **0.1 mg/kg IV/IO, 5 mg max**		
Pediatric Ventilation Management	**116**	**INDUCTION: 0.1 mg/kg IN/IV/ IM/IO; 5 mg max** **POST-INTUBATION: 0.1 mg/kg IN/IM/IV/IO, 10 mg max**	**q 5 mins PRN for sedation**	
Electrical Therapy - Cardioversion	**130**	**Adult: 2.5-5 mg IM/IN/IV/IO** **Pediatric: 0.2 mg/kg IN/IM, 10 mg max.** **Pediatric: 0.1 mg/kg IV/IO, 5 mg max**		
Electrical Therapy - pacing	**131**	**2.5-5 mg IM/IN/IV/IO**		
RSI	**133**	**0.1 mg/kg IN/IV/IM/IO; 10 mg max**	**q 5 mins PRN for sedation**	

Morphine Sulfate 

Class: Analgesic.

Action: Binds opioid receptors.

Contraindications: Hypersensitivity, hypotension, respiratory depression.

Adverse Reactions: N/V, itching, loss of appetite, hypotension, and respiratory depression.

Common Adult Dosing: Initial 2-5 mg, repeat at 2 mg.

Protocol	Pg	Dose/Route	May Repeat
Pain Management	**43**	**0.1 mg/kg IM/IV/ IO; 10 mg max**	**Once after 20 min**
Pediatric Pain Management	**102**	**0.1 mg/kg IM/IV/IO; 10 mg max**	**Once after 20 min**
Electrical Therapy - cardioversion	**130**	**0.1 mg/kg slow IV/IO; 10 mg max**	**Once after 20 min**
Electrical Therapy - pacing	**131**	**0.1 mg/kg slow IV/IO; 10 mg max**	**Once after 20 min**

Naloxone (Narcan) E A P

Class: Opioid antagonist.

Action: Reverses the effects of opioids.

Contraindications: Hypersensitivity, neonate during initial resuscitation.

Adverse Reactions: Rapid administration causes projectile vomiting, agitation.

Protocol	Pg	Dose/Route	May Repeat
Overdose	**41**	**0.4 mg – 2 mg IN/IM/IV/IO titrated to an increase in respiratory effort**	**To max total dose of 10 mg**
Pediatric Overdose	**100**	**0.1 mg/kg IN/IV/IM/IO titrated to increase in respiratory effort, 2 mg max per dose**	**To max total dose of 10 mg**

Nitroglycerin 

Class: Vasodilator.

Action: Dilates systemic arteries and veins, reduces both preload and afterload.

Contraindications: Hypotension (do not administer if systolic pressure below 90 mmHg unless ordered by a physician), use of erectile dysfunction medications within the last 48 hours, hypersensitivity.

Adverse Reactions: Hypotension.

Protocol	Pg	Dose/Route	May Repeat
Chest Pain (non traumatic) /ACS	**29**	**0.4 mg SL**	**q 5 min for persistent pain if SBP>90**
CHF/Pulmonary Edema	**45**	**0.4 mg SL**	**q 5 min as long as HR >60 AND SYSTOLIC BP >90 mmHg**
		1.6 mg SL	**q 5 min for SYSTOLIC BP >200 mmHg**
STEMI	**61**	**0.4 mg SL**	**q 5 min for persistent pain if SBP>90**

Normal Saline 0.9% 

Class: Isotonic, crystalloid solution.
Action: Restores intravascular volume.
Contraindications: None.
Adverse Reactions: Pulmonary edema.

Protocol	Pg	Dose/Route	May Repeat
Adult	**13, 15, 17, 19, 25, 3, 37, 47, 55, 57, 59, 63, 65**	**Bolus IV/IO to SBP >90**	**To 2L total**
Pediatric	**74, 76, 78, 80, 84, 86, 90, 96, 108, 110**	**20 ml/kg bolus IV/IO**	**x2**

Norepinephrine (Levophed) P

Class: Sympathomimetic (alpha & beta).

Action: Vasoconstriction (alpha effect), increased cardiac contractility and heart rate (beta effects).

Contraindications: Hypersensitivity, hypovolemia.

Adverse Reactions: Hypertension, tissue necrosis with IV extravasation.

Protocol	Pg	Dose/Route	Note
Pulmonary Edema / CHF	**45**	**5 mcg/min IV/IO, 30 mcg/min max**	**To maintain SBP >90**
Sepsis	**55**	**5 mcg/min IV/IO, 30 mcg/min max to maintain SBP >90**	**If SBP <90 after 2L IV fluids**
Shock	**57**	**5 mcg/min IV/IO, 30 mcg/min max to maintain SBP >90**	**If SBP <90 after 2L IV fluids**
Pediatric Shock	**108**	**0.1 mcg/kg/min titrate to effect max 2 mcg/kg/min**	**If hypotensive after 60 ml/kg IV fluid**

Ondansetron (Zofran) E A P

Class: Antiemetic.

Action: Selective serotonin blocking agent.

Contraindications: Hypersensitivity.

Adverse Reactions: Headache, chest pain, dizziness, hypotension, QT prolongation.

Protocol	Pg	Dose/Route	May Repeat
Abdominal / Flank Pain, Nausea & Vomiting	**15**	**4 mg ODT/IM/IV/IO**	**Once**
Chest Pain (Non traumatic) / ACS	**29**	**4 mg ODT/IM/IV/IO**	**Once**
Pain Management	**43**	**4 mg ODT/IM/IV/IO**	**Once**
STEMI	**61**	**4 mg ODT/IM/IV/IO**	**Once**
Pediatric Abdominal pain, N/V	**76**	**0.15 mg/kg ODT/IM/IV/IO, 4 mg max**	**Once**
Pediatric Pain Management	**102**	**0.15 mg/kg ODT/IM/IV/IO, 4 mg max**	**Once**

Oxymetazoline (Afrin) 

Class: Sympathomimetic.

Action: Direct local vasoconstriction.

Contraindications: Monoamine oxidase inhibitor (MAOI) use within 14 days, hypertension.

Adverse Reactions: Hypertension, tachycardia, headache.

Dose/Route
2 sprays each nostril for epistaxis
2 sprays each nostril for epistaxis

Oxytocin (Pitocin) 

Class: Hormone.

Action: Promotes contraction of the uterus.

Contraindications: Hypersensitivity, hyperactive uterus.

Adverse Reactions: Hypotension, tachycardia, CP, N/V, uterine rupture.

Protocol	Pg	Dose/Route
Pregnancy (Childbirth / Labor)	**47**	**10 Units IM or 10 units in NS IV/IO over 30 min**

Phenylephrine (Neo-synephrine) E A P

Class: Sympathomimetic.

Action: Direct local vasoconstriction.

Contraindications: Ventricular tachycardia, severe coronary artery disease, head injured patients with altered mental status.

Adverse Reactions: Nasal irritation.

Protocol	Pg	Dose/Route
Epistaxis	**35**	**2 sprays each nostril**
Pediatric Epistaxis	**94**	**2 sprays each nostril**

Prochlorperazine (Compazine) A P

Class: Antiemetic, Phenothiazine.

Action: Antiemetic and anti-psychotic.

Contraindications: Hypersensitivity.

Adverse Reactions: Possible dystonic reactions.

Dose/Route
10mg IV/IM/IO for nausea

Promethazine 

Class: Antiemetic, Phenothiazine.

Action: Antiemetic and sedative agent with some anticholinergic properties.

Contraindications: Hypersensitivity.

Adverse Reactions: Sedation, phlebitis, tissue necrosis with IV extravasation.

Protocol	Pg	Dose/Route
Abdominal/Flank Pain, N/V	**15**	**12.5-25 mg deep IM**
CP/ACS	**29**	**12.5-25 mg deep IM**
Pain Management	**43**	**12.5-25 mg deep IM**

Class: Non-depolarizing neuromuscular blocker.
Action: Competitively binds to cholinergic receptors to block neuromuscular transmission.
Contraindications: Hypersensitivity.
Adverse Reactions: None.

Protocol	Pg	Dose/Route
Pediatric ventilation management	**116**	**1 mg/kg IV/IO**
RSI	**133**	**1 mg/kg IV/IO**

Sodium Bicarbonate P

Class: Alkalinizing agent.

Action: Increases blood pH.

Contraindications: Alkalotic states, respiratory acidosis.

Adverse Reactions: None.

Protocol	Pg	Dose/Route	May Repeat	Note
Hyperkalemia	**39**	**1 mEq/kg slow IVP/IO**		
Overdose	**41**	**1 mEq/kg IV/IO**	**Once after 3-5 min**	
Pediatric Overdose	**100**	**1 mEq/kg of 8.4% solution IV/IO**	**Once after 5 min**	**use 4.2% solution for neonate**

Solu-Cortef (Hydrocortisone) 

Class: Corticosteroid.

Action: Anti-inflammatory replaces absent glucocorticoids, suppresses immune response.

Contraindications: Hypersensitivity, systemic fungal infections.

Adverse Reactions: Bradycardia, arrhythmia, hypertension, headache.

Dose/Route
Assist the patient with their own prescription for adrenal crisis

Succinylcholine Chloride 

Class: Depolarizing neuromuscular blocker.

Action: Inhibits transmission of nerve impulses by binding with cholinergic receptor sites, antagonizing action of acetylcholine.

Contraindications: Hypersensitivity, malignant hyperthermia, rhabdomyolysis, penetrating eye injuries.

Adverse Reactions: Ventricular dysrhythmia, cardiac arrest from hyperkalemia.

Protocol	Pg	Dose/Route
Pediatric Ventilation Management	**116**	**1.5 mg/kg IV/IO**
RSI	**133**	**1.5 mg/kg IV/IO**

Tetracaine Hydrochloride 

Class: Ophthalmic anesthetic.

Action: Blockade of intracellular sodium channels.

Contraindications: Hypersensitivity, open or penetrating globe injury.

Adverse Reactions: Blurred vision, burning, stinging.

Dose/Route
1-3 gtts each eye for eye injury (not for penetrating injury or open globe)

Tranexamic Acid (TXA) A P

Class: Antifibrinolytic.

Action: Hemostatic agent.

Contraindications: Hypersensitivity, thromboembolic disorders, onset bleeding >3 hours.

Adverse Reactions: Vision changes, headache, seizures.

Protocol	Pg	Dose/Route
General Adult Trauma	**13**	**2 g TXA in 100-250ml of NS over 20 min IV/IO**
Allergic Reaction	**17**	**1 g TXA in 100-250ml of NS over 10 min IV/IO**
Epistaxis	**35**	**1 g TXA in 100-250ml of NS over 10 min IV/IO**
Pregnancy (Childbirth / Labor)	**47**	**1 g TXA in 100-250ml of NS over 10 min IV/IO**