

## History

- Age
- Past medical / surgical history
- Medications
- Onset
- Palliation / Provocation
- Quality (crampy, constant, sharp, dull, etc.)
- Region / Radiation / Referred
- Severity (1-10)
- Time (duration / repetition)
- Fever
- Last meal eaten
- Last bowel movement / emesis
- Menstrual history (pregnancy)

## Signs and Symptoms

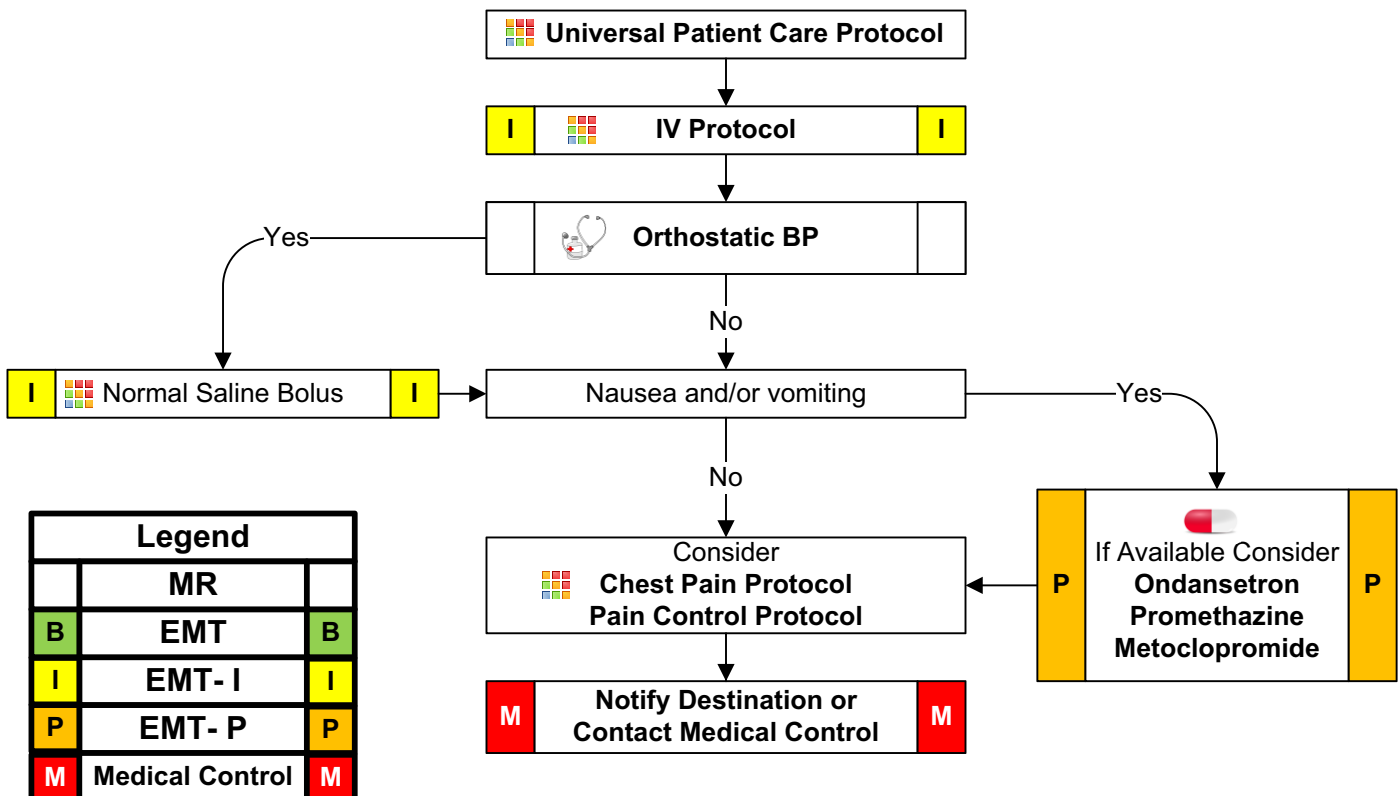
- Pain (location / migration)
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Dysuria
- Constipation
- Vaginal bleeding / discharge
- Pregnancy

### Associated symptoms:

(Helpful to localize source)  
Fever, headache, weakness, malaise, myalgias, cough, headache, mental status changes, rash

## Differential

- Pneumonia or Pulmonary embolus
- Liver (hepatitis, CHF)
- Peptic ulcer disease / Gastritis
- Gallbladder
- Myocardial infarction
- Pancreatitis
- Kidney stone
- Abdominal aneurysm
- Appendicitis
- Bladder / Prostate disorder
- Pelvic (PID, Ectopic pregnancy, Ovarian cyst)
- Spleen enlargement
- Diverticulitis
- Bowel obstruction
- Gastroenteritis (infectious)



## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lung, Abdomen, Back, Extremities, Neuro**
- Document the mental status and vital signs prior to administration of anti-emetics
- Abdominal pain in women of childbearing age should be treated as an ectopic pregnancy until proven otherwise.
- Antacids should be avoided in patients with renal disease
- The diagnosis of abdominal aneurysm should be considered with abdominal pain in patients over 50.
- Repeat vital signs after each bolus.
- The use of metoclopramide (Reglan) may worsen diarrhea and should be avoided in patients with this symptom.
- Choose the lower dose of promethazine (Phenergan) for patients likely to experience sedative effects (e.g., elderly, debilitated, etc.)
- Appendicitis may present with vague, peri-umbilical pain which migrates to the RLQ over time.

## History

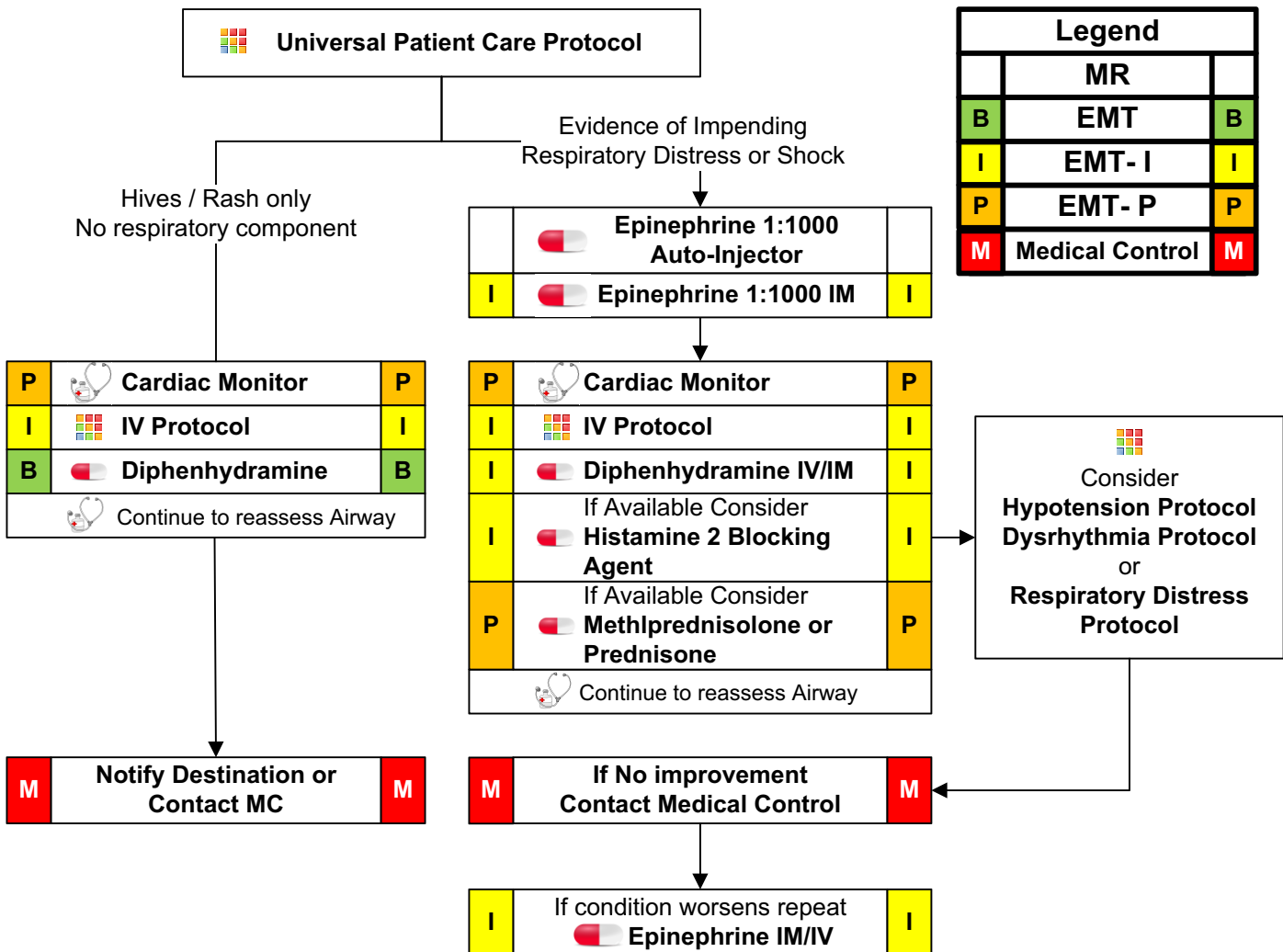
- Onset and location
- Insect sting or bite
- Food allergy / exposure
- Medication allergy / exposure
- New clothing, soap, detergent
- Past history of reactions
- Past medical history
- Medication history

## Signs and Symptoms

- Itching or hives
- Coughing / wheezing or respiratory distress
- Chest or throat constriction
- Difficulty swallowing
- Hypotension or shock
- Edema

## Differential

- Urticaria (rash only)
- Anaphylaxis (systemic effect)
- Shock (vascular effect)
- Angioedema (drug induced)
- Aspiration / Airway obstruction
- Vasovagal event
- Asthma or COPD
- CHF



Medical Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs**
- **Contact Medical Control** prior to administering epinephrine in patients who are >50 years of age, have a history of cardiac disease, or if the patient's heart rate is >150. Epinephrine may precipitate cardiac ischemia. These patients should receive a 12 lead ECG.
- **Any patient with respiratory symptoms or extensive reaction should receive IV or IM diphenhydramine.**
- The shorter the onset from symptoms to contact, the more severe the reaction.

## History

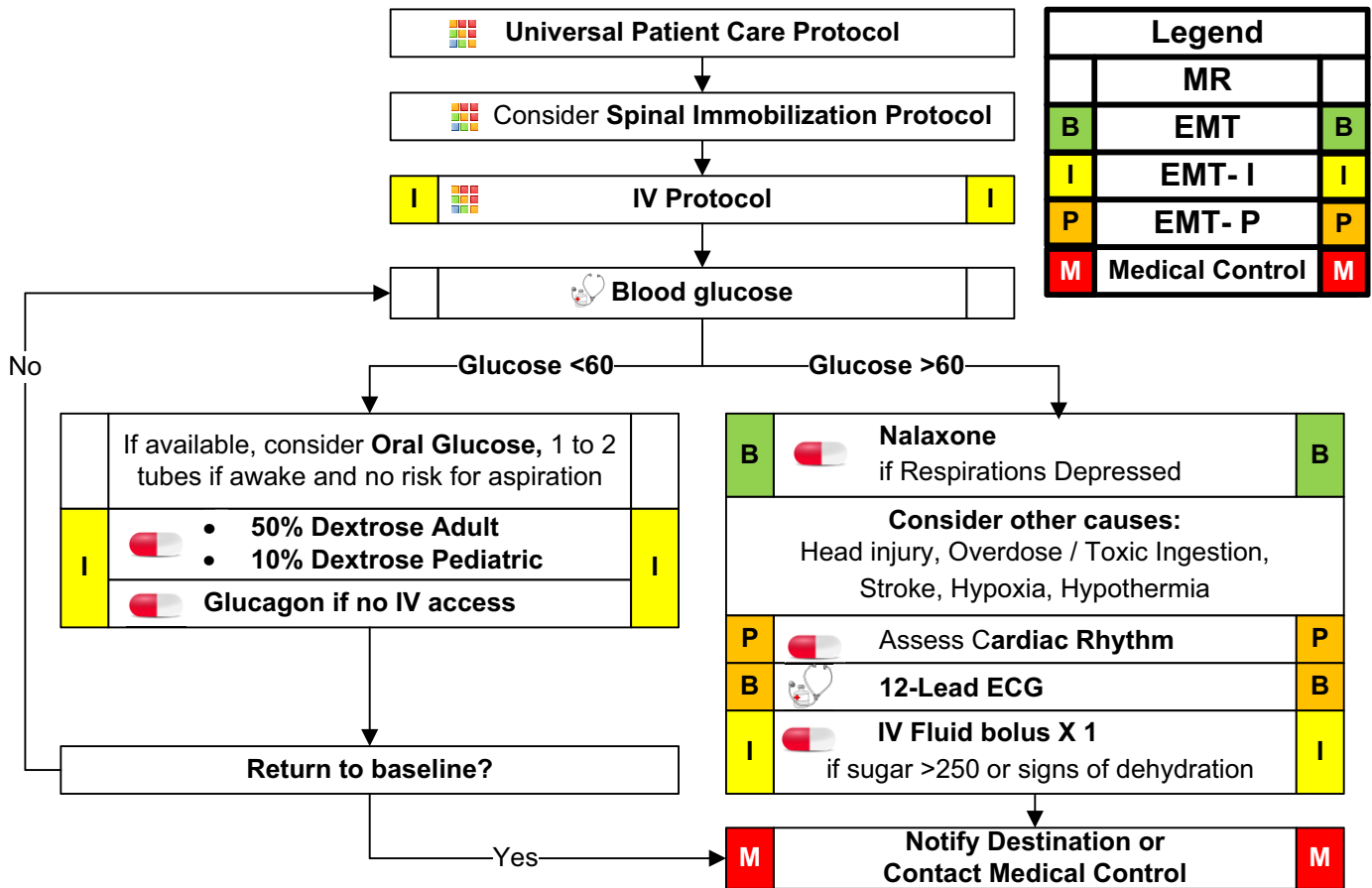
- Known diabetic, medic alert tag
- Drugs, drug paraphernalia
- Report of illicit drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition
- Changes in feeding or sleep habits

## Signs/Symptoms

- Decreased mental status or lethargy
- Change in baseline mental status
- Bizarre behavior
- Hypoglycemia (cool, diaphoretic skin)
- Hyperglycemia (warm, dry skin; fruity breath; Kussmal resps; signs of dehydration)
- Irritability

## Differential

- Head trauma
- CNS (stroke, tumor, seizure, infection)
- Cardiac (MI, CHF)
- Hypothermia
- Infection (CNS and other)
- Thyroid (hyper / hypo)
- Shock (septic, metabolic, traumatic)
- Diabetes (hyper / hypoglycemia)
- Toxicologic or Ingestion
- Acidosis / Alkalosis
- Environmental exposure
- Pulmonary (Hypoxia)
- Electrolyte abnormality
- Psychiatric disorder



## Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro. Pay careful attention to the head exam for signs of bruising or other injury.**
- Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
- It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood glucose after Dextrose or Glucagon
- Do not let alcohol confuse the clinical picture. Alcoholics frequently develop hypoglycemia and may have unrecognized injuries.
- Low glucose (< 60), normal glucose (60 - 120), high glucose (> 250).
- Consider Restraints if necessary for patient's and/or personnel's protection per the restraint procedure.

### History

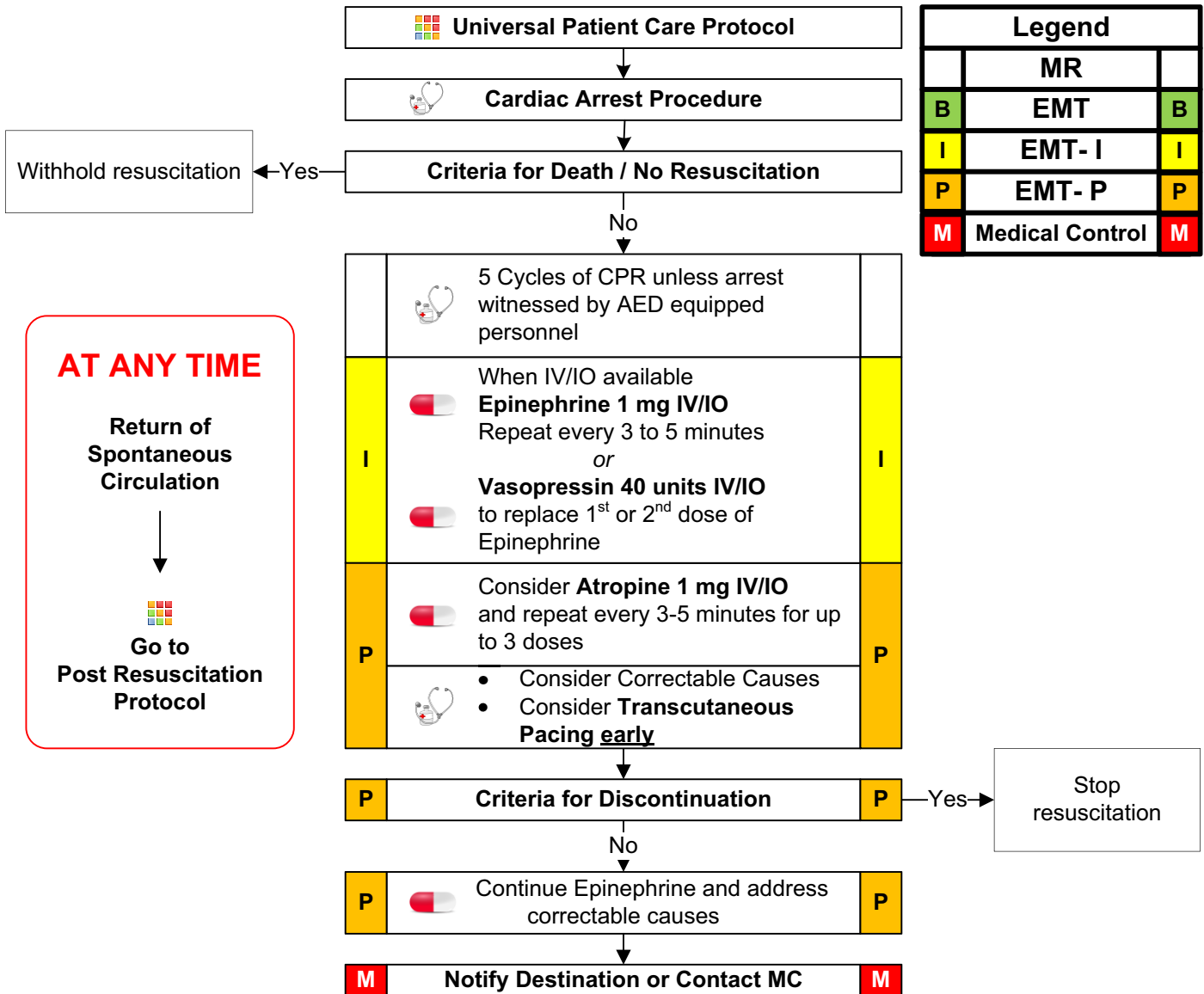
- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
- DNR or MOST form

### Signs and Symptoms

- Pulseless
- Apneic
- No electrical activity on ECG
- No auscultated heart tones

### Differential

- Medical or Trauma
- Hypoxia
- Potassium (hypo / hyper)
- Drug overdose
- Acidosis
- Hypothermia
- Device (lead) error
- Death



### Pearls

- **Recommended Exam: Mental Status**
- Always confirm asystole in more than one lead.
- Successful resuscitation of Asystole requires the identification and correction of a cause. Causes of Asystole include:
  - Acidosis
  - Hypovolemia
  - Hyperkalemia
  - Overdose (Narcotics, Tricyclic Antidepressants, Calcium Channel Blockers, Beta Blockers)
  - Tension Pneumothorax
  - Hypoglycemia

## History

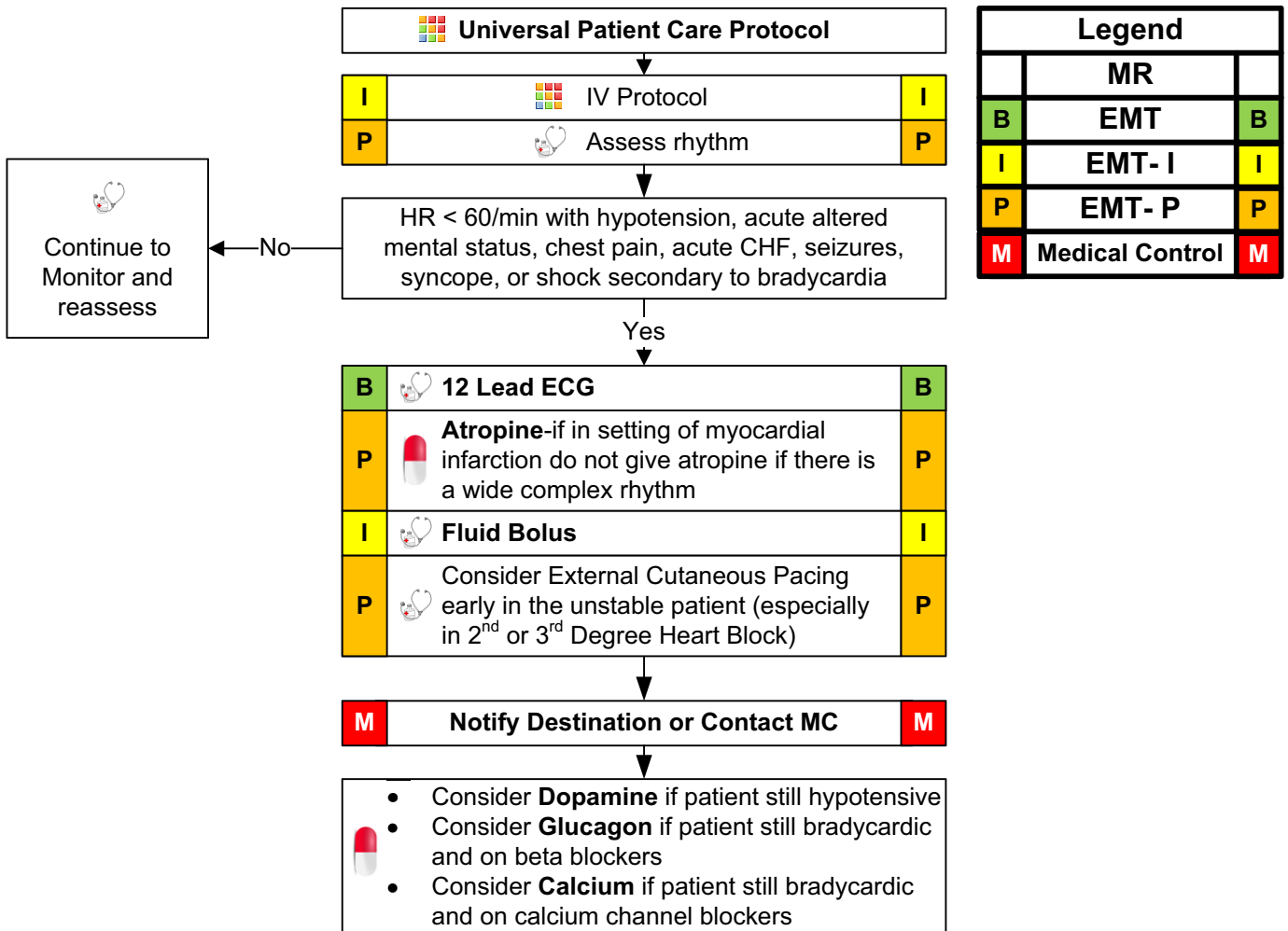
- Past medical history
- Medications
  - Beta-Blockers
  - Calcium channel blockers
  - Clonidine
  - Digoxin
- Pacemaker

## Signs and Symptoms

- HR < 60/min with hypotension, acute altered mental status, chest pain, acute CHF, seizures, syncope, or shock secondary to bradycardia
- Chest pain
- Respiratory distress
- Hypotension or Shock
- Altered mental status
- Syncope

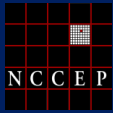
## Differential

- Acute myocardial infarction
- Hypoxia
- Pacemaker failure
- Hypothermia
- Sinus bradycardia
- Athletes
- Head injury (elevated ICP) or Stroke
- Spinal cord lesion
- Sick sinus syndrome
- AV blocks (1°, 2°, or 3°)
- Overdose



## Pearls

- **Recommended Exam: Mental Status, Neck, Heart, Lungs, Neuro**
- The use of Lidocaine, Beta Blockers, and Calcium Channel Blockers in heart block can worsen Bradycardia and lead to asystole and death.
- Pharmacological treatment of Bradycardia is based upon the presence or absence of symptoms. **If symptomatic treat, if asymptomatic, monitor only.**
- In wide complex slow rhythm consider hyperkalemia
- Remember: The use of Atropine for PVCs in the presence of a MI may worsen heart damage.
- Consider treatable causes for Bradycardia (Beta Blocker OD, Calcium Channel Blocker OD, etc.)
- Be sure to aggressively oxygenate the patient and support respiratory effort.



# Cardiac Arrest



### History:

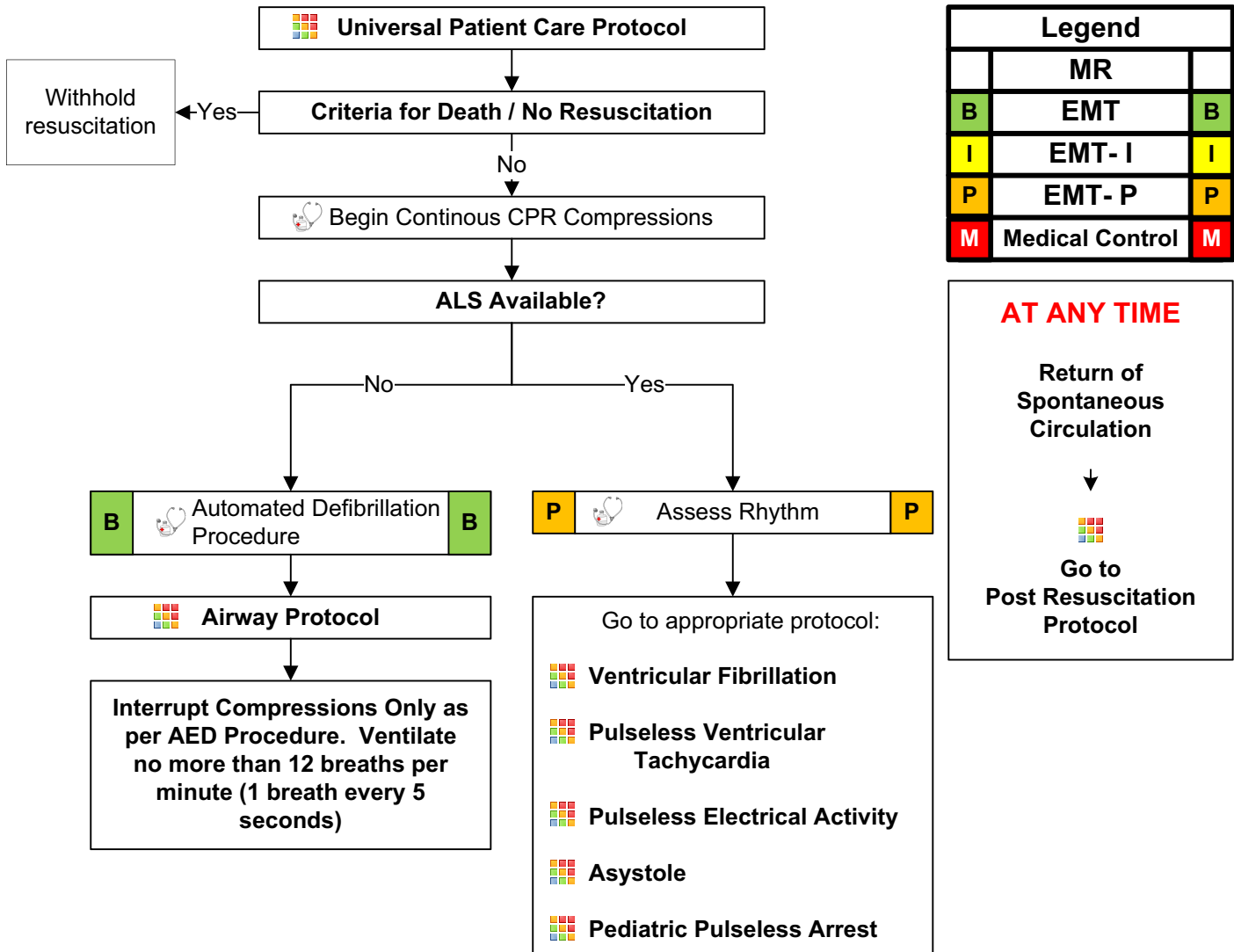
- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness
- Signs of lividity, rigor mortis
- DNR, MOST, or Living Will

### Signs and Symptoms:

- Unresponsive
- Apneic
- Pulseless

### Differential:

- Medical vs Trauma
- V. fib vs Pulseless V. tach
- Asystole
- Pulseless electrical activity (PEA)



Medical Protocols

### Pearls

- **Recommended Exam: Mental Status**
- Success is based on proper planning and execution. Procedures require space and patient access. Make room to work.
- Reassess airway frequently and with every patient move.
- **Maternal Arrest** - Treat mother per appropriate protocol with immediate notification to Medical Control and rapid transport.
- **Adequate compressions with timely defibrillation are the keys to success**



# Chest Pain: Cardiac and STEMI



## History

- Age
- Medications
- **Viagra, Levitra, Cialis**
- Past medical history (MI, Angina, Diabetes, post menopausal)
- Allergies (Aspirin, Morphine, Lidocaine)
- Recent physical exertion
- Palliation / Provocation
- Quality (crampy, constant, sharp, dull, etc.)
- Region / Radiation / Referred
- Severity (1-10)
- Time (onset /duration / repetition)

## Signs and Symptoms

- CP (pain, pressure, aching, vice-like tightness)
- Location (substernal, epigastric, arm, jaw, neck, shoulder)
- Radiation of pain
- Pale, diaphoresis
- Shortness of breath
- Nausea, vomiting, dizziness
- **Time of Onset**

## Differential

- Trauma vs. Medical
- Angina vs. Myocardial infarction
- Pericarditis
- Pulmonary embolism
- Asthma / COPD
- Pneumothorax
- Aortic dissection or aneurysm
- GE reflux or Hiatal hernia
- Esophageal spasm
- Chest wall injury or pain
- Pleural pain
- Overdose (Cocaine) or Methamphetamine

## Universal Patient Care Protocol

P	Rhythm Assessment	P
B	<b>12 Lead ECG</b>	B
I	IV Protocol	I
B	<b>Aspirin</b> (Unless allergy)	B
B	Nitroglycerin SL	B
I	Consider Nitroglycerin Paste	I
P	Continued Pain Morphine Fentanyl Dilaudid	P
P	Nausea and Vomiting Consider Ondansetron Promethazine Metoclopramide	P
Use Protocols as Needed Hypotension Protocol Dysrhythmia Protocols		

Legend		
MR		
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M

**Positive Acute MI (STEMI = 1 mm ST Segment Elevation in 2 Contiguous Leads)**

**Transport based on EMS System STEMI Plan with Early Notification**

**Keep Scene Time to < 15 Minutes**

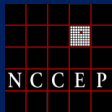
B	If Transporting to a Non-PCI Center <b>Reperfusion Checklist</b>	B
I	Consider NS Bolus for Inferior MI	I
I	Consider 2 <sup>nd</sup> IV en route	I

**M Notify Destination or Contact MC M**

## Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Items in Red Text are the key performance indicators for the EMS Acute Cardiac (STEMI) Care Toolkit**
- Avoid Nitroglycerin in any patient who has used Viagra or Levitra in the past 24 hours or Cialis in the past 36 hours due to potential severe hypotension.
- Patients with STEMI (ST-Elevation Myocardial Infarction) or positive Reperfusion Checklist should be transported to the appropriate destination based on the EMS System STEMI Plan
- If patient has taken nitroglycerin without relief, consider potency of the medication.
- Monitor for hypotension after administration of nitroglycerin and narcotics (Morphine, Fentanyl, or Dilaudid).
- Nitroglycerin and Narcotics (Morphine, Fentanyl, or Dilaudid) may be repeated per dosing guidelines in Drug List.
- Diabetics and geriatric patients often have atypical pain, or only generalized complaints.
- Document the time of the 12-Lead ECG in the PCR as a Procedure along with the interpretation (EMT-P)

Medical Protocols



# Dental Problems



## History

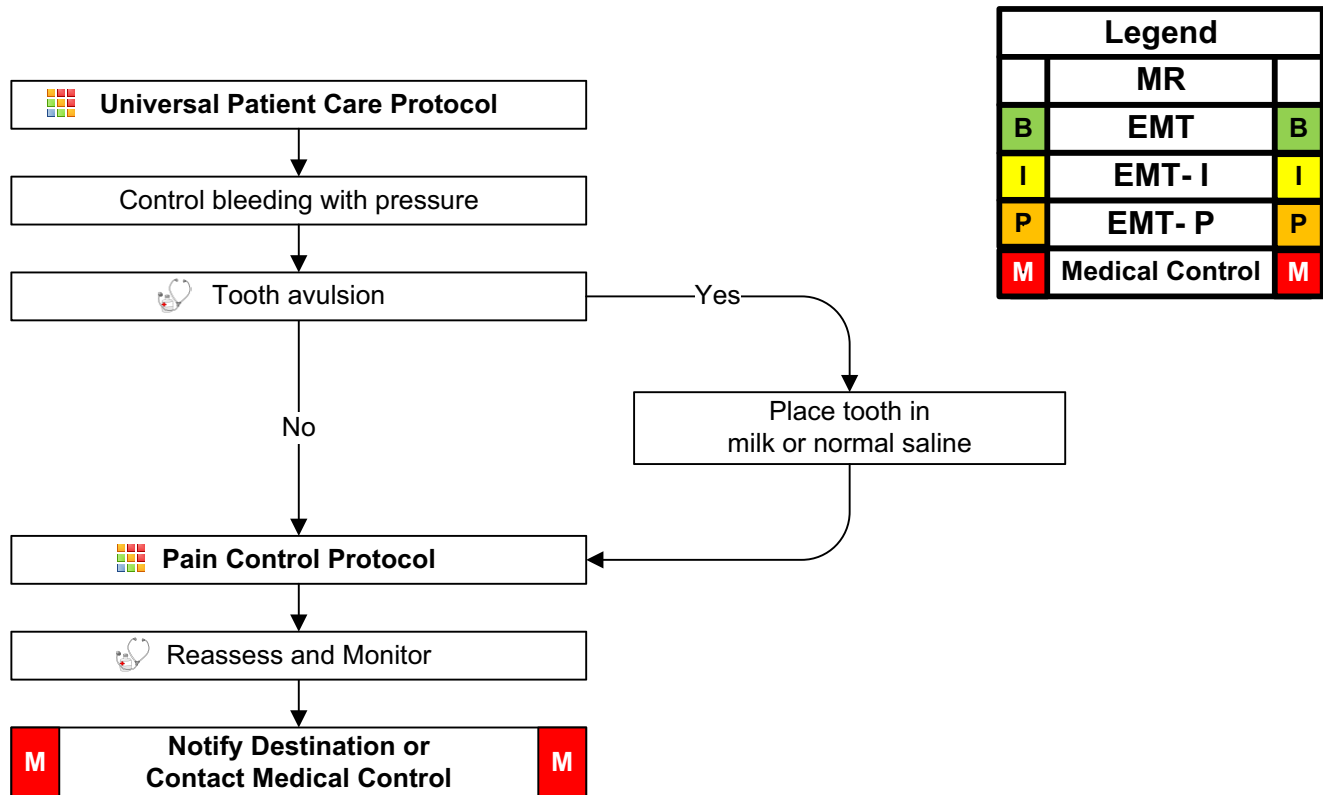
- Age
- Past medical history
- Medications
- Onset of pain / injury
- Trauma with "knocked out" tooth
- Location of tooth
- Whole vs. partial tooth injury

## Signs and Symptoms

- Bleeding
- Pain
- Fever
- Swelling
- Tooth missing or fractured

## Differential

- Decay
- Infection
- Fracture
- Avulsion
- Abscess
- Facial cellulitis
- Impacted tooth (wisdom)
- TMJ syndrome
- Myocardial infarction



Medical Protocols

## Pearls

- **Recommended Exam: Mental Status, HEENT, Neck, Chest, Lungs, Neuro**
- Significant soft tissue swelling to the face or oral cavity can represent a cellulitis or abscess.
- Scene and transport times should be minimized in complete tooth avulsions. Reimplantation is possible within 4 hours if the tooth is properly cared for.
- All tooth disorders typically need antibiotic coverage in addition to pain control
- Occasionally cardiac chest pain can radiate to the jaw.
- All pain associated with teeth should be associated with a tooth which is tender to tapping or touch (or sensitivity to cold or hot).



## History

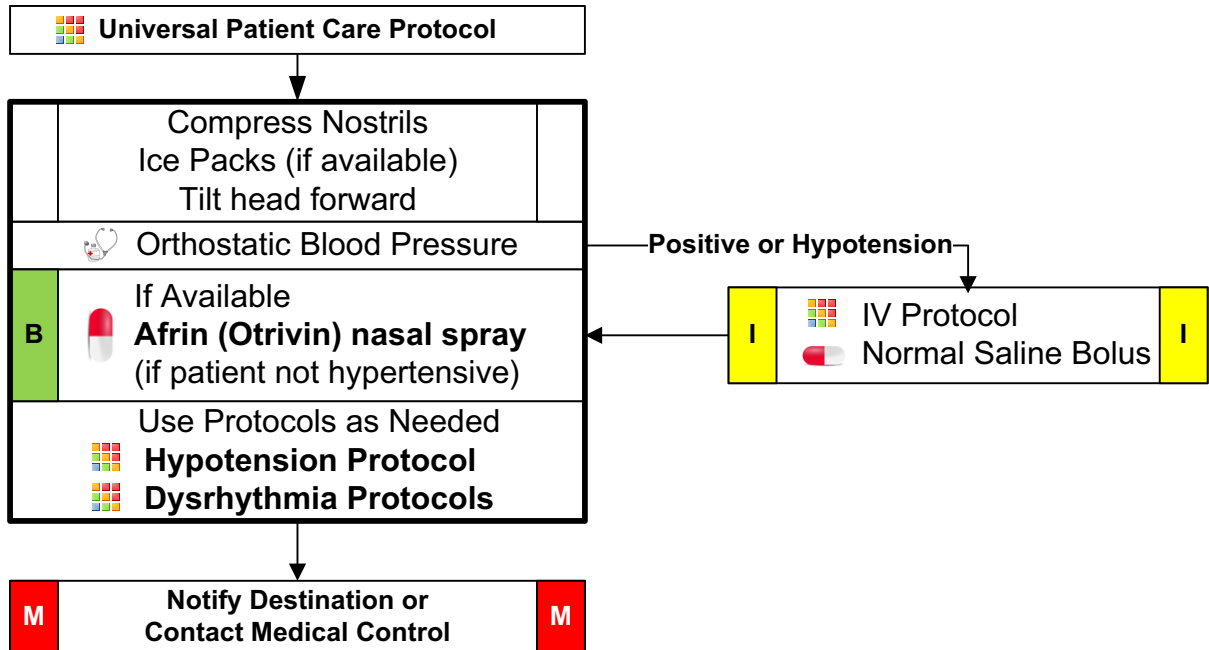
- Age
- Past medical history
- Medications (HTN, anticoagulants, Aspirin, NSAIDS)
- Previous episodes of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding

## Signs and Symptoms

- Bleeding from nasal passage
- Pain
- Nausea
- Vomiting

## Differential

- Trauma
- Infection (viral URI or Sinusitis)
- Allergic rhinitis
- Lesions (polyps, ulcers)
- Hypertension



Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M

## Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Neuro**
- **Avoid Afrin in patients who have a blood pressure of greater than 110 diastolic or known coronary artery disease.**
- It is very difficult to quantify the amount of blood loss with epistaxis.
- Bleeding may also be occurring posteriorly. Evaluate for posterior blood loss by examining the posterior pharynx.
- Anticoagulants include aspirin, coumadin, non-steroidal anti-inflammatory medications (ibuprofen), and many over the counter headache relief powders.

## History

- Documented hypertension
- Related diseases: diabetes, CVA renal failure, cardiac
- Medications (compliance ?)
- Erectile dysfunction medication
- Pregnancy

## Signs and Symptoms

### One of these

- Systolic BP 200 or greater
- Diastolic BP 110 or greater

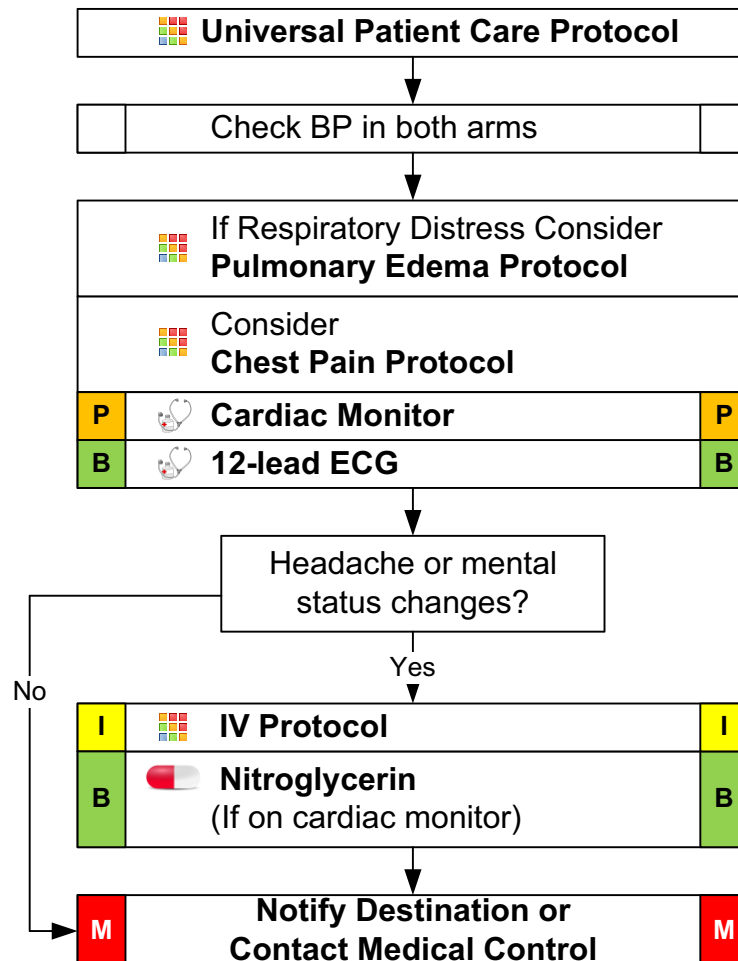
### AND at least one of these

- Headache
- Nosebleed
- Blurred vision
- Dizziness

## Differential

- Hypertensive encephalopathy
- Primary CNS Injury (Cushing's response = bradycardia with hypertension)
- Myocardial infarction
- Aortic dissection (aneurysm)
- Pre-ecampsia / Eclampsia

Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M



## Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Avoid Nitroglycerin in any patient who has used Viagra or Levitra in the past 24 hours or Cialis in the past 36 hours due to potential severe hypotension.**
- Never treat elevated blood pressure based on one set of vital signs.
- Nitroglycerin may be given to lower blood pressure in patients who have an elevated diastolic BP of  $\geq 110$  and are symptomatic with chest pain, respiratory distress, syncope, headache or mental status changes.
- Symptomatic hypertension is typically revealed through end organ damage to the cardiac, CNS or renal systems.
- All symptomatic patients with hypertension should be transported with their head elevated.



# Hypotension



## History

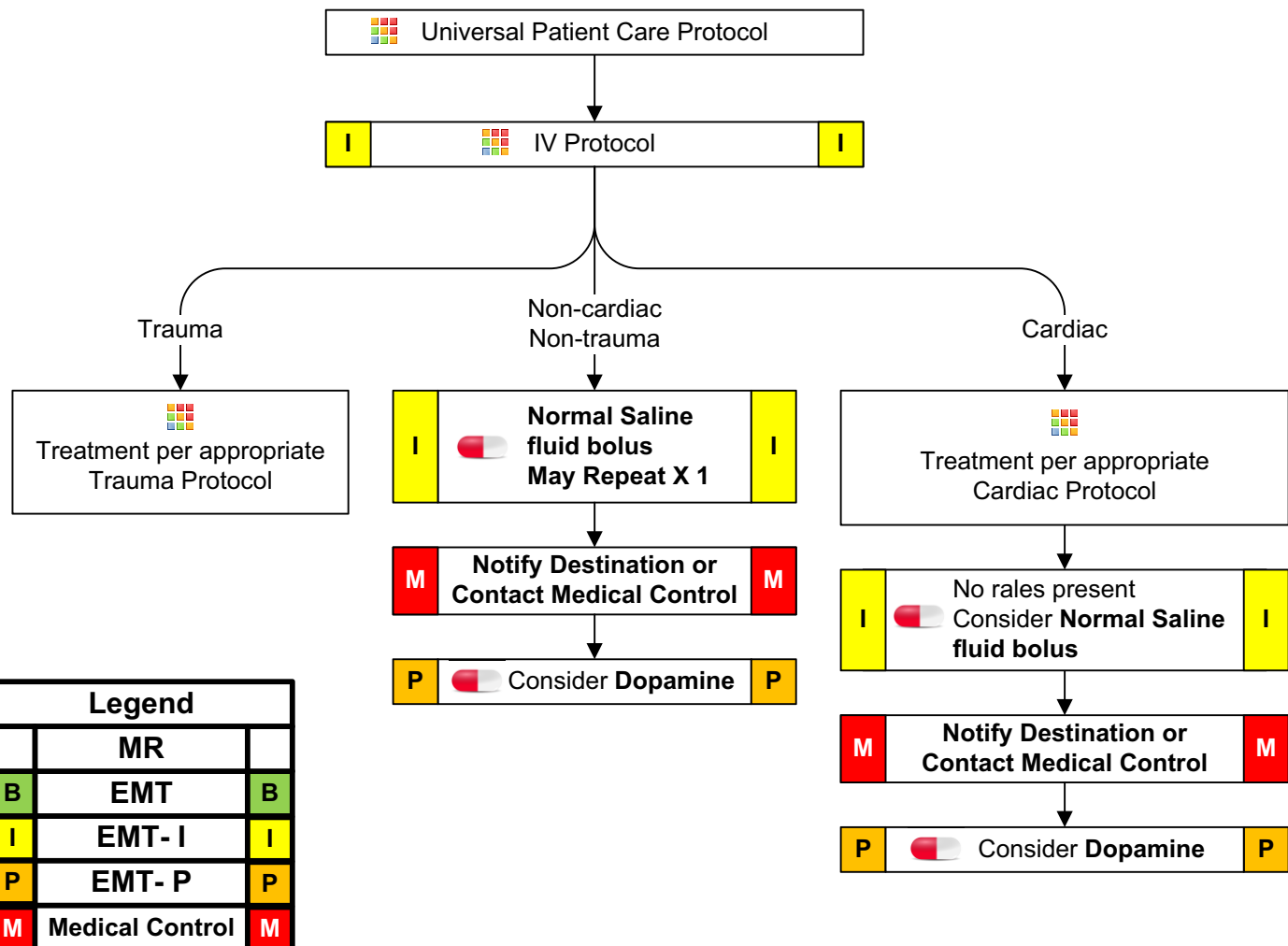
- Blood loss - vaginal or gastrointestinal bleeding, AAA, ectopic
- Fluid loss - vomiting, diarrhea, fever
- Infection
- Cardiac ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- History of poor oral intake

## Signs and Symptoms

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

## Differential

- **Shock**
  - Hypovolemic
  - Cardiogenic
  - Septic
  - Neurogenic
  - Anaphylactic
- Ectopic pregnancy
- Dysrhythmias
- Pulmonary embolus
- Tension pneumothorax
- Medication effect / overdose
- Vasovagal
- Physiologic (pregnancy)



Medical Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Hypotension can be defined as a systolic blood pressure of less than 90.
- Consider performing orthostatic vital signs on patients in nontrauma situations if suspected blood or fluid loss.
- Consider all possible causes of shock and treat per appropriate protocol.
- For non-cardiac, non-trauma hypotension, Dopamine should only be started after 2 liters of NS have been given.



# Overdose Toxic Ingestion



## History

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

## Signs and Symptoms

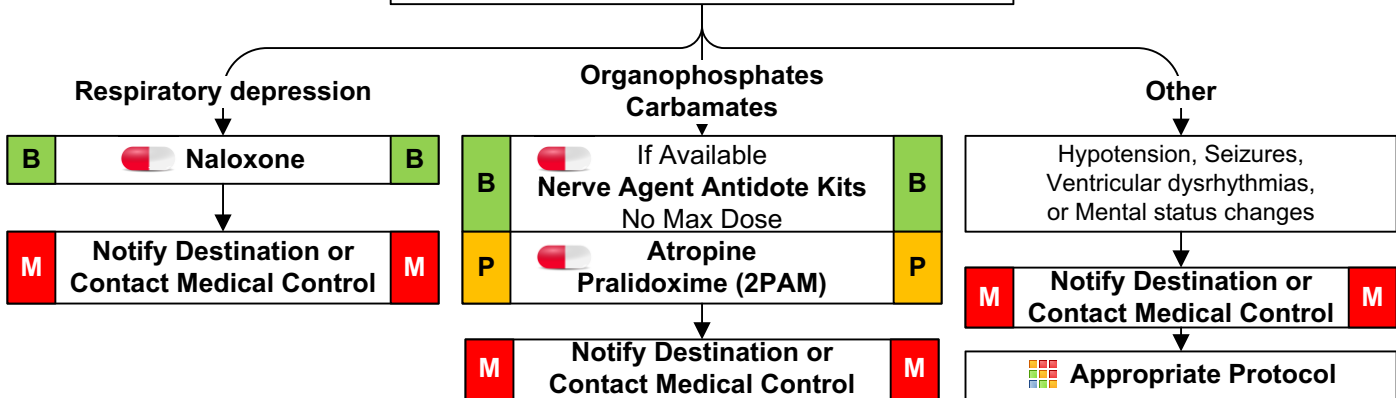
- Mental status changes
- Hypotension / hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures

## Differential

- **Tricyclic antidepressants (TCAs)**
- **Acetaminophen (tylenol)**
- **Aspirin**
- **Depressants**
- **Stimulants**
- **Anticholinergic**
- **Cardiac medications**
- **Solvents, Alcohols, Cleaning agents**
- **Insecticides (organophosphates)**

Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M

Universal Patient Care Protocol		
P	Cardiac Monitor	P
B	12 Lead ECG	B
I	IV Protocol	I
B	Consider <b>Charcoal</b> if patient alert	B
	Tricyclic Ingestion?	
P	<b>Sodium Bicarbonate</b> if Tachycardia or QRS Widening	P
	Consider <b>Chest Pain Protocol</b>	



Medical Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro**
- Do not rely on patient history of ingestion, especially in suicide attempts. Make sure patient is still not carrying other medications or has any weapons.
- Bring bottles, contents, emesis to ED.
- **Tricyclic:** 4 major areas of toxicity: seizures, dysrhythmias, hypotension, decreased mental status or coma; rapid progression from alert mental status to death.
- **Acetaminophen:** initially normal or nausea/vomiting. If not detected and treated, causes irreversible liver failure
- **Aspirin:** Early signs consist of abdominal pain and vomiting. Tachypnea and altered mental status may occur later. Renal dysfunction, liver failure, and or cerebral edema among other things can take place later.
- **Depressants:** decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils
- **Stimulants:** increased HR, increased BP, increased temperature, dilated pupils, seizures
- **Anticholinergic:** increased HR, increased temperature, dilated pupils, mental status changes
- **Cardiac Medications:** dysrhythmias and mental status changes
- **Solvents:** nausea, coughing, vomiting, and mental status changes
- **Insecticides:** increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils
- Consider restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- **Nerve Agent Antidote kits** contain 2 mg of Atropine and 600 mg of pralidoxime in an autoinjector for self administration or patient care. These kits may be available as part of the domestic preparedness for Weapons of Mass Destruction.
- Consider contacting the North Carolina Poison Control Center for guidance.

### History

- Respiratory arrest
- Cardiac arrest


### Signs/Symptoms

- Return of pulse








### Differential

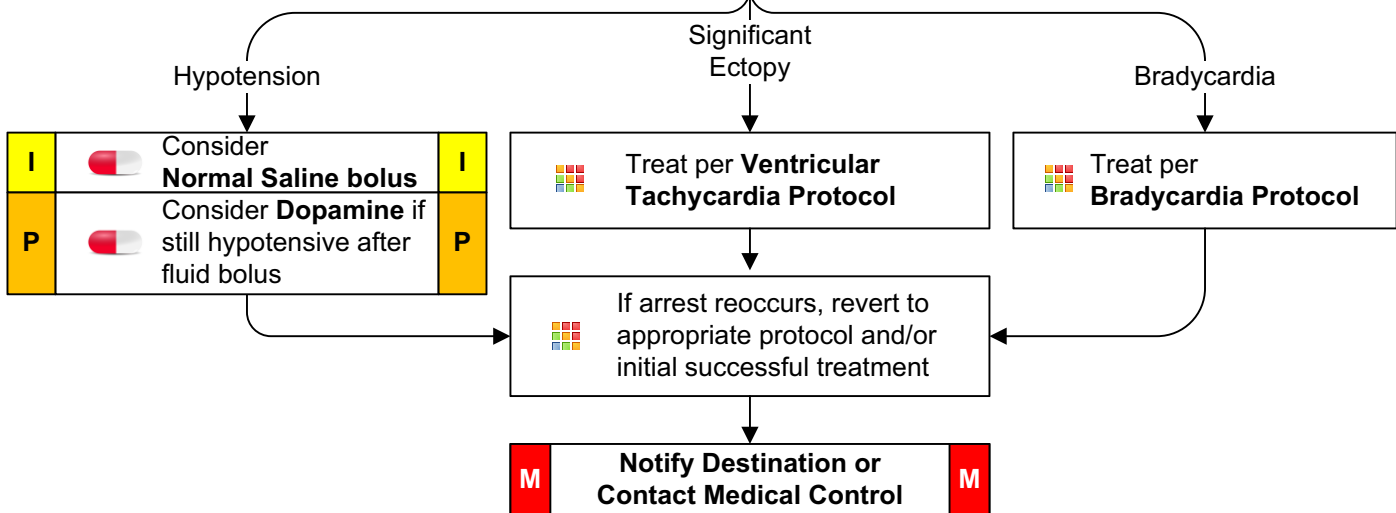
- Continue to address specific differentials associated with the original dysrhythmia

Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M

 **Repeat Primary Assessment**

Consider Induced Hypothermia  
If EMS System has a local protocol

B		<b>Continue ventilatory support</b>	B
		<ul style="list-style-type: none"> <li>100% oxygen</li> <li>ETCO2 ideally &gt;20</li> <li>Resp Rate &lt;12</li> </ul> <b>DO NOT HYPERVENTILATE</b>	
I		<b>IV Protocol</b>	I
P		<b>Cardiac Monitor</b>	P
		<b>Vital Signs</b>	
B		<b>Pulse Oximetry</b>	B
		<b>12 Lead ECG</b>	
P		Continue anti-arrhythmic if return of spontaneous circulation was associated with its use	P



### Pearls

- Recommended Exam: Mental Status, Neck, Skin, Lungs, Heart, Abdomen, Extremities, Neuro**
- Hyperventilation is a significant cause of hypotension and recurrence of cardiac arrest in the post resuscitation phase and must be avoided at all costs.
- Most patients immediately post resuscitation will require ventilatory assistance.
- The condition of post-resuscitation patients fluctuates rapidly and continuously, and they require close monitoring. Appropriate post-resuscitation management may best be planned in consultation with medical control.
- Common causes of post-resuscitation hypotension include hyperventilation, hypovolemia, pneumothorax, and medication reaction to ALS drugs.
- Titrate Dopamine to maintain MAP >90. Ensure adequate fluid resuscitation is ongoing.



# Pulmonary Edema



## History

- Congestive heart failure
- Past medical history
- Medications (digoxin, lasix)
- **Viagra, Levitra, Cialis**
- Cardiac history --past myocardial infarction

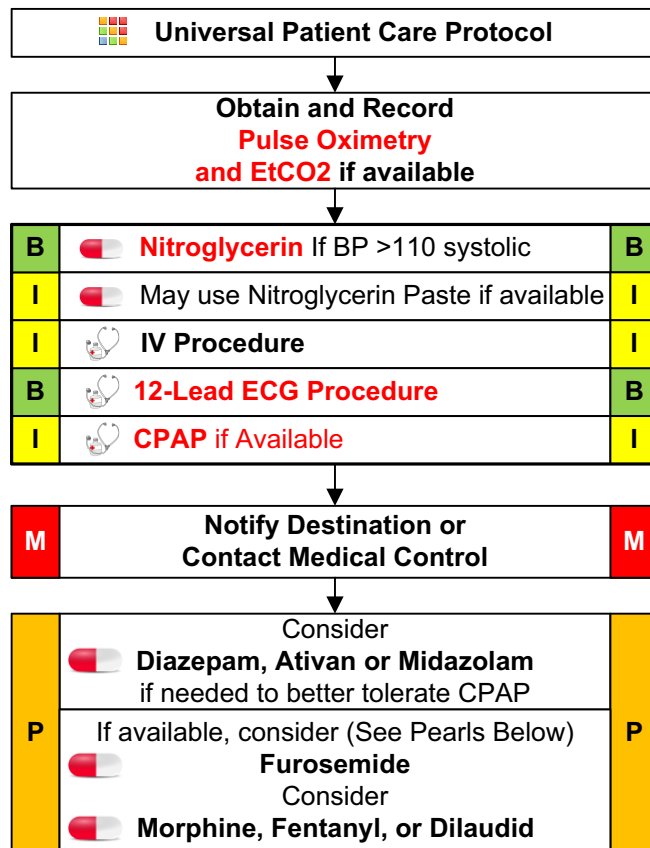
## Signs/Symptoms

- Respiratory distress, bilateral rales
- Apprehension, orthopnea
- Jugular vein distention
- Pink, frothy sputum
- Peripheral edema, diaphoresis
- Hypotension, shock
- Chest pain

## Differential

- **Myocardial infarction**
- **Congestive heart failure**
- **Asthma**
- **Anaphylaxis**
- **Aspiration**
- **COPD**
- **Pleural effusion**
- **Pneumonia**
- **Pulmonary embolus**
- **Pericardial tamponade**
- **Toxic Exposure**

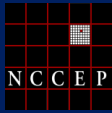
Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M



Medical Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- **Avoid Nitroglycerin** in any patient who has used **Viagra** or **Levitra** in the past 24 hours or **Cialis** in the past 36 hours due to potential severe hypotension.
- **Furosemide** and **Narcotics** have **NOT** been shown to improve the outcomes of EMS patients with pulmonary edema. **Even though this historically has been a mainstay of EMS treatment, it is no longer recommended.**
- If patient has taken nitroglycerin without relief, consider potency of the medication.
- Contraindications to narcotics include severe COPD and respiratory distress. Monitor the patient closely.
- Consider myocardial infarction in all these patients. Diabetics and geriatric patients often have atypical pain, or only generalized complaints.
- **Carefully monitor the level of consciousness, BP, and respiratory status with the above interventions.**
- If Nitropaste is used, do not continue to use Nitroglycerin SL
- Allow the patient to be in their position of comfort to maximize their breathing effort.
- Document CPAP application using the CPAP procedure in the PCR. Document 12 Lead ECG using the 12 Lead ECG procedure.



# Pulseless Electrical Activity (PEA)



## History

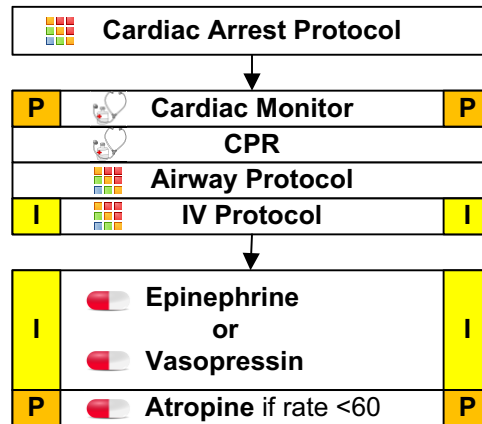
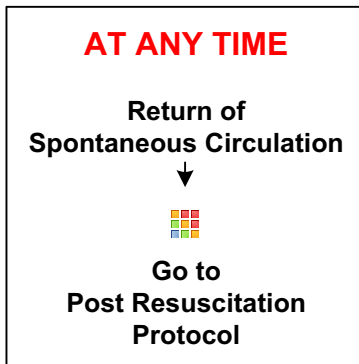
- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
  - Tricyclics
  - Digitalis
  - Beta blockers
  - Calcium channel blockers
- DNR, MOST, of Living Will

## Signs and Symptoms

- Pulseless
- Apneic
- Electrical activity on ECG
- No heart tones on auscultation

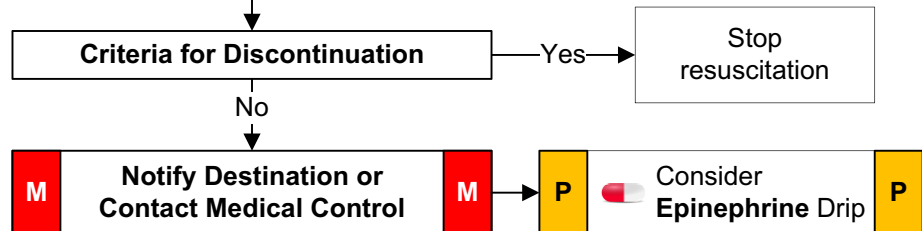
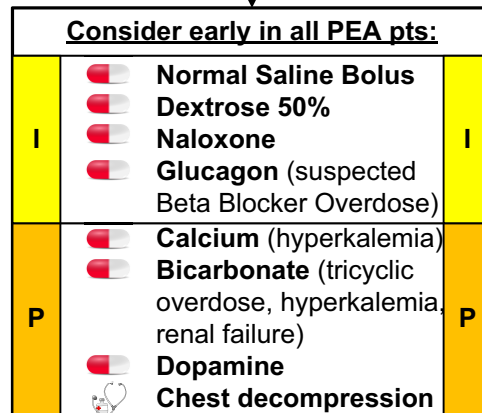
## Differential

- Hypovolemia (Trauma, AAA, other)
- Cardiac tamponade
- Hypothermia
- Drug overdose (Tricyclics, Digitalis, Beta blockers, Calcium channel blockers)
- Massive myocardial infarction
- Hypoxia
- Tension pneumothorax
- Pulmonary embolus
- Acidosis
- Hyperkalemia



**Legend**

	MR	
B	EMT	B
I	EMT-I	I
P	EMT-P	P
M	Medical Control	M



Medical Protocols

## Pearls

- **Recommended Exam: Mental Status**
- Consider each possible cause listed in the differential: Survival is based on identifying and correcting the cause!
- Discussion with Medical Control can be a valuable tool in developing a differential diagnosis and identifying possible treatment options.

## History

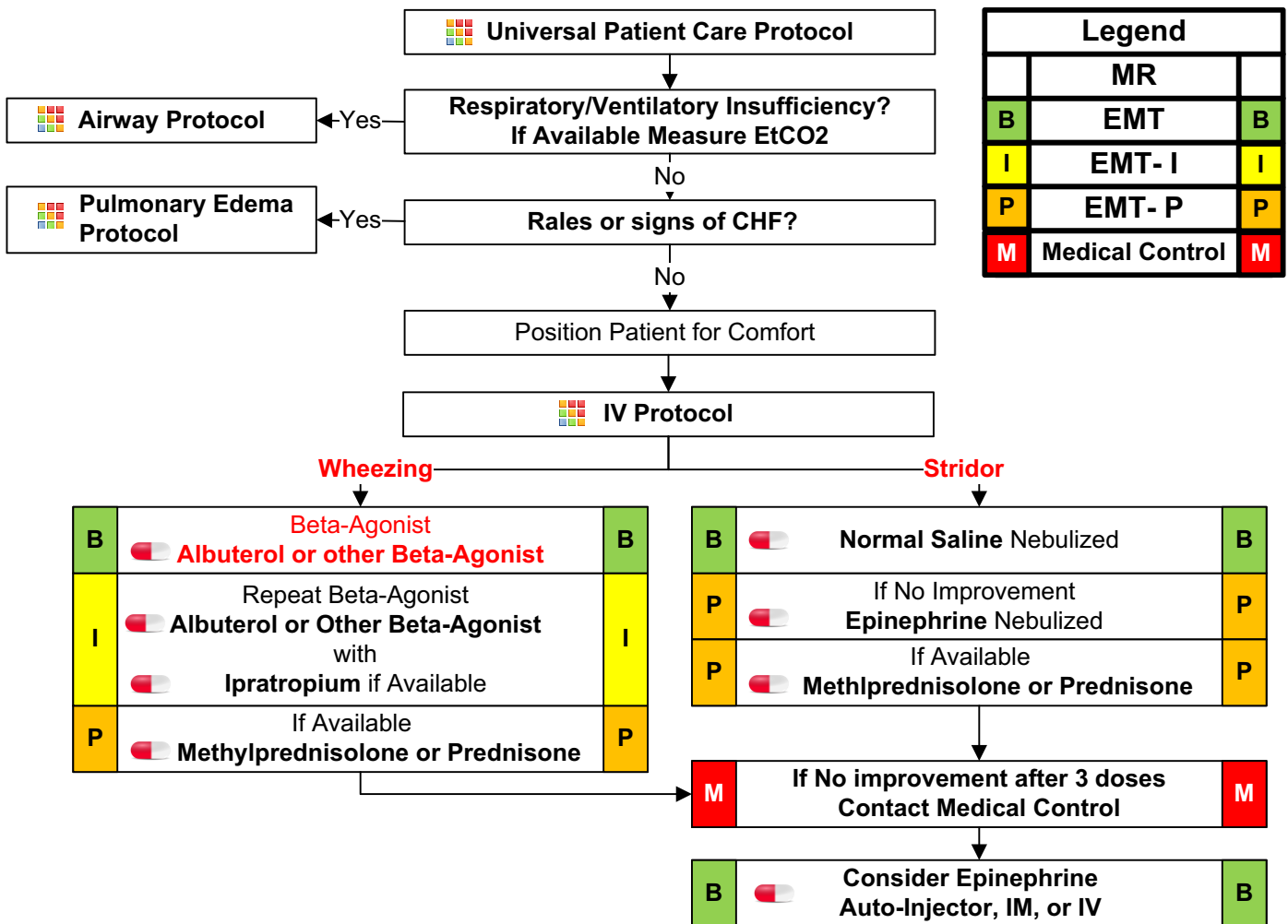
- Asthma; COPD -- chronic bronchitis, emphysema, congestive heart failure
- Home treatment (oxygen, nebulizer)
- Medications (theophylline, steroids, inhalers)
- Toxic exposure, smoke inhalation

## 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 (Emphysema, Bronchitis)
- Pleural effusion
- Pneumonia
- Pulmonary embolus
- Pneumothorax
- Cardiac (MI or CHF)
- Pericardial tamponade
- Hyperventilation
- Inhaled toxin (Carbon monoxide, etc.)



## Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- EMT administration of Beta-Agonists (e.g., Albuterol) is restricted to patients who are under doctor's orders with a prescription for the drug.
- **Pulse oximetry** should be monitored continuously if initial saturation is < or = 96%, or there is a decline in patients status despite normal pulse oximetry readings.
- **Contact Medical Control** prior to administering epinephrine in patients who are >50 years of age, have a history of cardiac disease, or if the patient's heart rate is >150. Epinephrine may precipitate cardiac ischemia. A 12-lead ECG should be performed on these patients.
- A silent chest in respiratory distress is a pre-respiratory arrest sign.
- ETCO2 should be used when Respiratory Distress is significant and does not respond to initial Beta-Agonist dose.



## History

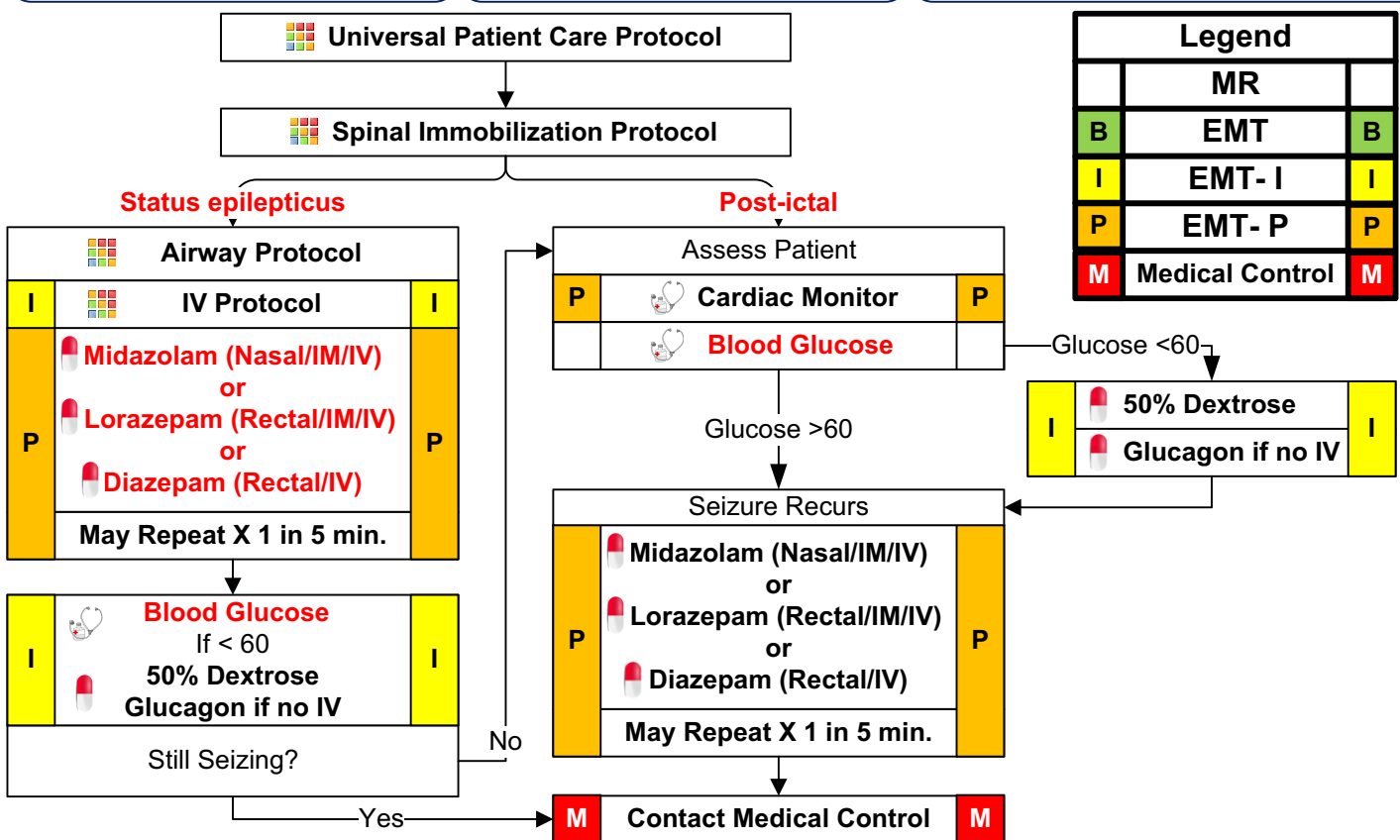
- Reported / witnessed seizure activity
- Previous seizure history
- Medical alert tag information
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy

## Signs and Symptoms

- Decreased mental status
- Sleepiness
- Incontinence
- Observed seizure activity
- Evidence of trauma
- Unconscious

## Differential

- **CNS (Head) trauma**
- **Tumor**
- **Metabolic, Hepatic, or Renal failure**
- **Hypoxia**
- **Electrolyte abnormality (Na, Ca, Mg)**
- **Drugs, Medications, Non-compliance**
- **Infection / Fever**
- **Alcohol withdrawal**
- **Eclampsia**
- **Stroke**
- **Hyperthermia**
- **Hypoglycemia**



Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M

Medical Protocols

## Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro**
- **Items in Red Text are key performance measures used to evaluate protocol compliance and care**
- Status epilepticus is defined as two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- **Grand mal seizures (generalized)** are associated with loss of consciousness, incontinence, and tongue trauma.
- **Focal seizures (petit mal)** effect only a part of the body and are not usually associated with a loss of consciousness
- **Jacksonian seizures** are seizures which start as a focal seizure and become generalized.
- Be prepared for airway problems and continued seizures.
- Assess possibility of occult trauma and substance abuse.
- Be prepared to assist ventilations especially if diazepam or midazolam is used.
- For any seizure in a pregnant patient, follow the OB Emergencies Protocol.
- Diazepam (Valium) is not effective when administered IM. It should be given IV or Rectally. Midazolam is well absorbed when administered IM.

## History

- Medications (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past medical history
- History of palpitations / heart racing
- Syncope / near syncope

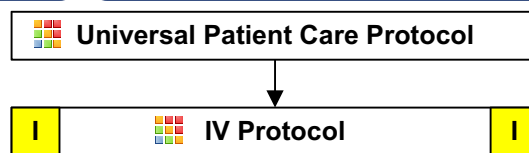
## Signs and Symptoms

- HR > 150/Min
- **QRS < .12 Sec (if QRS > .12 sec, go to V-Tach Protocol)**
- **If history of WPW, go to V-Tach Protocol**
- Dizziness, CP, SOB
- Potential presenting rhythm
  - Atrial/Sinus tachycardia
  - Atrial fibrillation / flutter
  - Multifocal atrial tachycardia

## Differential

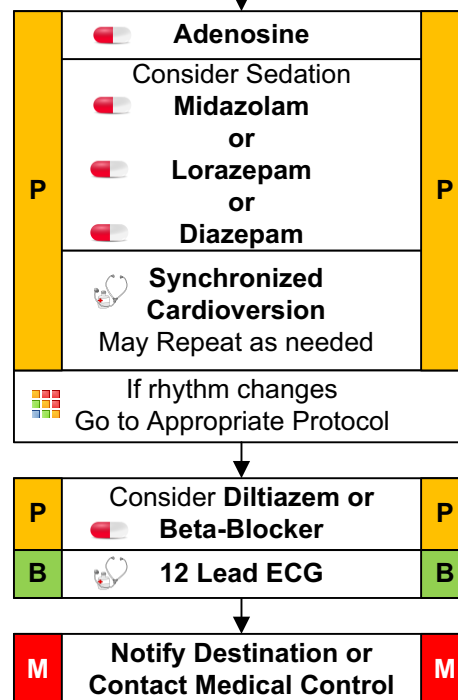
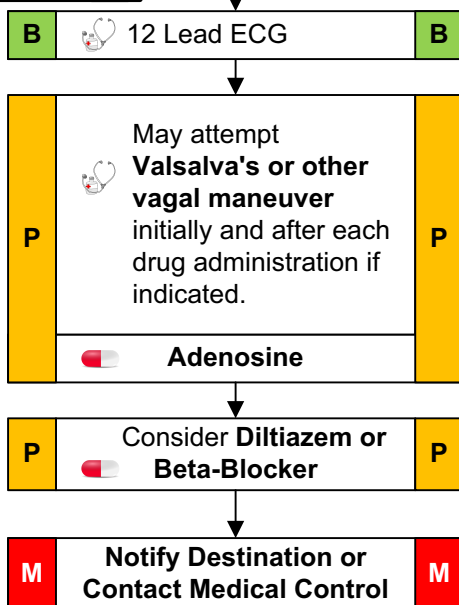
- Heart disease (WPW, Valvular)
- Sick sinus syndrome
- Myocardial infarction
- Electrolyte imbalance
- Exertion, Pain, Emotional stress
- Fever
- Hypoxia
- Hypovolemia or Anemia
- Drug effect / Overdose (see HX)
- Hyperthyroidism
- Pulmonary embolus

Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M



Stable

Pre-arrest  
(No palpable BP,  
Altered mental status)



Medical Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- If patient has history or 12 Lead ECG reveals Wolfe Parkinson White (WPW), DO NOT administer a Calcium Channel Blocker (e.g., Diltiazem) or Beta Blockers.
- Adenosine may not be effective in identifiable atrial flutter/fibrillation, yet is not harmful.
- Monitor for hypotension after administration of Calcium Channel Blocker or Beta Blockers.
- Monitor for respiratory depression and hypotension associated with Midazolam.
- Continuous pulse oximetry is required for all SVT Patients.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.

## History

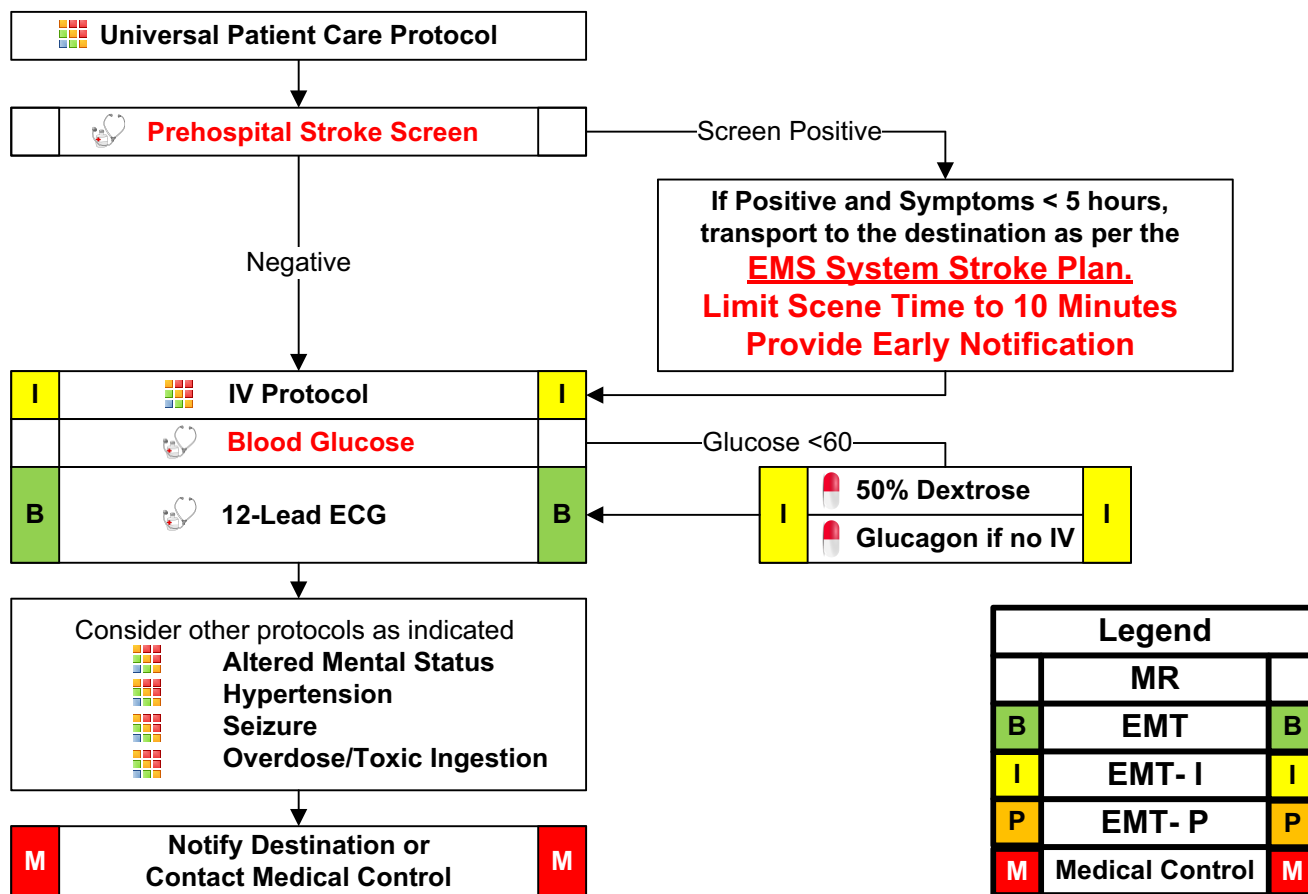
- Previous CVA, TIA's
- Previous cardiac / vascular surgery
- Associated diseases: diabetes, hypertension, CAD
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma

## Signs and Symptoms

- Altered mental status
- Weakness / Paralysis
- Blindness or other sensory loss
- Aphasia / Dysarthria
- Syncope
- Vertigo / Dizziness
- Vomiting
- Headache
- Seizures
- Respiratory pattern change
- Hypertension / hypotension

## Differential

- See Altered Mental Status
- TIA (Transient ischemic attack)
- Seizure
- Hypoglycemia
- Stroke
  - Thrombotic/ Embolic (~85%)
  - Hemorrhagic (~15%)
- Tumor
- Trauma



## Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Stroke Care Toolkit**
- **The Reperfusion Checklist should be completed for any suspected stroke patient. With a duration of symptoms of less than 5 hours, scene times should be limited to 10 minutes, early destination notification/activation should be provided and transport times should be minimized based on the EMS System Stroke Plan.**
- **Onset of symptoms** is defined as the last witnessed time the patient was symptom free (i.e. awakening with stroke symptoms would be defined as an onset time of the previous night when patient was symptom free)
- The differential listed on the Altered Mental Status Protocol should also be considered.
- Elevated blood pressure is commonly present with stroke. Consider treatment if diastolic is > 110 mmHg.
- Be alert for airway problems (swallowing difficulty, vomiting/aspiration).
- Hypoglycemia can present as a localized neurologic deficit, especially in the elderly.
- Document the Stroke Screen results in the PCR.
- Document the 12 Lead ECG as a procedure in the PCR.

## History

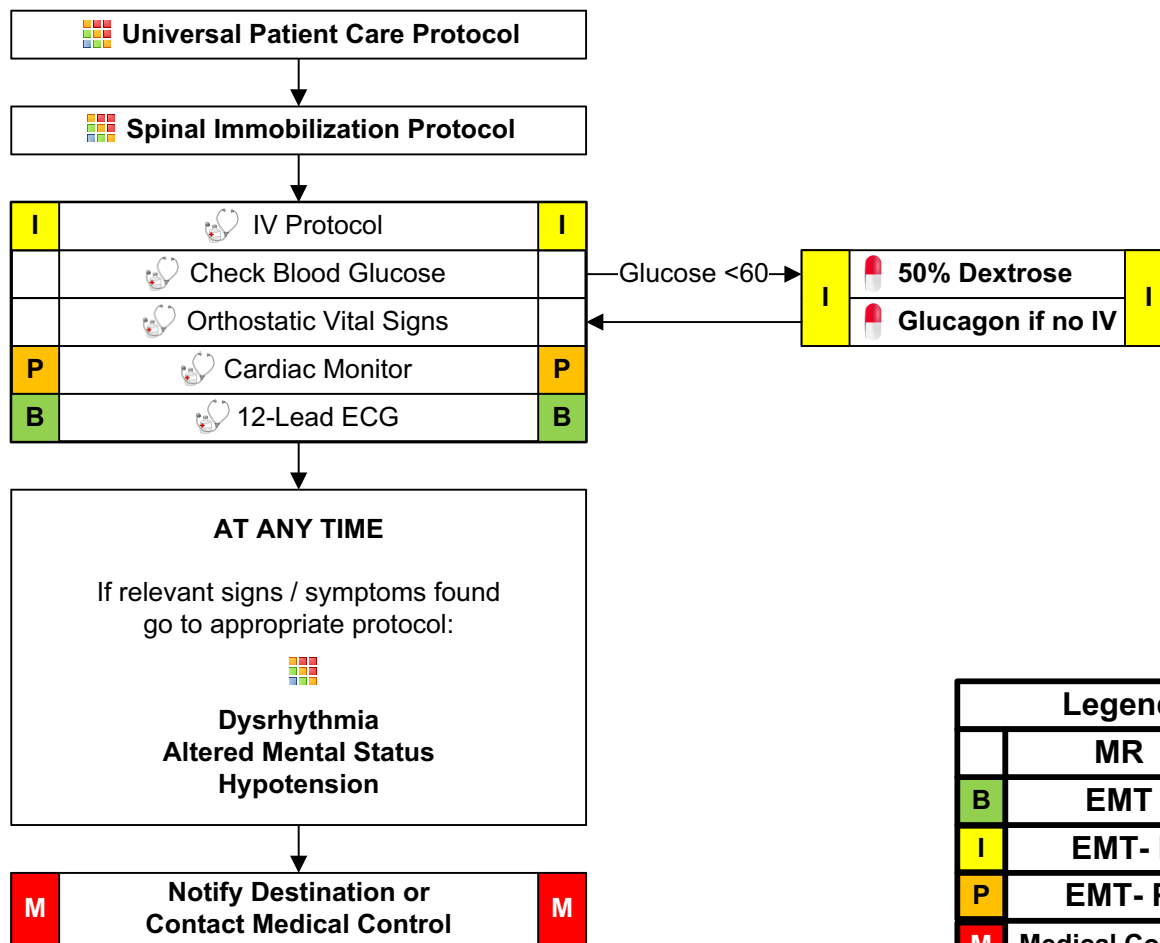
- Cardiac history, stroke, seizure
- Occult blood loss (GI, ectopic)
- Females: LMP, vaginal bleeding
- Fluid loss: nausea, vomiting, diarrhea
- Past medical history
- Medications

## Signs and Symptoms

- Loss of consciousness with recovery
- Lightheadedness, dizziness
- Palpitations, slow or rapid pulse
- Pulse irregularity
- Decreased blood pressure

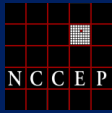
## Differential

- Vasovagal
- Orthostatic hypotension
- Cardiac syncope
- Micturation / Defecation syncope
- Psychiatric
- Stroke
- Hypoglycemia
- Seizure
- Shock (see Shock Protocol)
- Toxicologic (Alcohol)
- Medication effect (hypertension)



## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Assess for signs and symptoms of trauma if associated or questionable fall with syncope.
- Consider dysrhythmias, GI bleed, ectopic pregnancy, and seizure as possible causes of syncope.
- These patients should be transported.
- More than 25% of geriatric syncope is cardiac dysrhythmia based.



# Ventricular Fibrillation Pulseless Vent. Tachycardia



## History

- Estimated down time
- Past medical history
- Medications
- Events leading to arrest
- Renal failure / dialysis
- DNR or living will

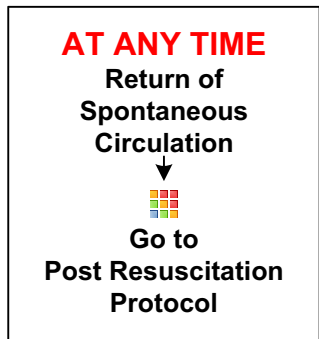
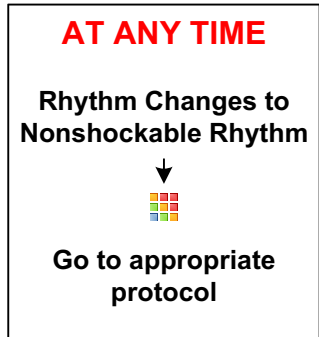
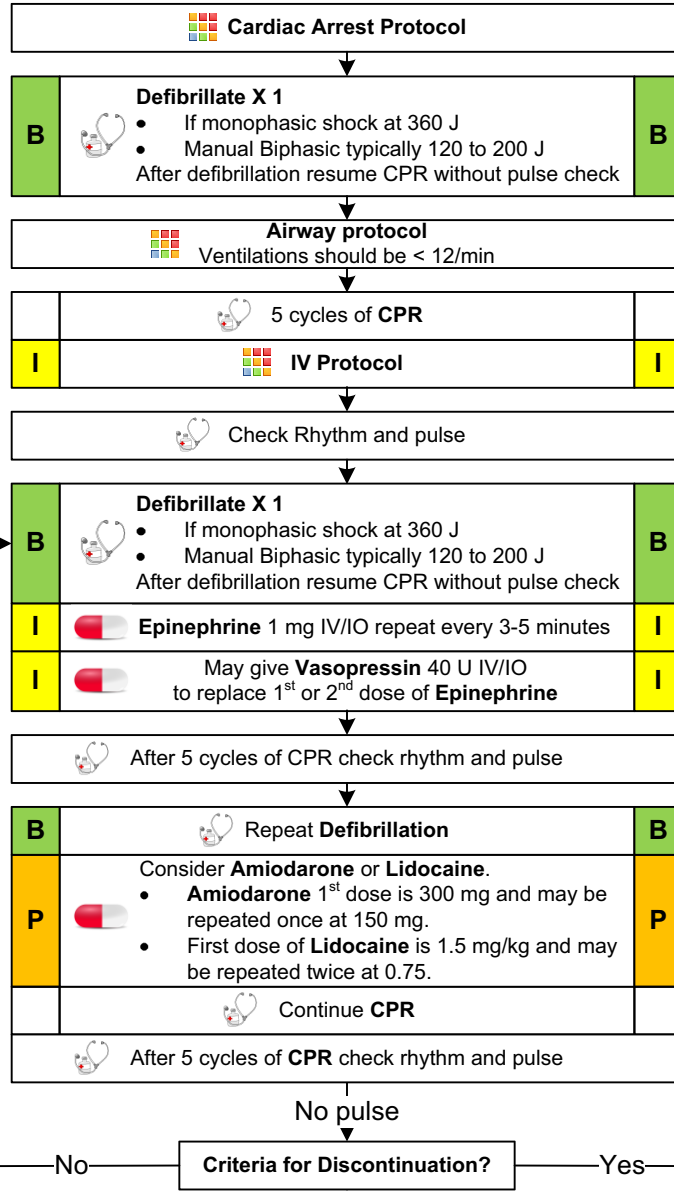
## Signs and Symptoms

- Unresponsive, apneic, pulseless
- Ventricular fibrillation or ventricular tachycardia on ECG

## Differential

- Asystole
- Artifact / Device failure
- Cardiac
- Endocrine / Metabolic
- Drugs
- Pulmonary

Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M



Medical Protocols

## Pearls

### Recommended Exam: Mental Status

- If no IV, drugs that can be given down ET tube should have dose doubled and then flushed with 5 ml of Normal Saline. IV/IO is the preferred route when available.
- Reassess and document endotracheal tube placement and EtCO<sub>2</sub> frequently, after every move, and at transfer of care.
- Calcium and sodium bicarbonate if hyperkalemia is suspected (renal failure, dialysis).
- **Treatment priorities are: uninterrupted chest compressions, defibrillation, then IV access and airway control.**
- Polymorphic V-Tach (Torsades de Pointes) may benefit from administration of magnesium sulfate if available.
- Do not stop CPR to check for placement of ET tube or to give medicines.
- If arrest not witnessed by EMS then 5 cycles of CPR prior to 1<sup>st</sup> defibrillation.
- Effective CPR and prompt defibrillation are the keys to successful resuscitation.
- If BVM is ventilating the patient successfully, intubation should be deferred until rhythm has changed or 4 or 5 defibrillation sequences have been completed.

### History

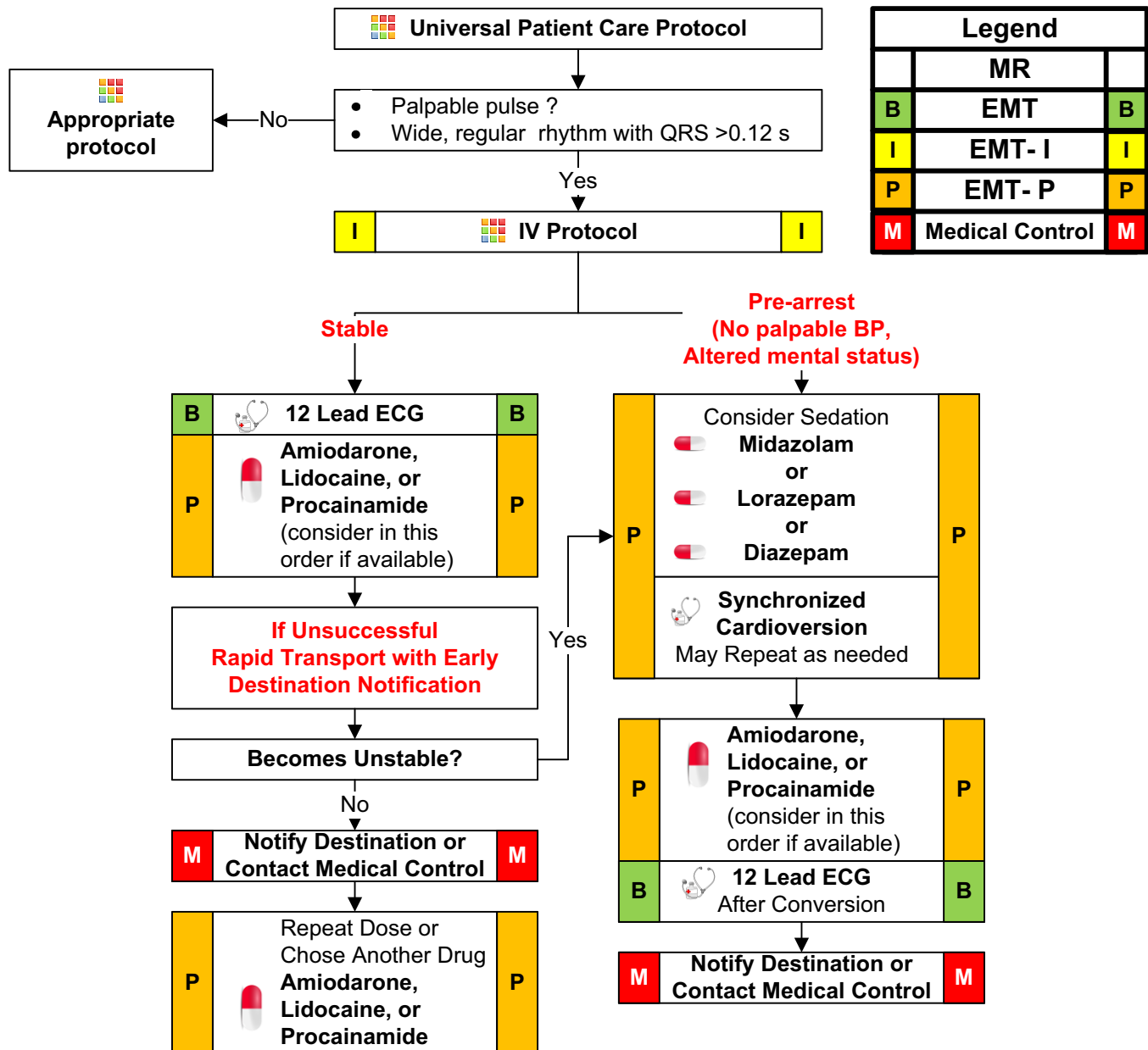
- Past medical history / medications, diet, drugs.
- Syncope / near syncope
- CHF
- Palpitations
- Pacemaker
- Allergies: lidocaine / novacaine

### Signs and Symptoms

- Ventricular tachycardia on ECG (Runs or sustained)
- Conscious, rapid pulse
- Chest pain, shortness of breath
- Dizziness
- Rate usually 150 - 180 bpm for sustained V-Tach
- **QRS > .12 Sec**

### Differential

- **Artifact / Device failure**
- **Cardiac**
- **Endocrine / Metabolic**
- **Drugs**
- **Pulmonary**



### Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- For witnessed / monitored ventricular tachycardia, try having patient cough.
- Polymorphic V-Tach (Torsades de Pointes) may benefit from the administration of magnesium sulfate if available.
- If presumed hyperkalemia (end-state renal disease, dialysis, etc.), administer Sodium Bicarbonate.
- Procainamide (if available) is no longer second line agent although it should not be given if there is history of CHF.

## History

- Age
- Time of last meal
- Last bowel movement/ emesis
- Improvement or worsening with food or activity
- Duration of problem
- Other sick contacts
- Past medical history
- Past surgical history
- Medications
- Menstrual history (pregnancy)
- Travel history
- Bloody emesis / diarrhea

## Signs and Symptoms

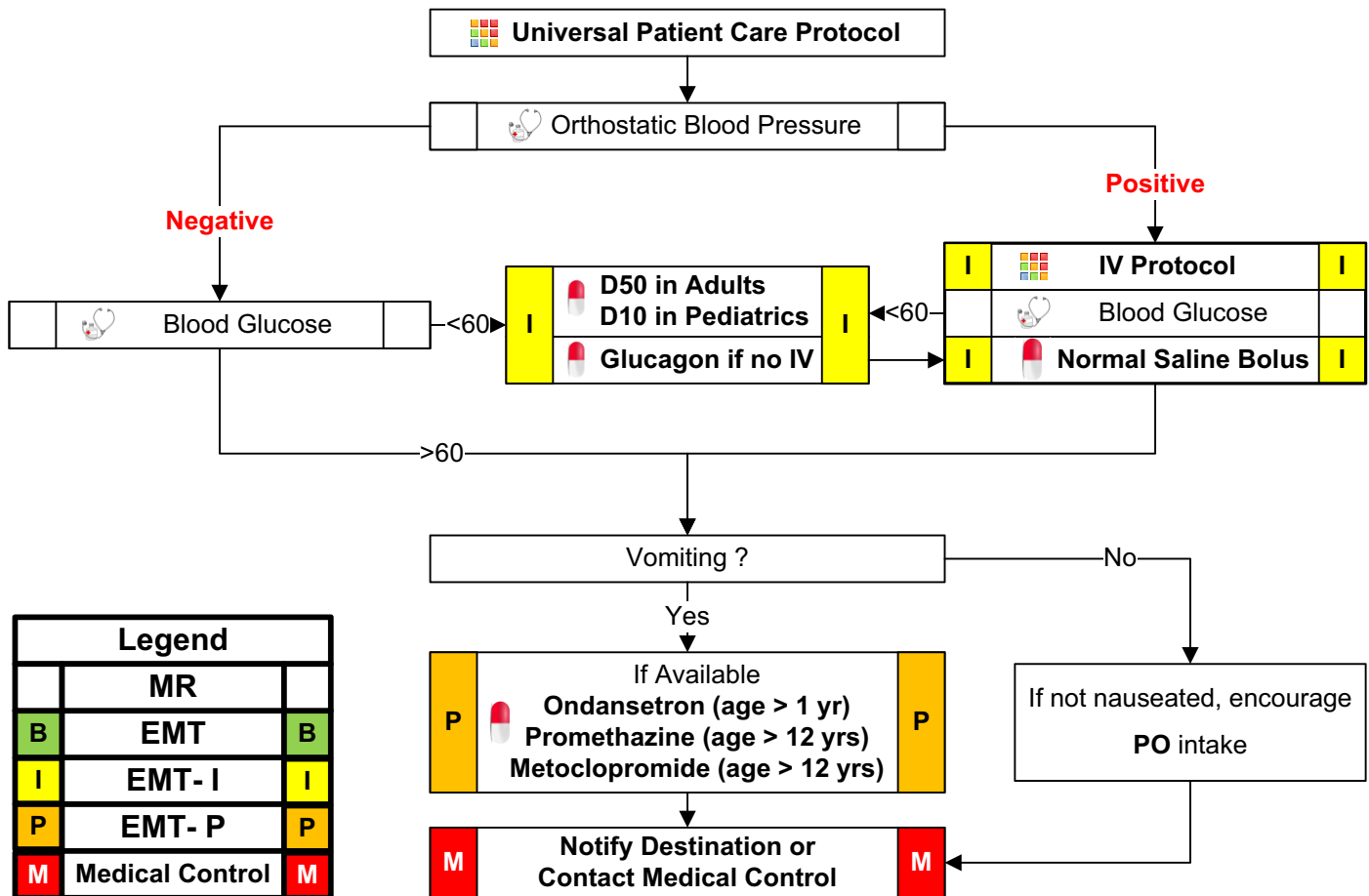
- Pain
- Character of pain (constant, intermittent, sharp, dull, etc.)
- Distention
- Constipation
- Diarrhea
- Anorexia
- Radiation

### Associated symptoms:

**(Helpful to localize source)**  
Fever, headache, blurred vision, weakness, malaise, myalgias, cough, headache, dysuria, mental status changes, rash

## Differential

- CNS (increased pressure, headache, stroke, CNS lesions, trauma or hemorrhage, vestibular)
- Myocardial infarction
- Drugs (NSAID's, antibiotics, narcotics, chemotherapy)
- GI or Renal disorders
- Diabetic ketoacidosis
- Gynecologic disease (ovarian cyst, PID)
- Infections (pneumonia, influenza)
- Electrolyte abnormalities
- Food or toxin induced
- Medication or Substance abuse
- Pregnancy
- Psychological



Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M

## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- The use of metoclopramide (Reglan) may worsen diarrhea and should be avoided in patients with this symptom.
- Choose the lower dose of promethazine (Phenergan) for patients likely to experience sedative effects (e.g., elderly, debilitated, etc.)
- Document the mental status and vital signs prior to administration of Promethazine (Phenergan).
- Beware of vomiting only in children. Pyloric stenosis, bowel obstruction, and CNS processes (bleeding, tumors, or increased CSF pressures) all often present with vomiting.