

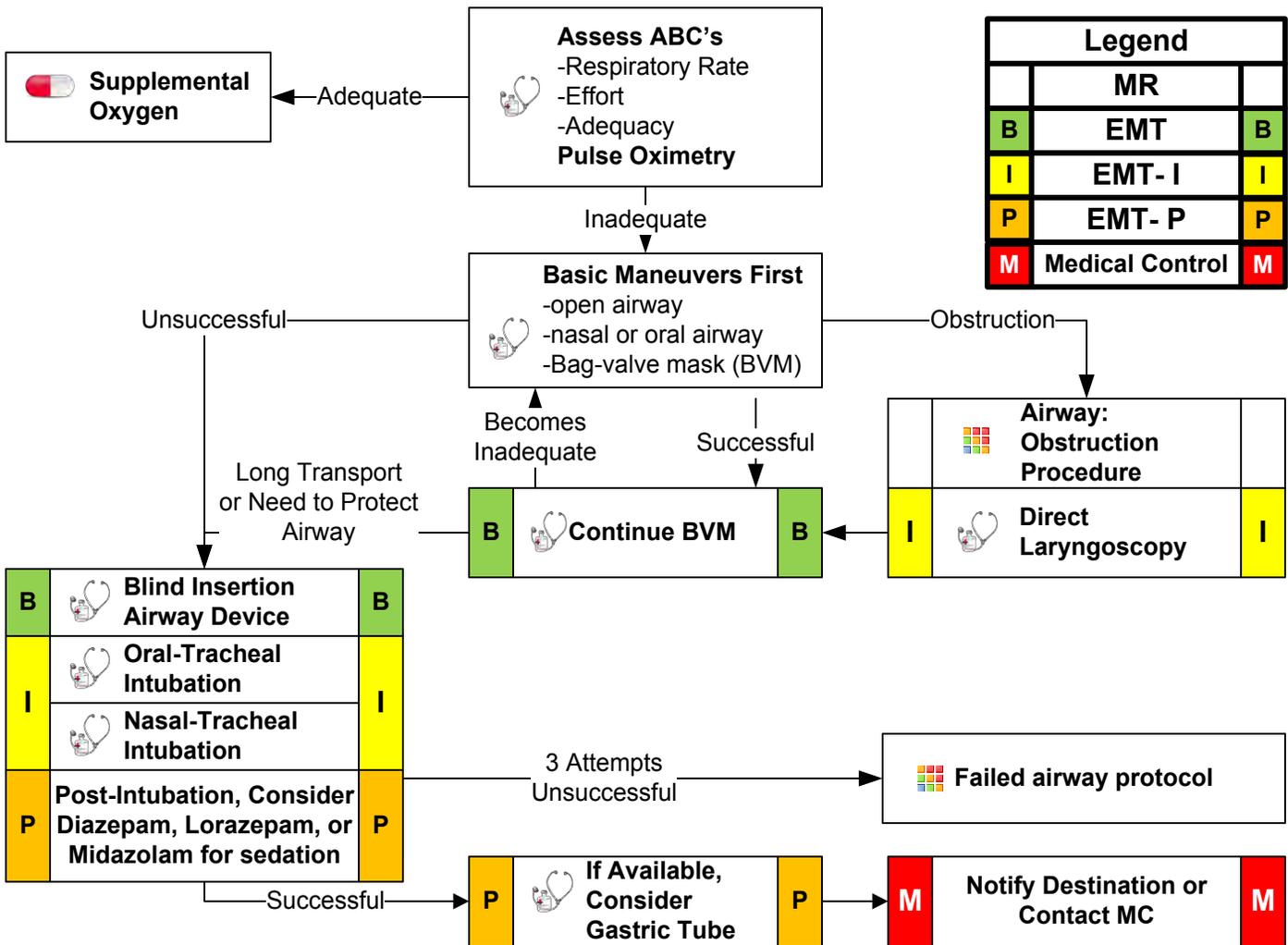


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### Pearls

- This protocol is only for use in patients with an Age > 12 or patients longer than the Broselow-Luten Tape.
- Capnometry (Color) or capnography is mandatory with all methods of intubation. Document results.
- **Continuous capnography (EtCO<sub>2</sub>) is strongly recommended for the monitoring of all patients with a BIAD or endotracheal tube.**
- **If an effective airway is being maintained by BVM with continuous pulse oximetry values of > 90, it is acceptable to continue with basic airway measures instead of using a BIAD or Intubation.**
- **For the purposes of this protocol a secure airway is 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.**
- **Ventilatory rate should be 6-10 per minute to maintain a EtCO<sub>2</sub> of 35-45. Avoid hyperventilation.**
- **It is strongly encouraged to complete an Airway Evaluation Form with any BIAD or Intubation procedure.**
- Paramedics should consider using a BIAD if oral-tracheal intubation is unsuccessful.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic - use oxygen, not a paper bag.
- Sellick's and **or BURP** maneuver should be used to assist with difficult intubations.
- Hyperventilation in deteriorating head trauma should only be done to maintain a EtCO<sub>2</sub> of 30-35.
- Gastric tube placement should be considered in all intubated patients if available.
- It is important to secure the endotracheal tube well and consider c-collar to better maintain ETT placement.



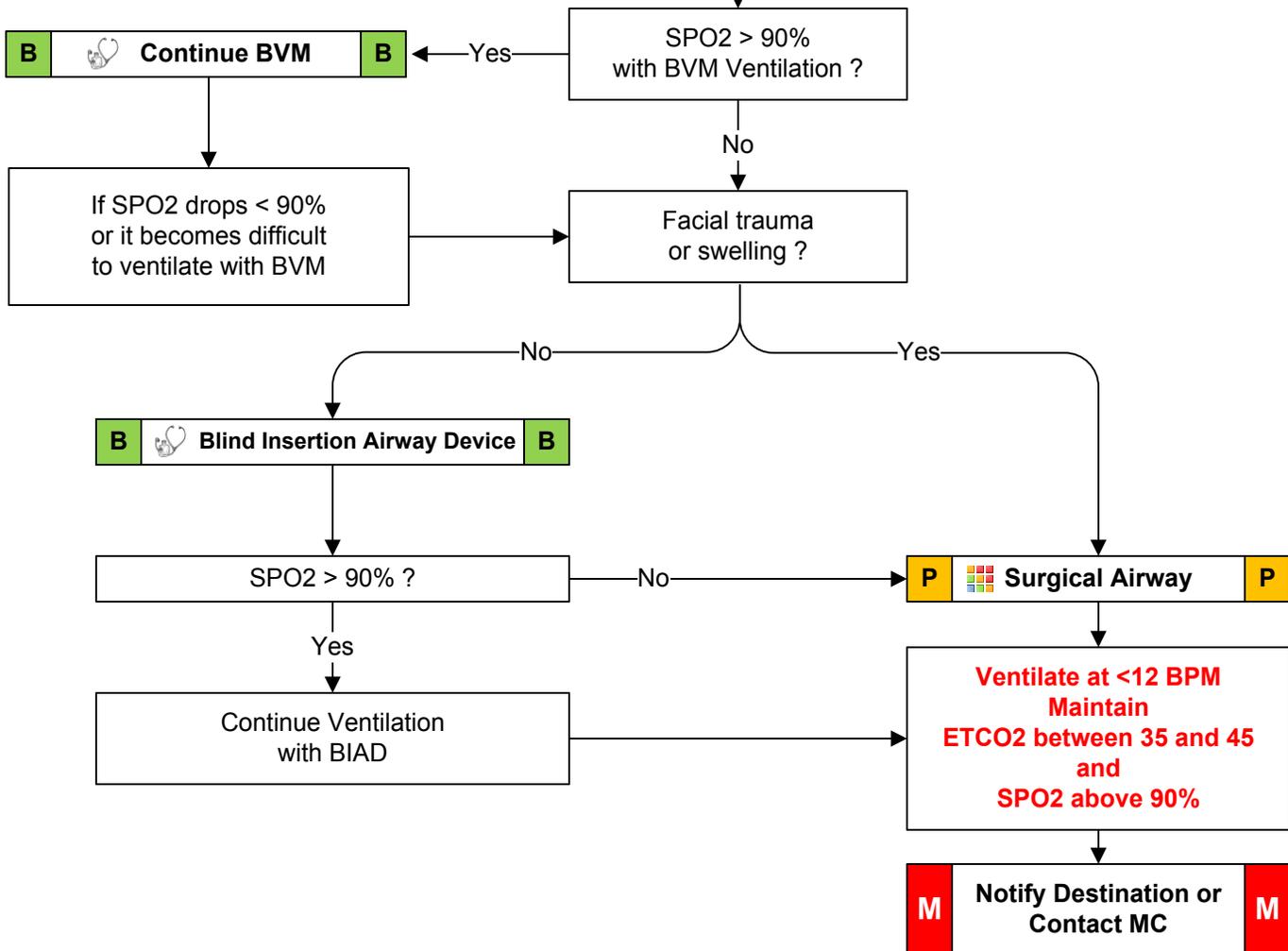
# Airway, Adult-Failed



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

Two (2) failed intubation attempts by most proficient technician on scene or anatomy inconsistent with intubation attempts.

NO MORE THAN THREE (3) ATTEMPTS TOTAL



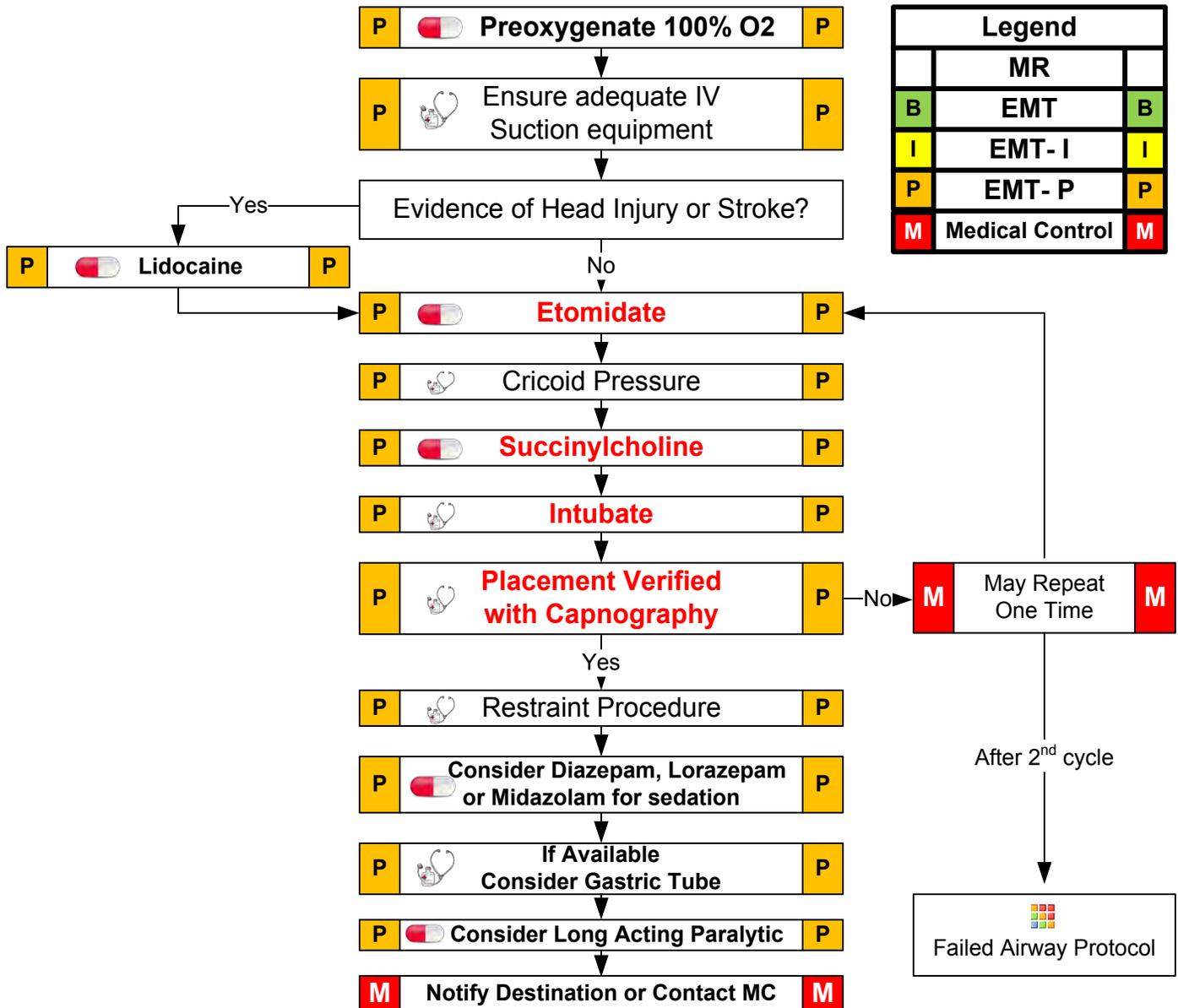
General Protocols

### Pearls

- If first intubation attempt fails, make an adjustment and then consider:
  - Different laryngoscope blade
  - Gum Elastic Bougie
  - Different ETT size
  - Change cricoid pressure
  - Apply BURP maneuver (Push trachea Back [posterior], Up, and to patient's Right)
  - Change head positioning
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Continuous EtCO2 should be applied to all patients with respiratory failure or to all patients with advanced airways.
- Notify **Medical Control AS EARLY AS POSSIBLE** about the patient's difficult / failed airway.



# Airway, Drug Assisted Intubation



General Protocols

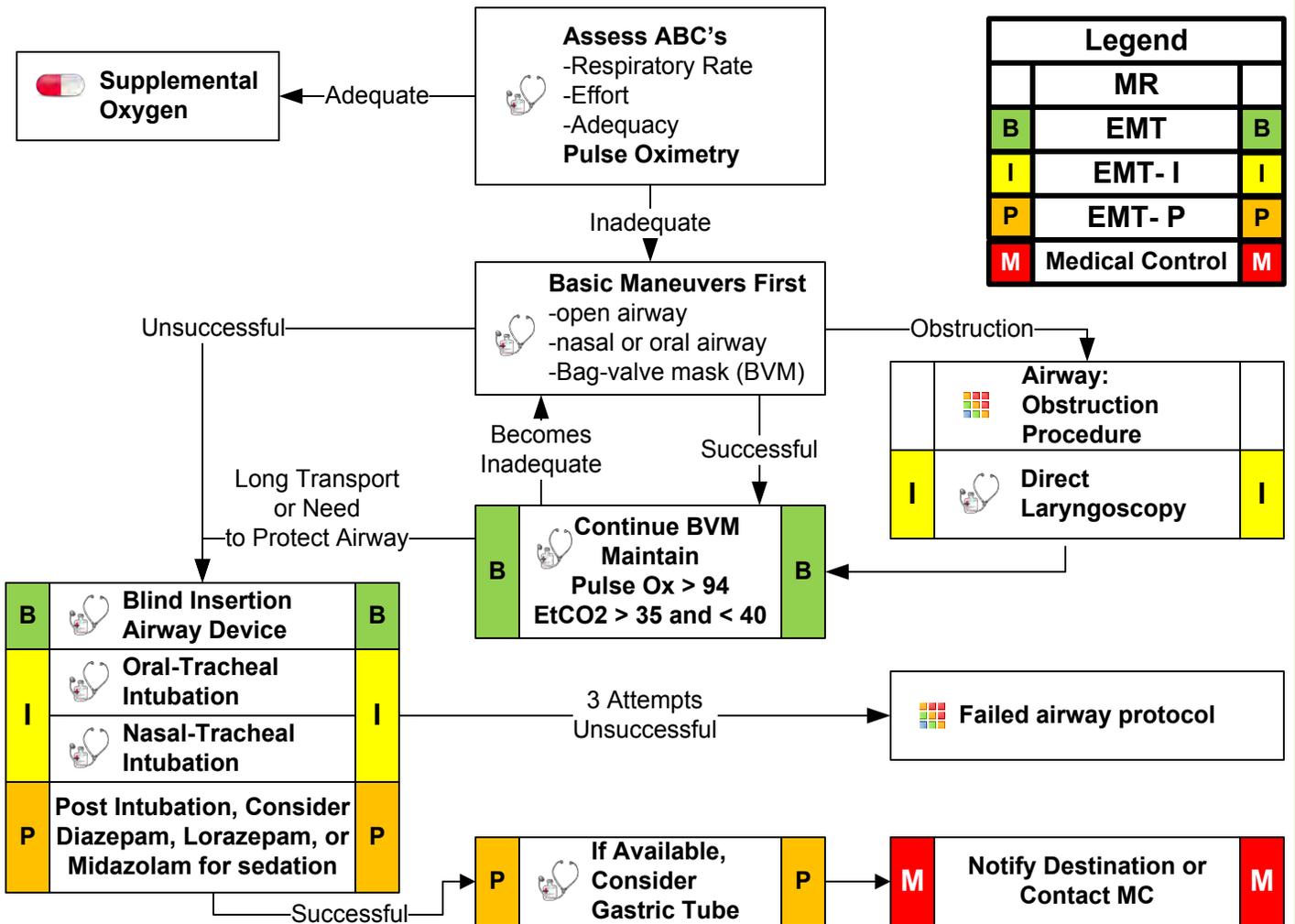
## Pearls

- This protocol is only for use in patients with an Age > 12 or patients longer than the Broselow-Luten Tape.
- Once a patient has been given a paralytic drug, **YOU ARE RESPONSIBLE FOR VENTILATIONS!**
- Items in Red Text are the key performance indicators used to evaluate protocol compliance. An Airway Evaluation Form must be completed on every patient who receives Drug Assisted Intubation.
- This procedure will take away the patient's airway away so you must be sure of your ability to intubate before giving drugs.
- **Continuous Waveform Capnography and Pulse Oximetry and are required for intubation verification and ongoing patient monitoring**
- Before administering any paralytic drug, screen for contraindications with a thorough neurologic exam.
- If First intubation attempt fails, make an adjustment and try again:
  - Different laryngoscope blade
  - Change head positioning
  - Different ETT size
  - Continuous pulse oximetry should be utilized in all patients.
  - Change cricoid pressure
  - Consider applying BURP maneuver (Back [posterior], Up, and to pt's Right Pressure)
- This procedure requires at least 2 EMT-Paramedics. Divide the workload - ventilate, suction, cricoid pressure, drugs, intubation.
- All equipment must be in place and ready for use prior to administering any RSI drugs.
- Protect the patient from self extubation when the drugs wear off. Longer acting paralytics may be needed post-intubation.

## Protocol 3



# Airway, Pediatric

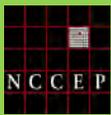


General Protocols

## Pearls

- For this protocol, pediatric is defined as less than 12 years of age or any patient which can be measured within the Broselow-Luten tape.
- Capnometry (color) or capnography is mandatory with all methods of intubation. Document results.
- **Continuous capnography (EtCO2) is strongly recommended with BIAD or endotracheal tube use.**
- **If an effective airway is being maintained by BVM with continuous pulse oximetry values of > 94, it is acceptable to continue with basic airway measures instead of using a BIAD or Intubation.**
- **For the purposes of this protocol a secure airway is 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.**
- **Ventilatory rate should be 30 for Neonates, 25 for Toddlers, 20 for School Age, and for Adolescents the normal Adult rate of 12 per minute. Maintain a EtCO2 between 30 and 35 and avoid hyperventilation.**
- **It is strongly encouraged to complete an Airway Evaluation Form with any BIAD or Intubation procedure.**
- Paramedics should consider using a BIAD if oral-tracheal intubation is unsuccessful.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic - use oxygen, not a paper bag.
- Sellick's and **or BURP** maneuver should be used to assist with difficult intubations.
- Hyperventilation in deteriorating head trauma should only be done to maintain a pCO<sub>2</sub> of 30-35.
- Gastric tube placement should be considered in all intubated patients.
- It is important to secure the endotracheal tube well and consider c-collar to better maintain ETT placement.

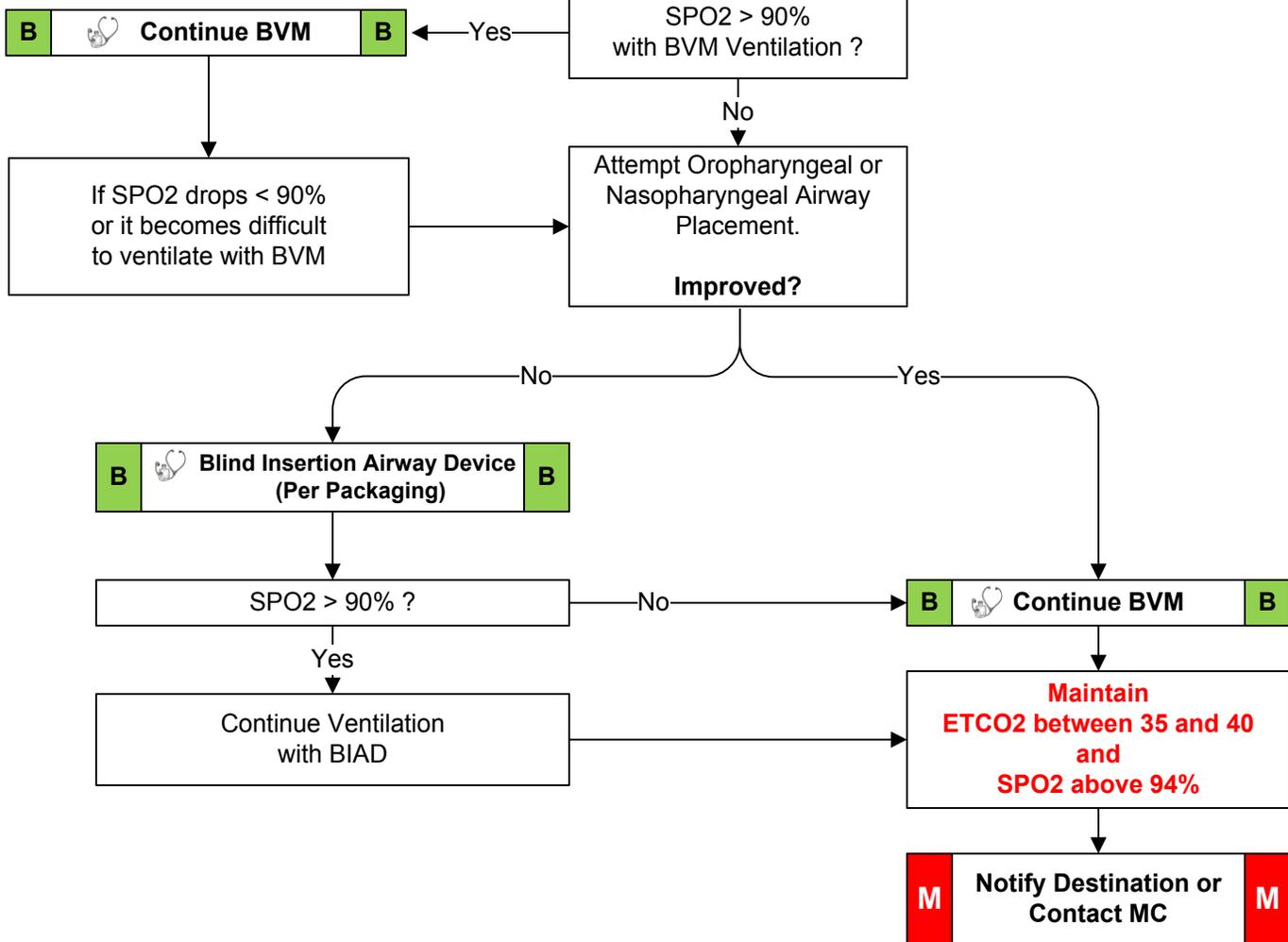
## Protocol 4



# Airway, Pediatric-Failed



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



General Protocols

## Pearls

- If first intubation attempt fails, make an adjustment and then try again:
  - Different laryngoscope blade
  - Gum Elastic Bougie
  - Different ETT size
  - Change cricoid pressure
  - Apply BURP maneuver (Push trachea Back [posterior], Up, and to patient's Right)
  - Change head positioning
- **Ventilatory rate should be 30 for Neonates, 25 for Toddlers, 20 for School Age, and for Adolescents the normal Adult rate of 12 per minute. Maintain a EtCO2 between 30 and 35 and avoid hyperventilation.**
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Continuous EtCO2 should be applied to all patients with respiratory failure or to all patients with advanced airways.
- Notify **Medical Control AS EARLY AS POSSIBLE** about the patient's difficult / failed airway.



# Back Pain



## History

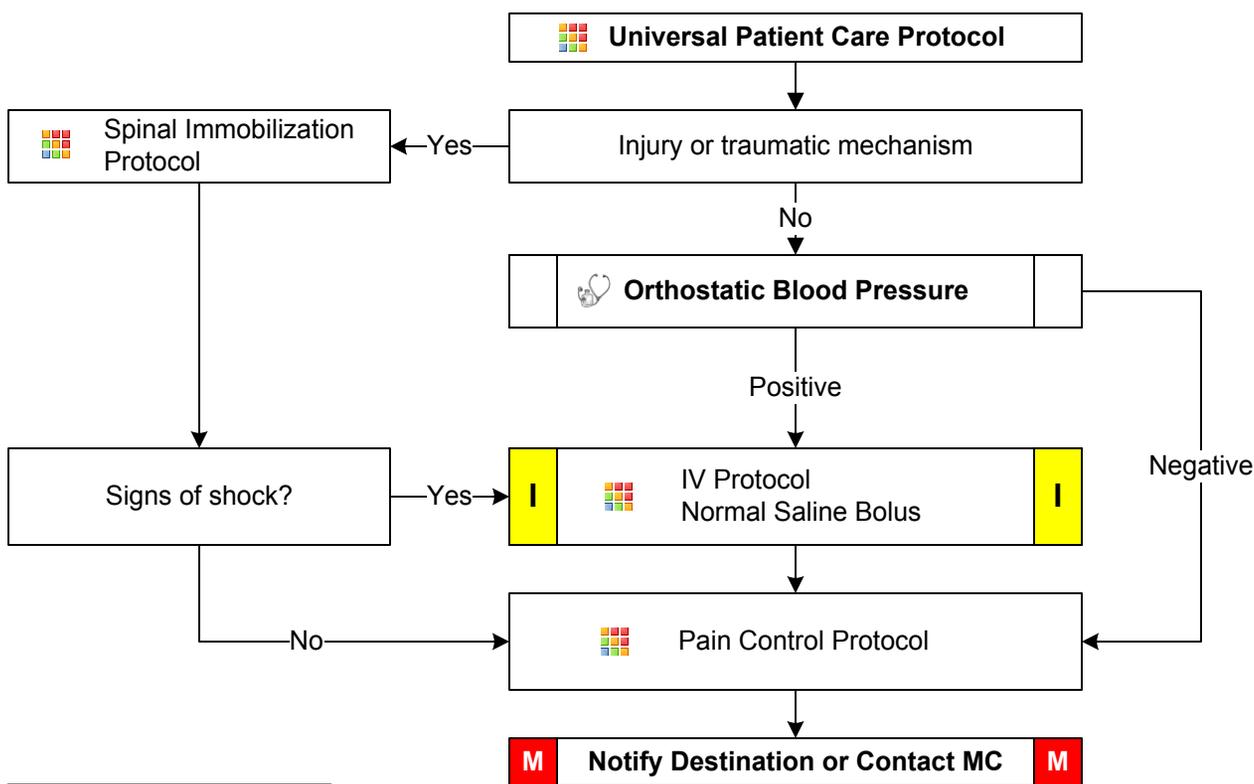
- Age
- Past medical history
- Past surgical history
- Medications
- Onset of pain / injury
- Previous back injury
- Traumatic mechanism
- Location of pain
- Fever
- Improvement or worsening with activity

## Signs and Symptoms

- Pain (paraspinous, spinous process)
- Swelling
- Pain with range of motion
- Extremity weakness
- Extremity numbness
- Shooting pain into an extremity
- Bowel / bladder dysfunction

## Differential

- **Muscle spasm / strain**
- **Herniated disc with nerve compression**
- **Sciatica**
- **Spine fracture**
- **Kidney stone**
- **Pyelonephritis**
- **Aneurysm**
- **Pneumonia**
- **Spinal Epidural Abscess**
- **Metastatic Cancer**



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

## Pearls

- **Recommended Exam: Mental Status, HEENT, Neck, Chest, Lungs, Abdomen, Back, Extremities, Neuro**
- Abdominal aneurysms are a concern in patients over the age of 50
- Kidney stones typically present with an acute onset of flank pain which radiates around to the groin area.
- Patients with midline pain over the spinous processes should be spinally immobilized.
- Any bowel or bladder incontinence is a significant finding which requires immediate medical evaluation
- In patient with history of IV drug abuse a spinal epidural abscess should be considered.

## Protocol 6



# Behavioral



## History

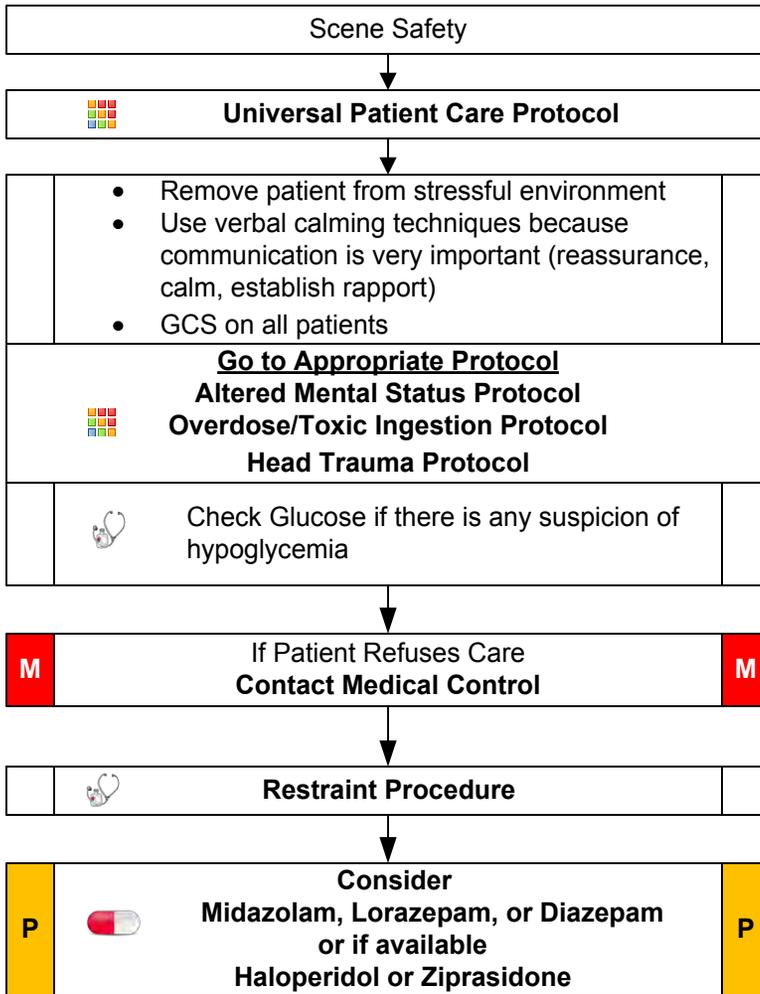
- Situational crisis
- Psychiatric illness/ medications
- Injury to self or threats to others
- Medic alert tag
- Substance abuse / overdose
- Diabetes

## Signs and Symptoms

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

## Differential

- **see Altered Mental Status differential**
- **Alcohol Intoxication**
- **Toxin / Substance abuse**
- **Medication effect / overdose**
- **Withdrawal syndromes**
- **Depression**
- **Bipolar (manic-depressive)**
- **Schizophrenia**
- **Anxiety disorders**



Legend		
	MR	
<b>B</b>	EMT	<b>B</b>
<b>I</b>	EMT- I	<b>I</b>
<b>P</b>	EMT- P	<b>P</b>
<b>M</b>	Medical Control	<b>M</b>

	<p>If available, consider <b>Oral Glucose</b>, 1 to 2 tubes if awake and no risk for aspiration</p>	
<b>I</b>	<ul style="list-style-type: none"> <li>•  <b>50% Dextrose Adult</b></li> <li>•  <b>10% Dextrose Pediatric</b></li> </ul>	<b>I</b>
	<p> <b>Glucagon if no IV access</b></p>	

General Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, Heart, Lungs, Neuro**
- Your safety first!!
- **Consider Haldol or Ziprasidone for patients with history of psychosis or a benzodiazepine for patients with presumed substance abuse.**
- Be sure to consider all possible medical/trauma causes for behavior (hypoglycemia, overdose, substance abuse, hypoxia, head injury, etc.)
- Do not irritate the patient with a prolonged exam.
- Do not overlook the possibility of associated domestic violence or child abuse.
- If patient is suspected of agitated delirium suffers cardiac arrest, consider a fluid bolus and sodium bicarbonate early.
- **All patients who receive either physical or chemical restraint must be continuously observed by ALS personnel on scene or immediately upon their arrival.**
- Any patient who is handcuffed or restrained by Law Enforcement and transported by EMS must be accompanied by law enforcement in the ambulance.
- Do not position or transport any restrained patient in such a way that could impact the patients respiratory or circulatory status.

## Protocol 7

Any local EMS System changes to this document must follow the NC OEMS Protocol Change Policy and be approved by OEMS

2009



# Fever / Infection Control



## History

- Age
- Duration of fever
- Severity of fever
- Past medical history
- Medications
- Immunocompromised (transplant, HIV, diabetes, cancer)
- Environmental exposure
- Last acetaminophen or ibuprofen

## Signs and Symptoms

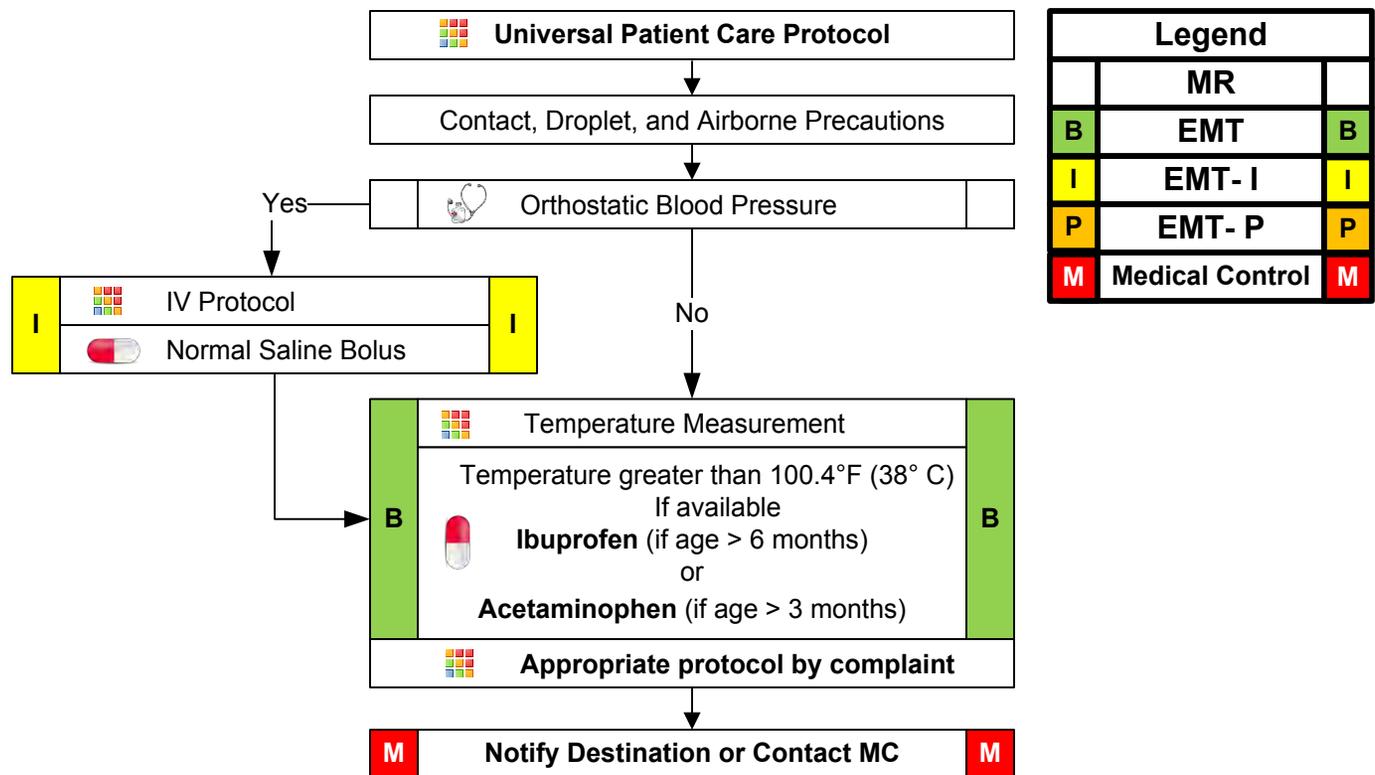
- Warm
- Flushed
- Sweaty
- Chills/Rigors

### Associated Symptoms (Helpful to localize source)

- myalgias, cough, chest pain, headache, dysuria, abdominal pain, mental status changes, rash

## Differential

- Infections / Sepsis
- Cancer / Tumors / Lymphomas
- Medication or drug reaction
- Connective tissue disease
  - Arthritis
  - Vasculitis
- Hyperthyroid
- Heat Stroke
- Meningitis

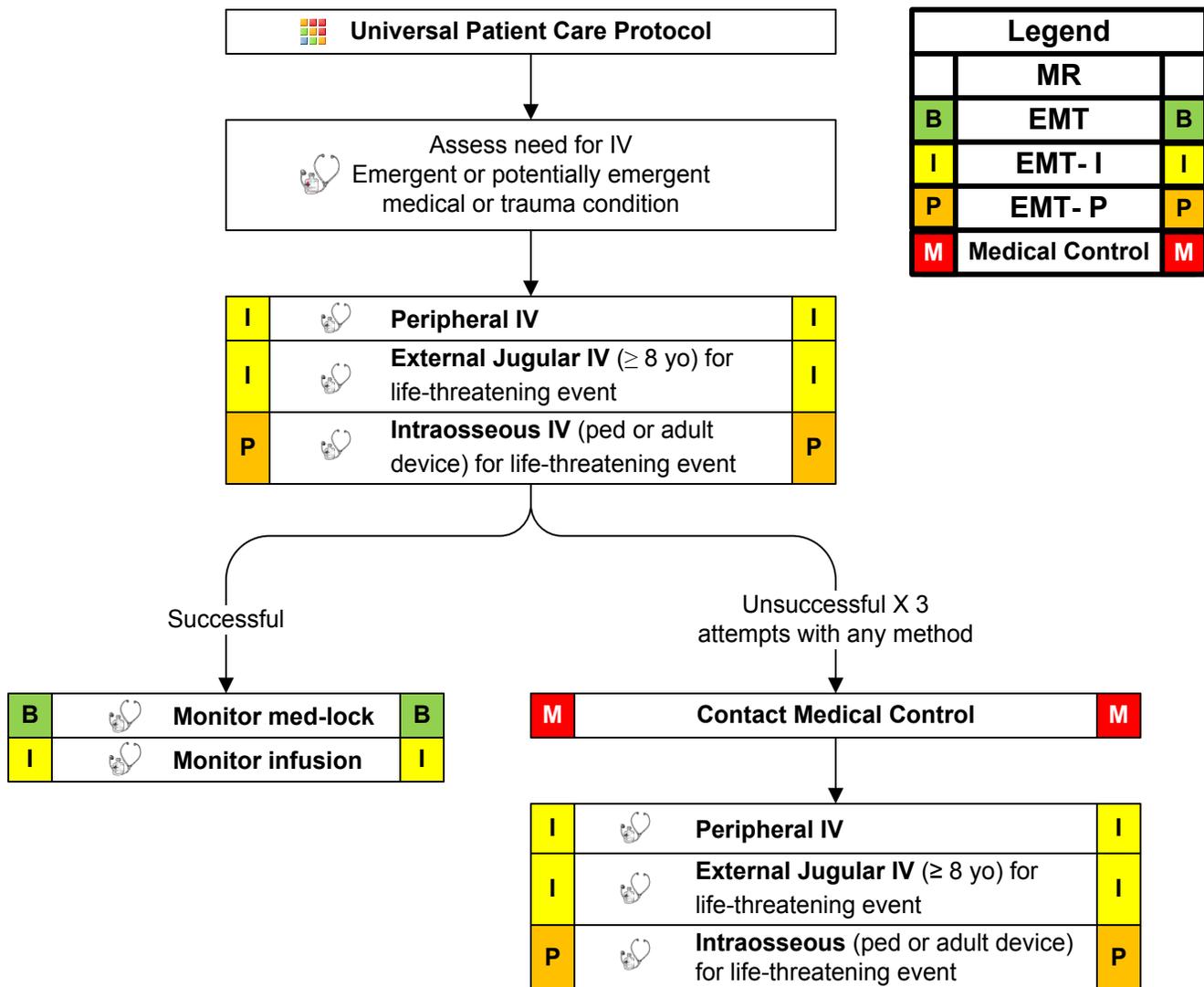


Legend		
	MR	
B	EMT	B
I	EMT - I	I
P	EMT - P	P
M	Medical Control	M

General Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- Febrile seizures are more likely in children with a history of febrile seizures and with a rapid elevation in temperature.
- Patients with a history of Liver failure should not receive acetaminophen.
- **Droplet precautions** include standard PPE plus a standard surgical mask for providers who accompany patients in the back of the ambulance and a surgical mask or NRB O2 mask for the patient. This level of precaution should be utilized when influenza, meningitis, mumps, streptococcal pharyngitis, and other illnesses spread via large particle droplets are suspected. A patient with a potentially infectious rash should be treated with droplet precautions.
- **Airborne precautions** include standard PPE plus utilization of a gown, change of gloves after every patient contact, and strict handwashing precautions. This level of precaution is utilized when multi-drug resistant organisms (e.g. MRSA), scabies, or zoster (shingles), or other illnesses spread by contact are suspected.
- **All-hazards precautions** include standard PPE plus airborne precautions plus contact precautions. This level of precaution is utilized during the initial phases of an outbreak when the etiology of the infection is unknown or when the causative agent is found to be highly contagious (e.g. SARS).
- Rehydration with fluids increased the patients ability to sweat and improves heat loss.
- All patients should have drug allergies documented prior to administering pain medications.
- Allergies to NSAID's (non-steroidal anti-inflammatory medications) are a contraindication to Ibuprofen.
- NSAID's should not be used in the setting of environmental heat emergencies.
- **Do not** give aspirin to a child.



### Pearls

- In the setting of cardiac arrest, any preexisting dialysis shunt or external central venous catheter may be used.
- Intraosseous with the appropriate adult or pediatric device.
- External jugular (≥ 8 years of age).
- Any prehospital fluids or medications approved for IV use, may be given through an intraosseous IV.
- All IV rates should be at KVO (minimal rate to keep vein open) unless administering fluid bolus.
- Use microdrips for all patients 6 years old or less.
- External jugular lines can be attempted initially in life-threatening events where no obvious peripheral site is noted.
- In patients who are hemodynamically unstable or in extremis, **contact medical control** prior to accessing dialysis shunts or external central venous catheters.
- Any venous catheter which has already been accessed prior to EMS arrival may be used.
- Upper extremity IV sites are preferable to lower extremity sites.
- Lower extremity IV sites are discouraged in patients with vascular disease or diabetes.
- In post-mastectomy patients, avoid IV, blood draw, injection, or blood pressure in arm on affected side.



# Pain Control: Adult



## History

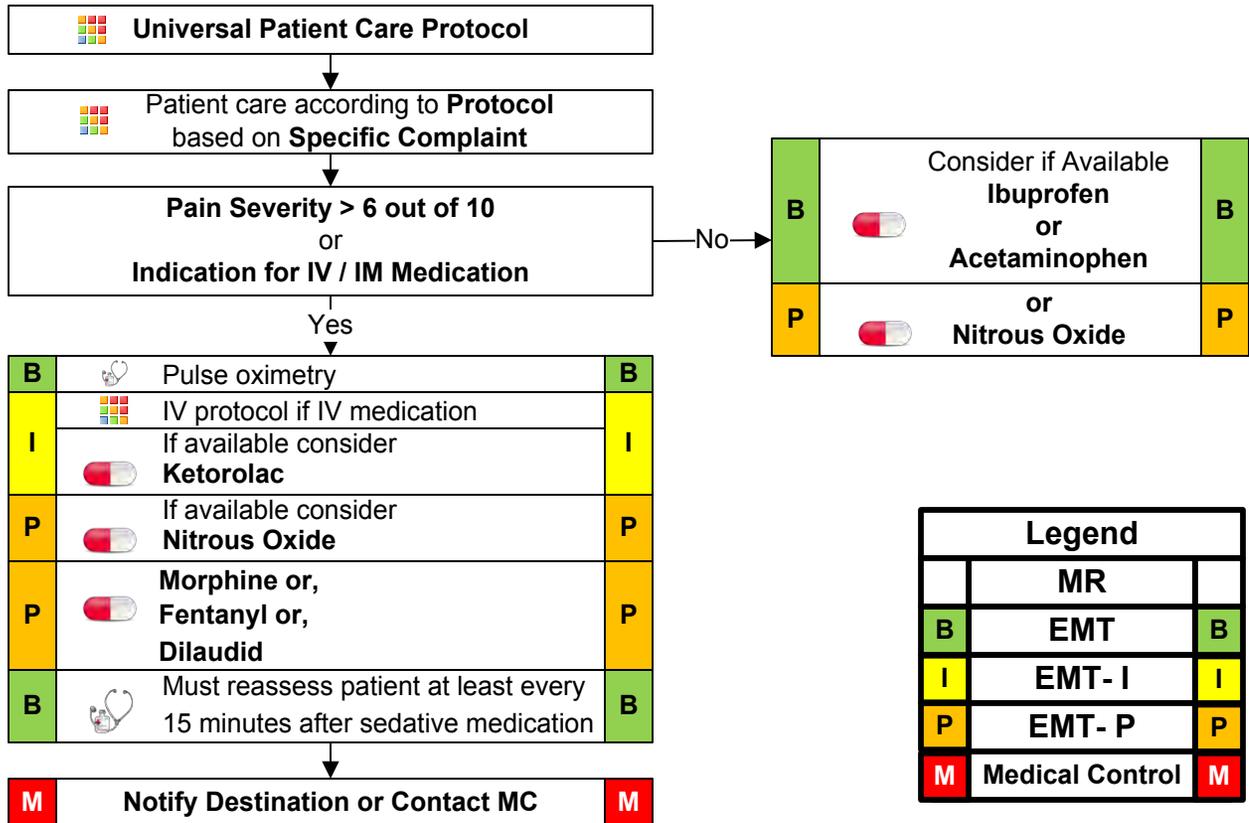
- Age
- Location
- Duration
- Severity (1 - 10)
- If child use Wong-Baker faces scale
- Past medical history
- Medications
- Drug allergies

## Signs and Symptoms

- Severity (pain scale)
- Quality (sharp, dull, etc.)
- Radiation
- Relation to movement, respiration
- Increased with palpation of area

## Differential

- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural / Respiratory
- Neurogenic
- Renal (colic)



General Protocols

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

## Pearls

- **Recommended Exam: Mental Status, Area of Pain, Neuro**
- Pain severity (0-10) is a vital sign to be recorded pre and post IV or IM medication delivery and at disposition.
- Vital signs should be obtained pre, 15 minutes post, and at disposition with all pain medications.
- Patients with presumed kidney stone should first receive Toradol. A narcotic may then be considered.
- Contraindications to the use of a **narcotic** include hypotension, head injury, respiratory distress or severe COPD.
- **Ketorolac (Toradol) and Ibuprofen should not be used in patients with known renal disease or renal transplant, in patients who have known drug allergies to NSAID's (non-steroidal anti-inflammatory medications), with active bleeding, or in patients who may need surgical intervention such as open fractures or fracture deformities.**
- All patients should have drug allergies documented prior to administering pain medications.
- All patients who receive IM or IV medications must be observed 15 minutes for drug reaction.
- **Ibuprofen or Ketorolac** should not be given for headaches or abdominal pain, history of gastritis, stomach ulcers, fracture, or if patient will require sedation
- Do not administer any PO medications for patients who may need surgical intervention such as open fractures or fracture deformities, headaches, or abdominal pain.
- Do not administer **Acetaminophen** to patients with a history of liver disease.
- See drug list for other contraindications for Narcotics, Acetaminophen, Nitrous Oxide, Ketorolac, and Ibuprofen.

## Protocol 10

Any local EMS System changes to this document must follow the NC OEMS Protocol Change Policy and be approved by OEMS

2009



# Pain Control: Pediatric



## History

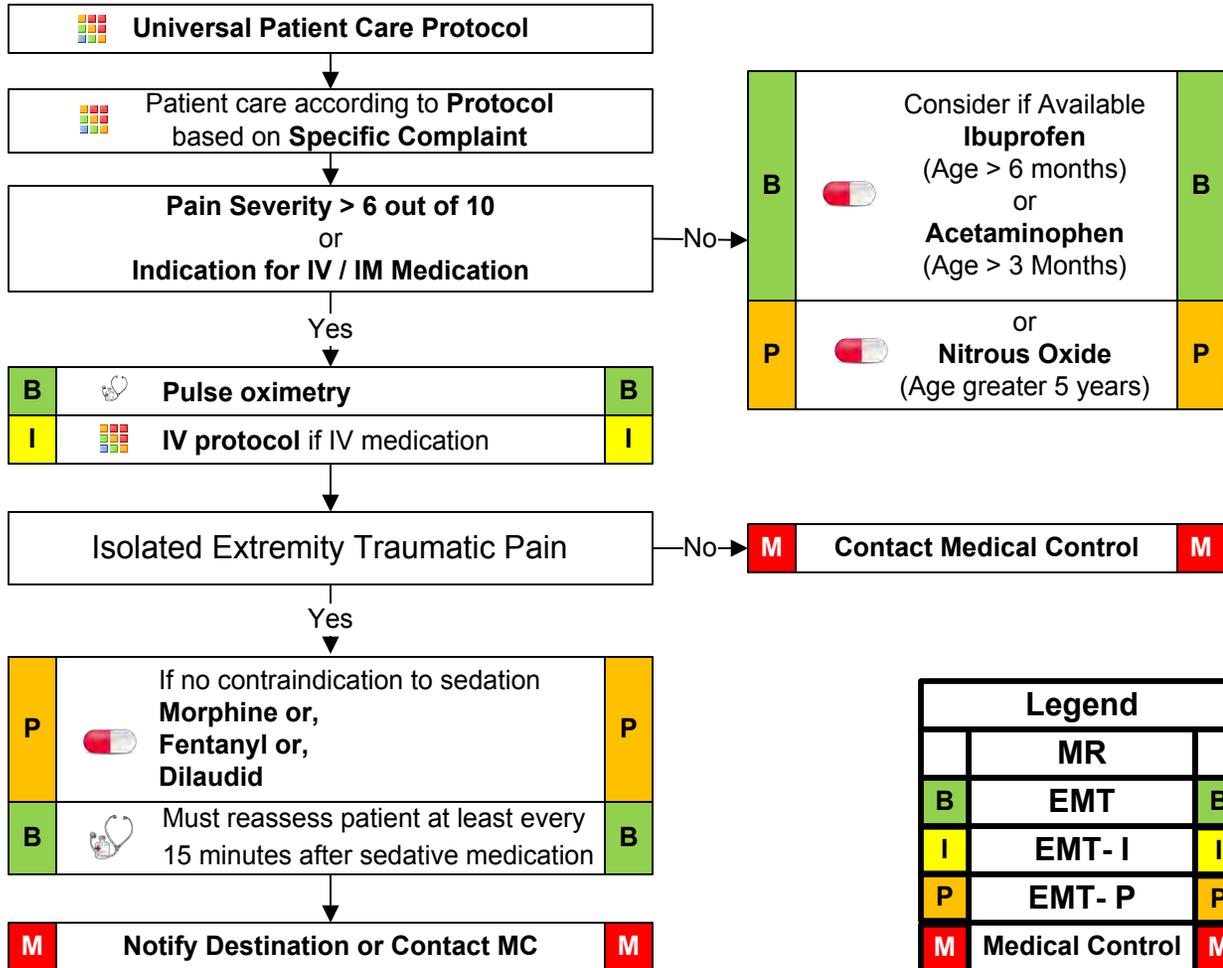
- Age
- Location
- Duration
- Severity (1 - 10)
- If child use Wong-Baker faces scale
- Past medical history
- Medications
- Drug allergies

## Signs and Symptoms

- Severity (pain scale)
- Quality (sharp, dull, etc.)
- Radiation
- Relation to movement, respiration
- Increased with palpation of area

## Differential

- Per the specific protocol
- Musculoskeletal
- Visceral (abdominal)
- Cardiac
- Pleural / Respiratory
- Neurogenic
- Renal (colic)



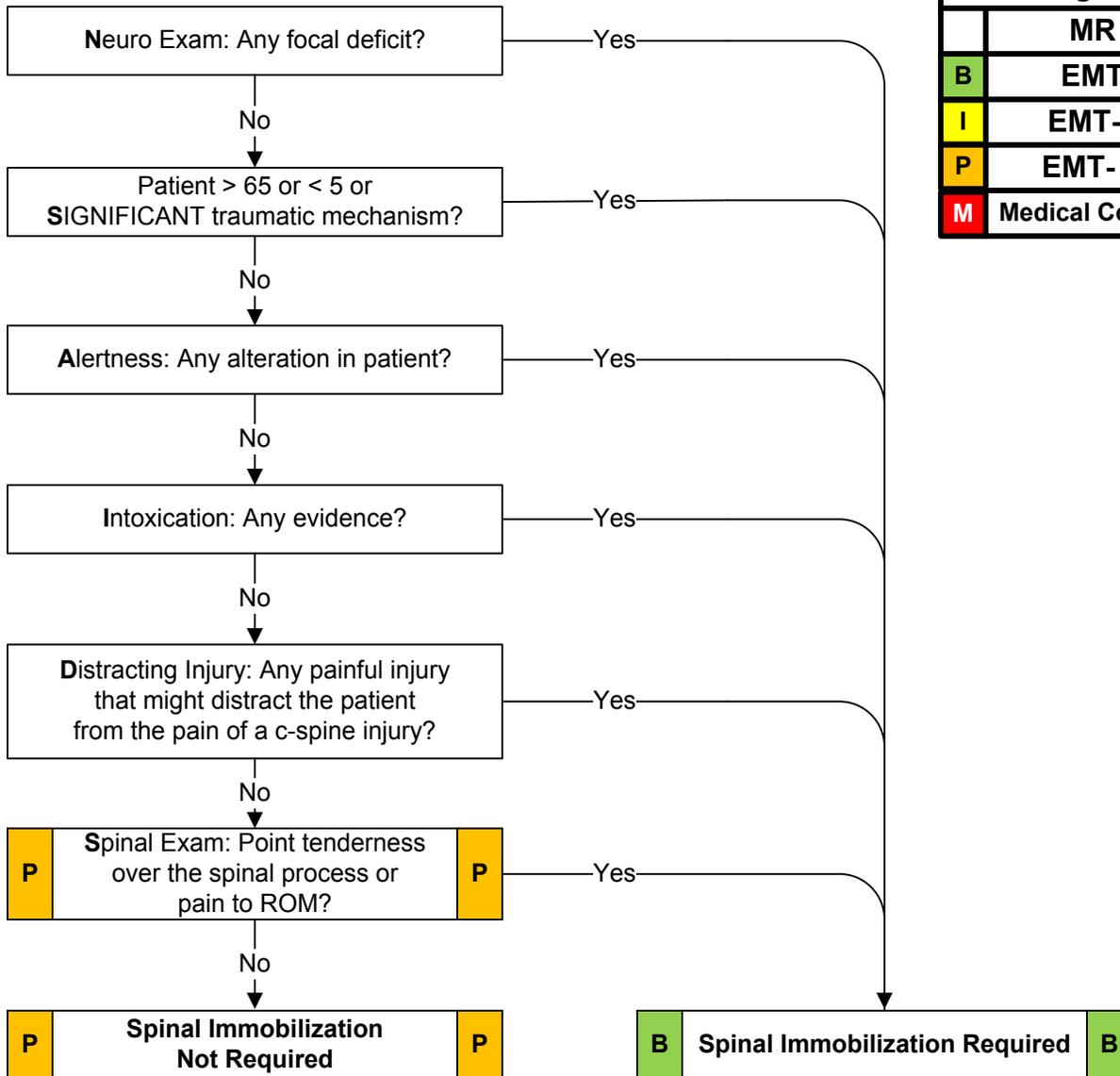
General Protocols

## Pearls

- **Recommended Exam: Mental Status, Area of Pain, Neuro**
- Pain severity (0-10) is a vital sign to be recorded pre and post IV or IM medication delivery and at disposition.
- For children use Wong-Baker faces scale or the FLACC score (see Assessment Pain Procedure)
- Vital signs should be obtained pre, 15 minutes post, and at disposition with all pain medications.
- Contraindications to Narcotic use include hypotension, head injury, or respiratory distress.
- All patients should have drug allergies documented and avoid medications with a history of an allergy or reaction.
- All patients who receive IM or IV medications must be observed 15 minutes for drug reaction.
- **Ibuprofen** should not be given if there is abdominal pain, history of gastritis, stomach ulcers, fracture, or if patient will require sedation.
- Do not administer any PO medications for patients who may need surgical intervention such as open fractures or fracture deformities.
- See drug list for other contraindications for Narcotics, Nitrous Oxide, Acetaminophen, and Ibuprofen.



# Spinal Immobilization Clearance



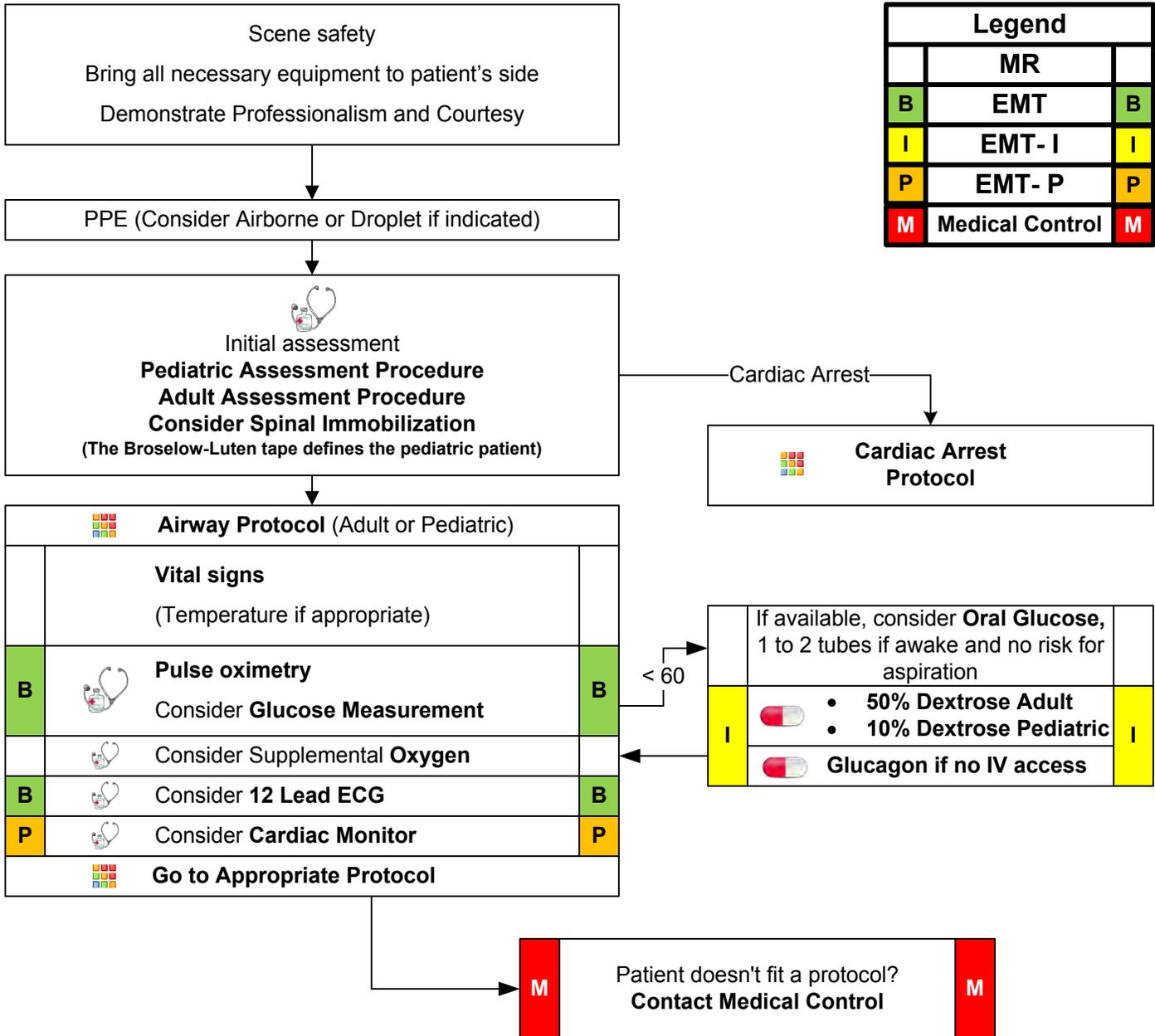
Legend		
	MR	
B	EMT	B
I	EMT- I	I
P	EMT- P	P
M	Medical Control	M

### Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Consider immobilization in any patient with arthritis, cancer, or other underlying spinal or bone disease.**
- Significant mechanism includes high-energy events such as ejection, high falls, and abrupt deceleration crashes and may indicate the need for spinal immobilization in the absence of symptoms.
- Range of motion should NOT be assessed if patient has midline spinal tenderness. Patient's range of motion should not be assisted. The patient should touch their chin to their chest, extend their neck (look up), and turn their head from side to side (shoulder to shoulder) without spinal process pain.
- The acronym "NSAIDS" should be used to remember the steps in this protocol.
- "N" = Neurologic exam. Look for focal deficits such as tingling, reduced strength, or numbness in an extremity.
- "S" = Significant mechanism or extremes of age.
- "A" = Alertness. Is patient oriented to person, place, time, and situation? Any change to alertness with this incident?
- "I" = Intoxication. Is there any indication that the person is intoxicated (impaired decision making ability)?
- "D" = Distracting injury. Is there any other injury which is capable of producing significant pain in this patient?
- "S" = Spinal exam. Look for point tenderness in any spinal process or spinal process tenderness with range of motion.
- **The decision to NOT implement spinal immobilization in a patient is the responsibility of the paramedic.**
- **In very old and very young patients, a normal exam may not be sufficient to rule out spinal injury.**



# Universal Patient Care Protocol



General Protocols

## Pearls

- **Recommended Exam: Minimal exam if not noted on the specific protocol is vital signs, mental status with GCS, and location of injury or complaint.**
- Any patient contact which does not result in an EMS transport must have a completed disposition form.
- Required vital signs on every patient include blood pressure, pulse, respirations, pain / severity.
- Pulse oximetry and temperature documentation is dependent on the specific complaint.
- A pediatric patient is defined by the Broselow-Luten tape. If the patient does not fit on the tape, they are considered adult.
- Timing of transport should be based on patient's clinical condition and the transport policy.
- Never hesitate to contact medical control for patient who refuses transport.
- Orthostatic vital sign procedure should be performed in situations where volume status is in question.



# Police Custody



## History

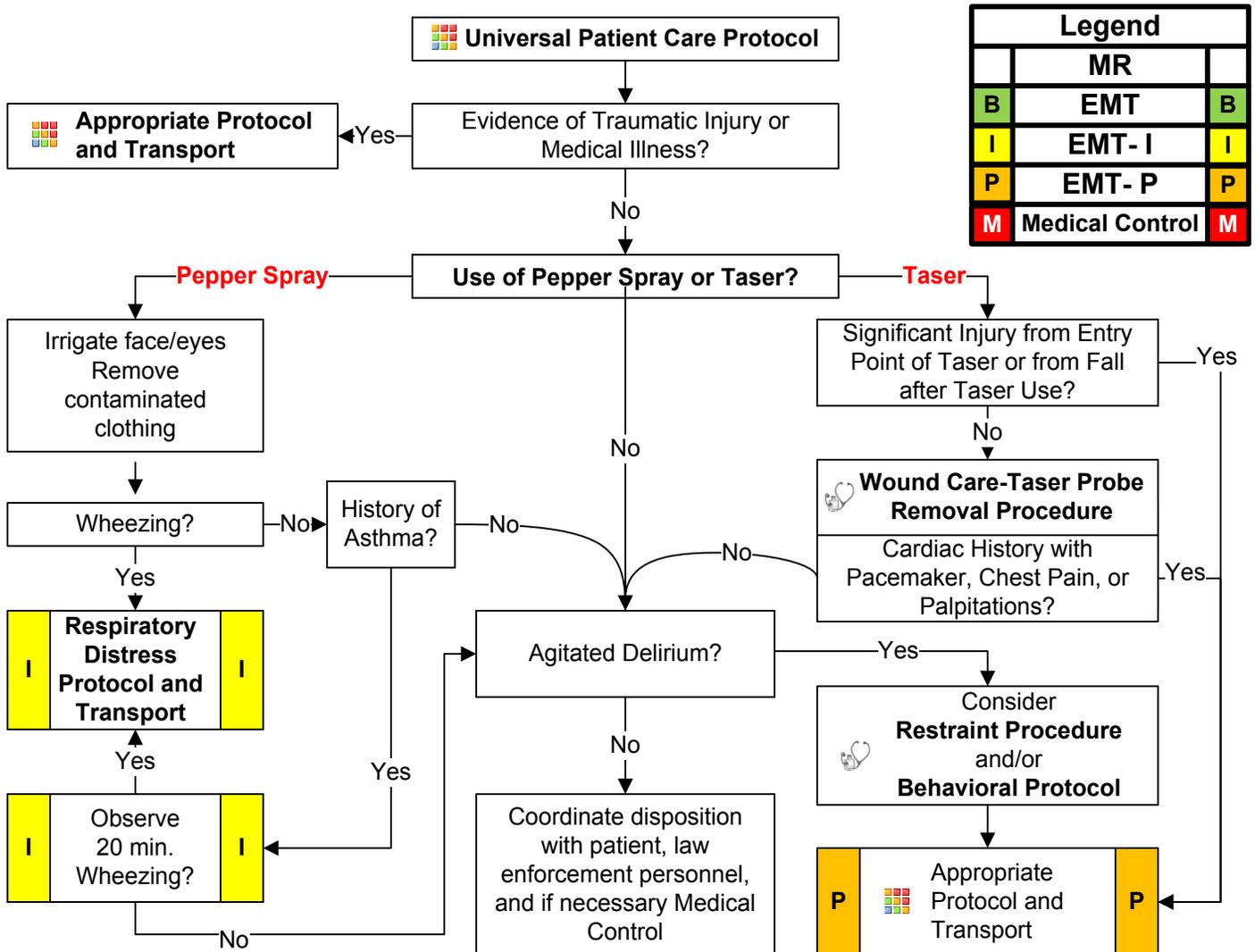
- Traumatic Injury
- Drug Abuse
- Cardiac History
- History of Asthma
- Psychiatric History

## Signs and Symptoms

- External signs of trauma
- Palpitations
- Shortness of breath
- Wheezing
- Altered Mental Status
- Intoxication/Substance Abuse

## Differential

- Agitated Delirium Secondary to Psychiatric Illness
- Agitated Delirium Secondary to Substance Abuse
- Traumatic Injury
- Closed Head Injury
- Asthma Exacerbation
- Cardiac Dysrhythmia



General Protocols

## Pearls

- For this protocol to be used, the patient does not have to be under police custody.
- Agitated delirium is characterized by marked restlessness, irritability, and/or high fever. Patients exhibiting these signs are at high risk for sudden death and should be transported to hospital by ALS personnel.
- Patients restrained by law enforcement devices cannot be transported in the ambulance without a law enforcement officer in the patient compartment who is capable of removing the devices.
- If there is any doubt about the cause of a patient's alteration in mental status, transport the patient to the hospital for evaluation.
- If an asthmatic patient is exposed to pepper spray and released to law enforcement, all parties should be advised to immediately recontact EMS if wheezing/difficulty breathing occurs.
- All patients in police custody retain the right to request transport. This should be coordinated with law enforcement.
- If extremity/chemical/law enforcement restraints are applied, completed Restraint procedure in call reporting system.



# Abdominal Pain



## 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

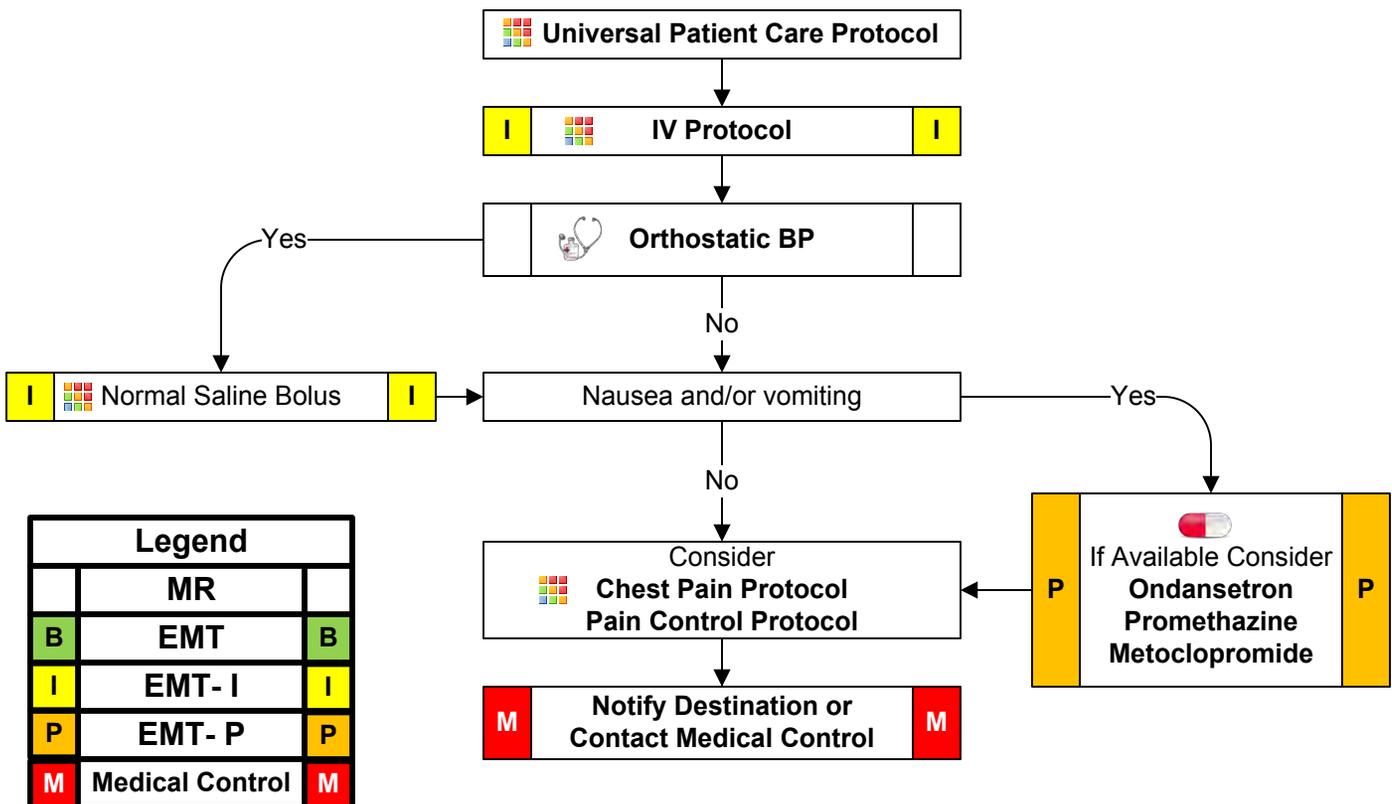
- Pain (location / migration)
- Tenderness
- Nausea
- Vomiting
- Diarrhea
- Dysuria
- Constipation
- Vaginal bleeding / discharge
- Pregnancy

### 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)



Medical Protocols

## 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

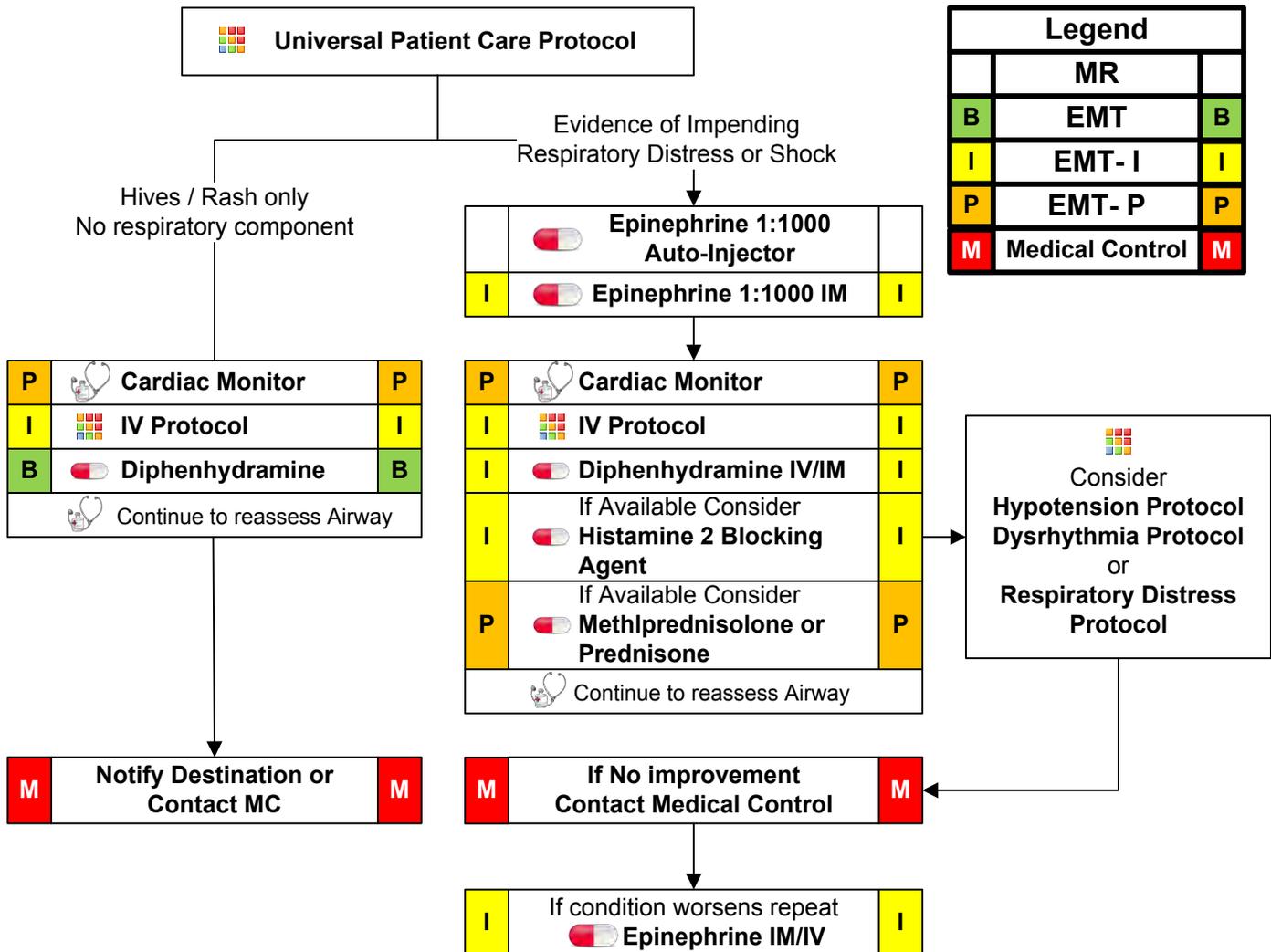
- Onset and location
- Insect sting or bite
- Food allergy / exposure
- Medication allergy / exposure
- New clothing, soap, detergent
- Past history of reactions
- Past medical history
- Medication history

## 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



## 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

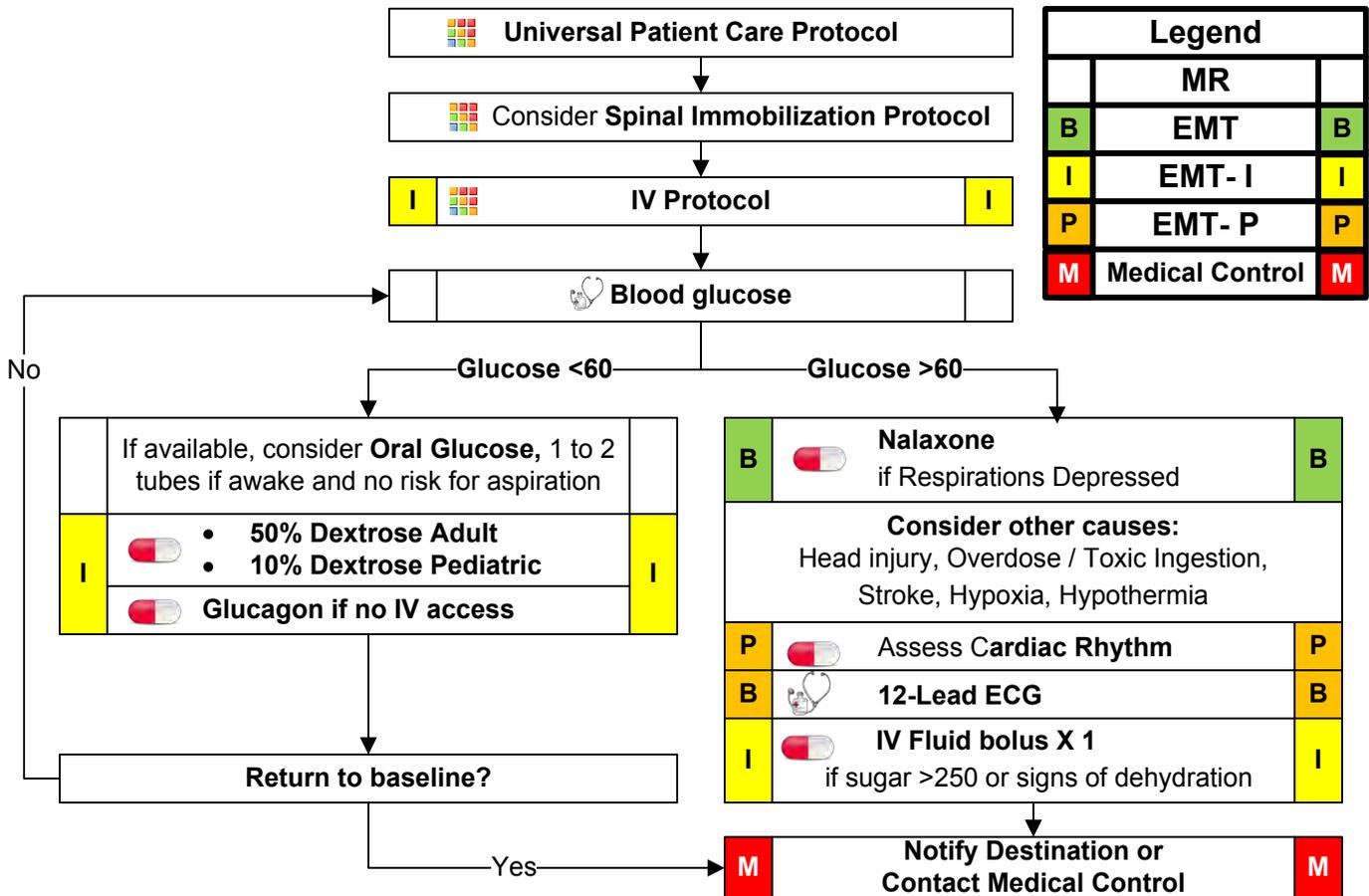
- Known diabetic, medic alert tag
- Drugs, drug paraphernalia
- Report of illicit drug use or toxic ingestion
- Past medical history
- Medications
- History of trauma
- Change in condition
- Changes in feeding or sleep habits

## 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



Medical Protocols

## 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

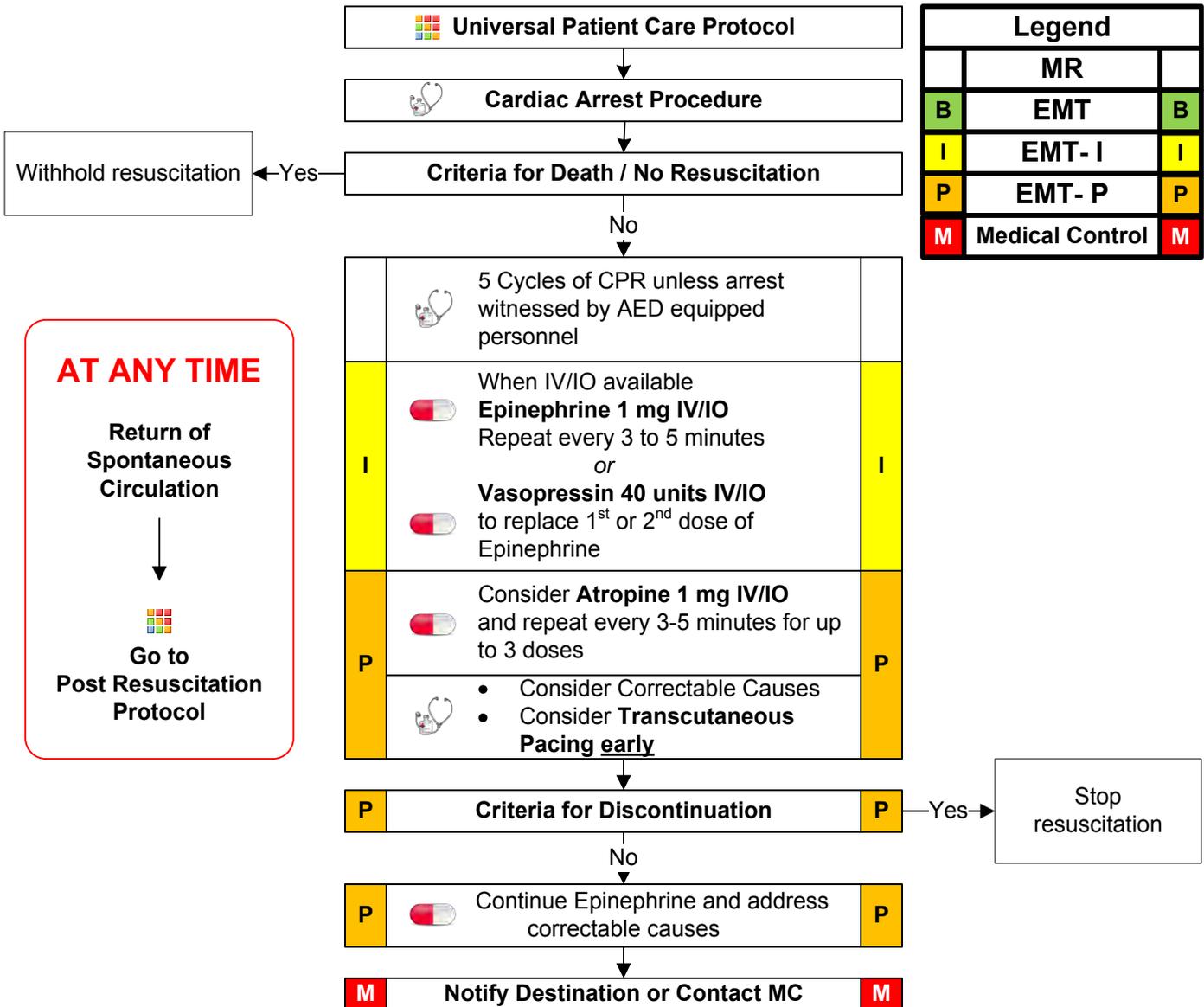
- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
- DNR or MOST form

### 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



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

### 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

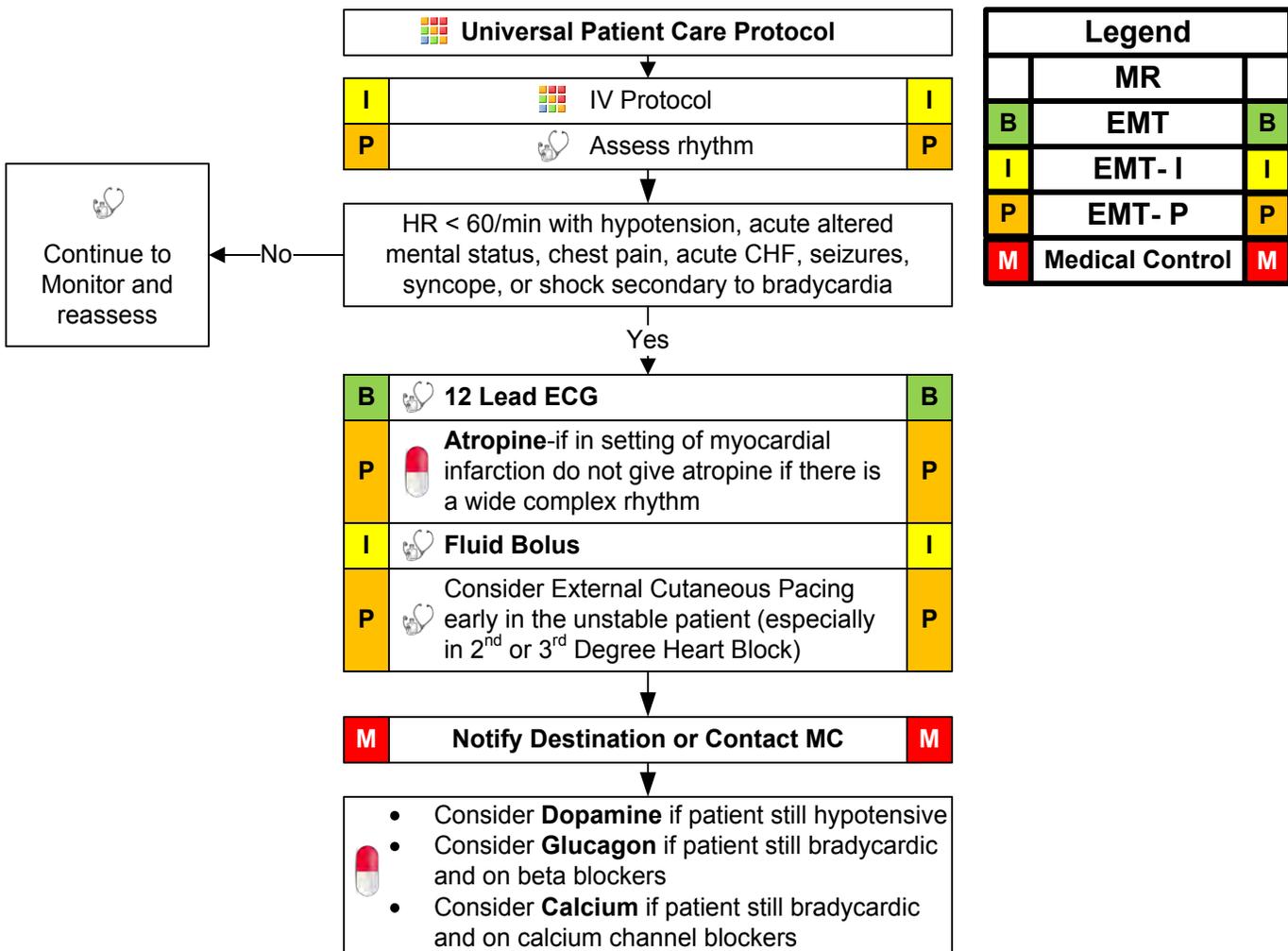
- Past medical history
- Medications
  - Beta-Blockers
  - Calcium channel blockers
  - Clonidine
  - Digoxin
- Pacemaker

### 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



Medical Protocols

### 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:

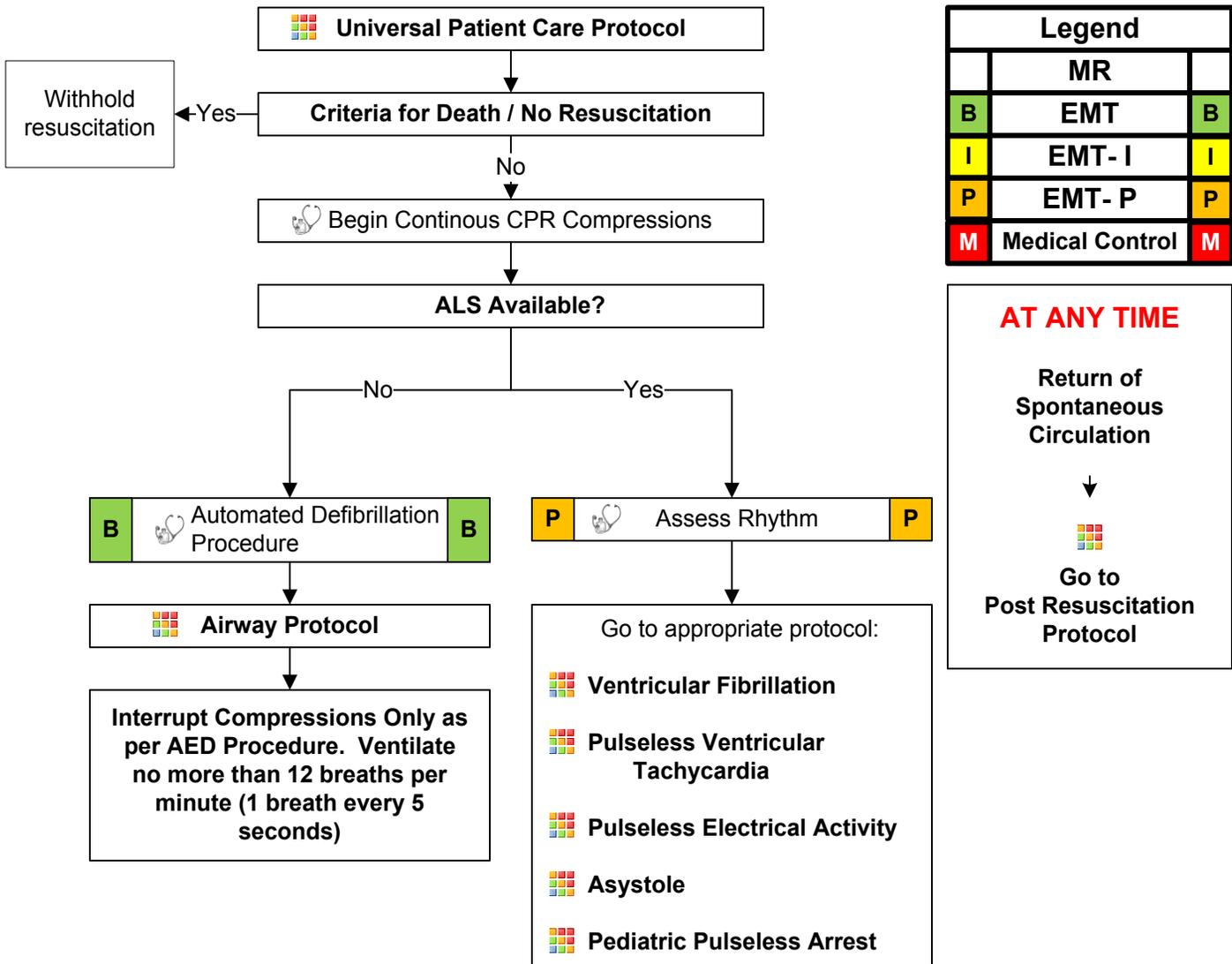
- Events leading to arrest
- Estimated downtime
- Past medical history
- Medications
- Existence of terminal illness
- Signs of lividity, rigor mortis
- DNR, MOST, or Living Will

## Signs and Symptoms:

- Unresponsive
- Apneic
- Pulseless

## Differential:

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



## 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		

**M** Notify Destination or Contact MC **M**

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

Medical Protocols

## 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)



# Dental Problems



## History

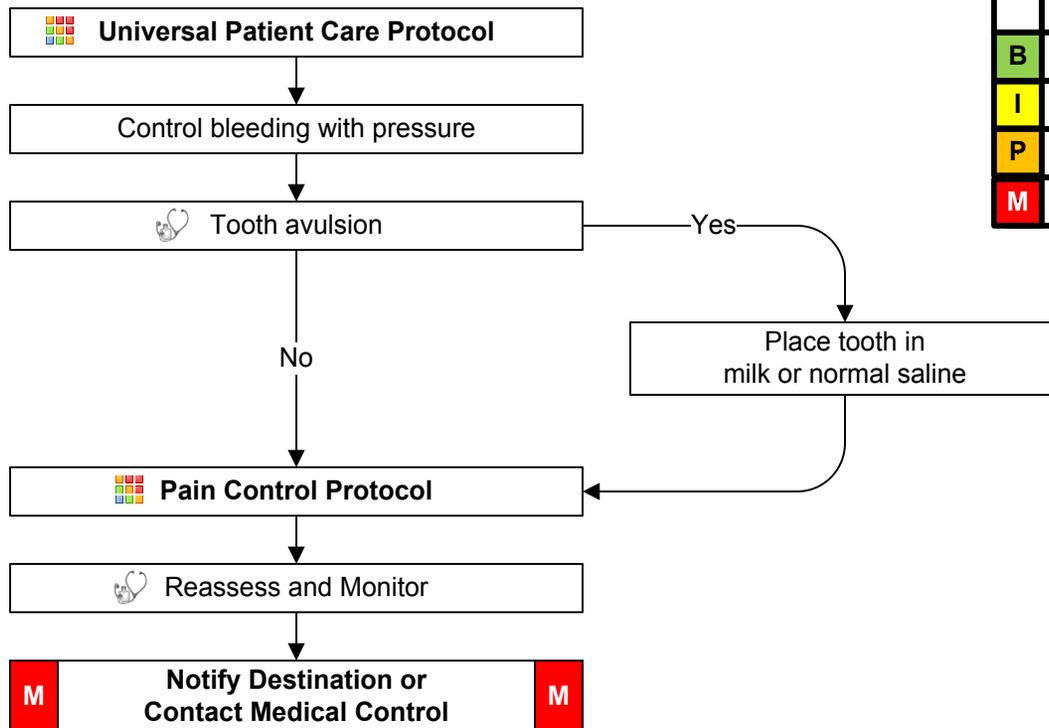
- Age
- Past medical history
- Medications
- Onset of pain / injury
- Trauma with "knocked out" tooth
- Location of tooth
- Whole vs. partial tooth injury

## 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



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, 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).



# Epistaxis



## History

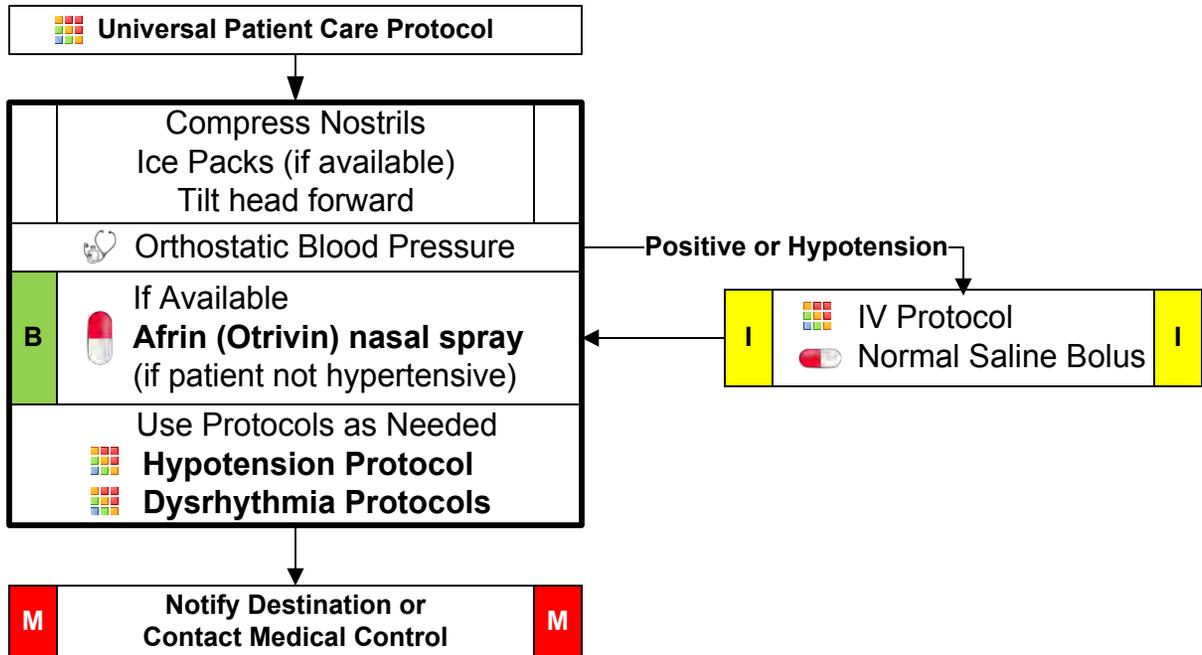
- Age
- Past medical history
- Medications (HTN, anticoagulants, Aspirin, NSAIDS)
- Previous episodes of epistaxis
- Trauma
- Duration of bleeding
- Quantity of bleeding

## Signs and Symptoms

- Bleeding from nasal passage
- Pain
- Nausea
- Vomiting

## Differential

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



Medical Protocols

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.



# Hypertension



## 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

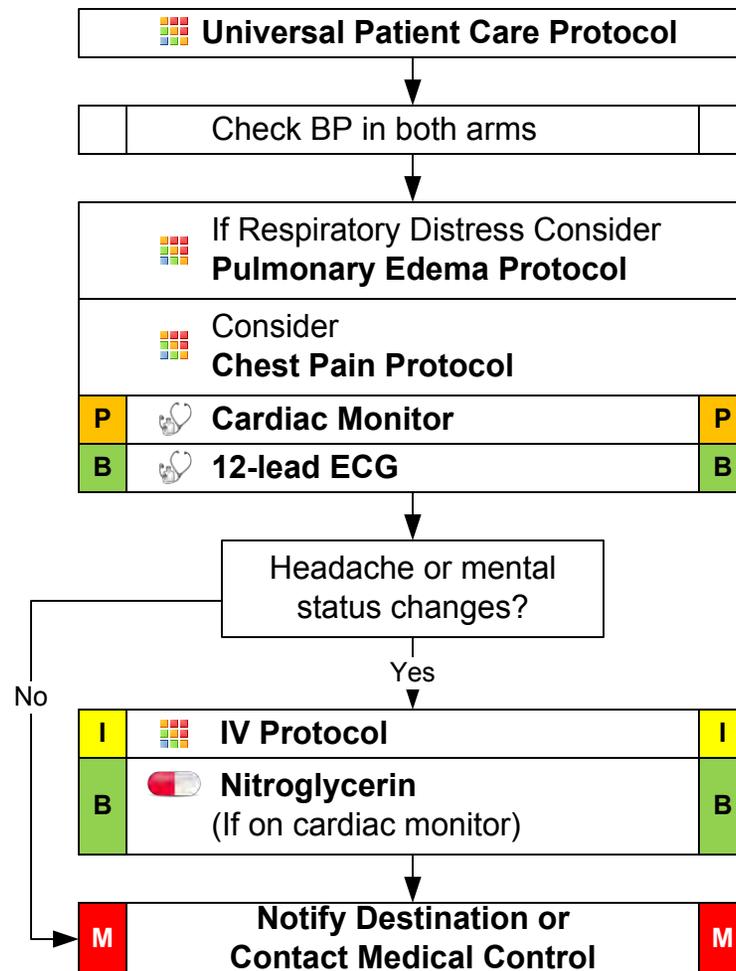
### AND at least one of these

- 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



Medical Protocols

## 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

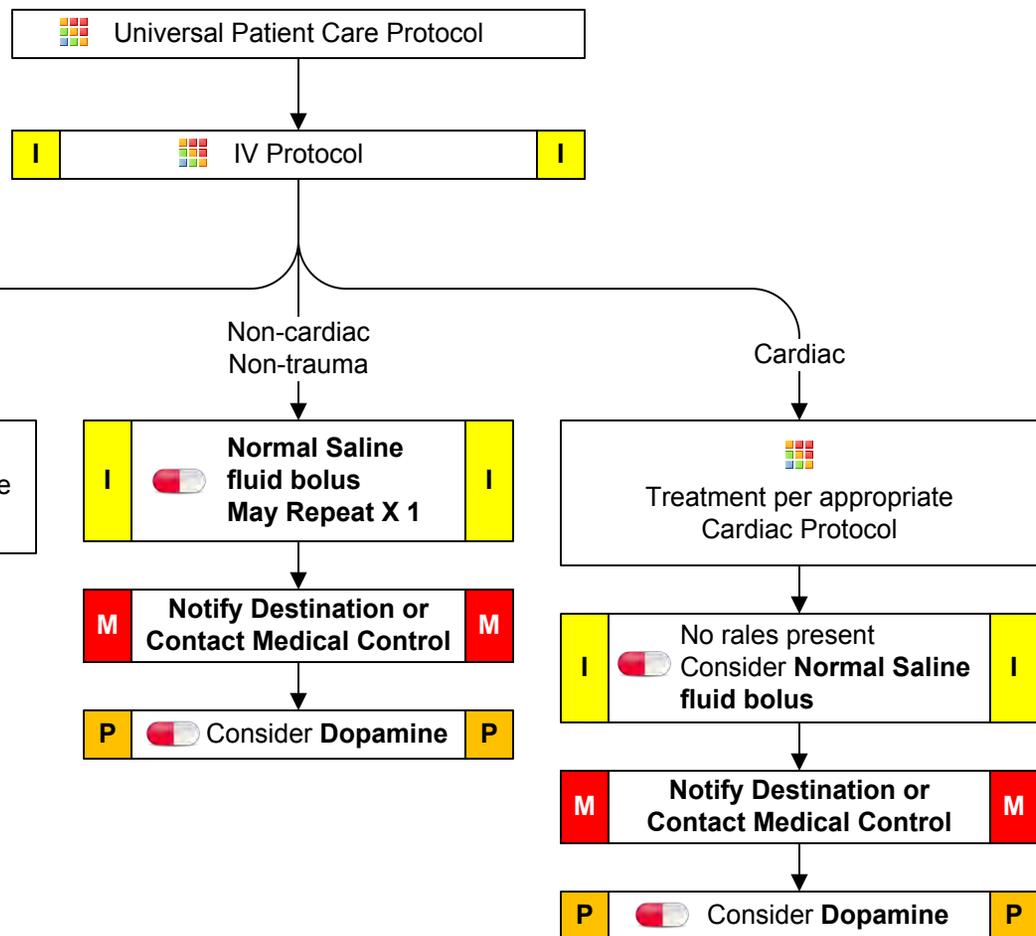
- Blood loss - vaginal or gastrointestinal bleeding, AAA, ectopic
- Fluid loss - vomiting, diarrhea, fever
- Infection
- Cardiac ischemia (MI, CHF)
- Medications
- Allergic reaction
- Pregnancy
- History of poor oral intake

## 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)



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

## 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

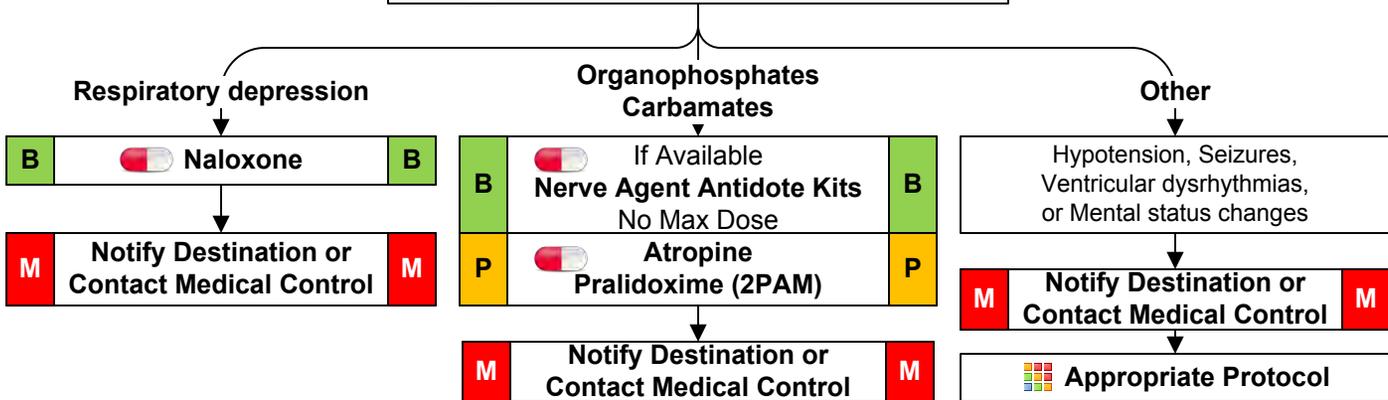
- Mental status changes
- Hypotension / hypertension
- Decreased respiratory rate
- Tachycardia, dysrhythmias
- Seizures

## 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

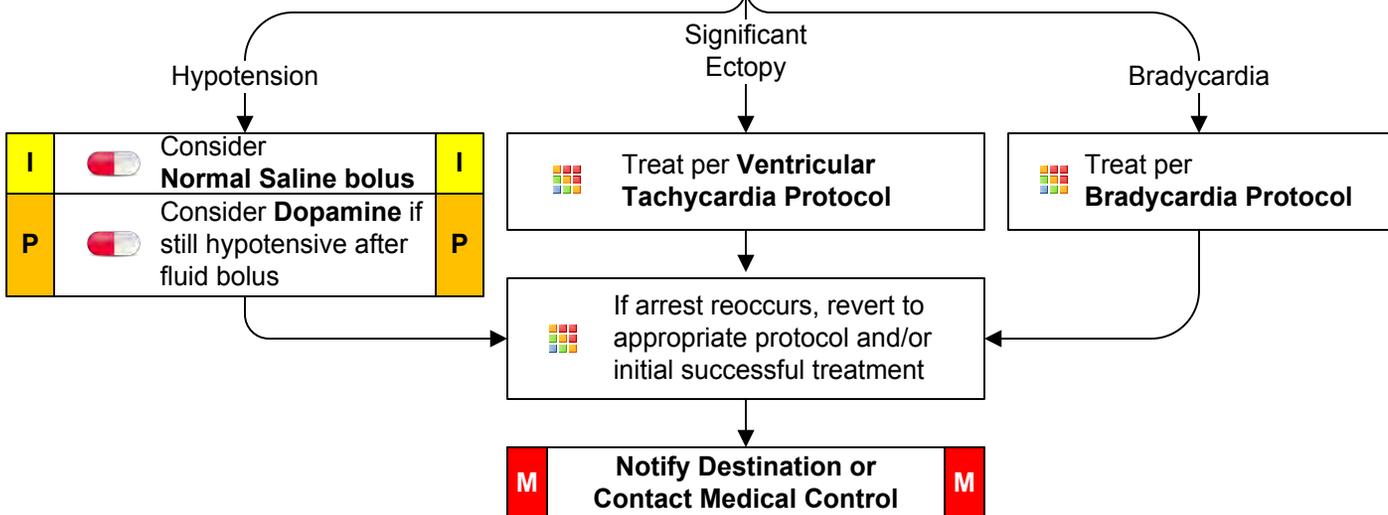
- Continue to address specific differentials associated with the original dysrhythmia

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

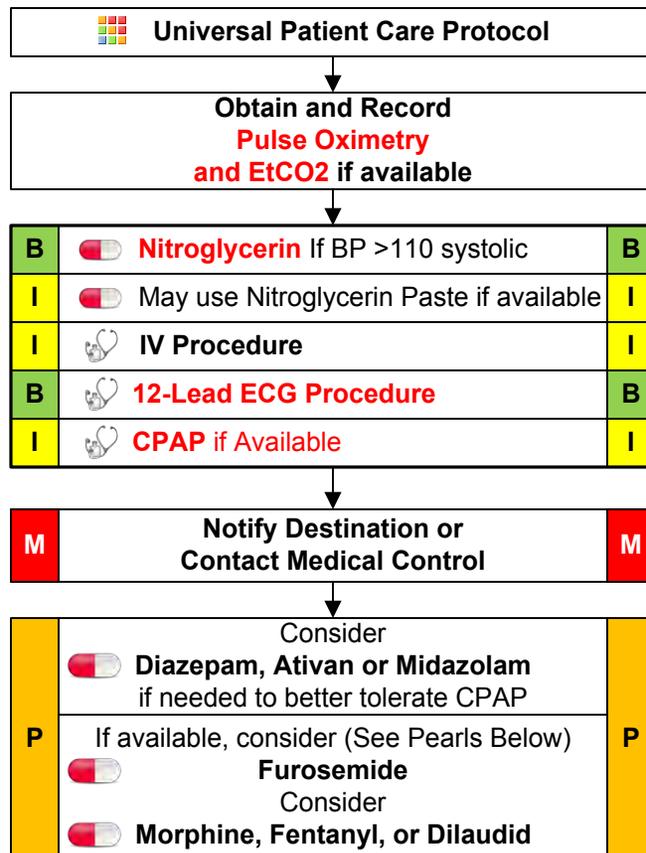
## Signs/Symptoms

- 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

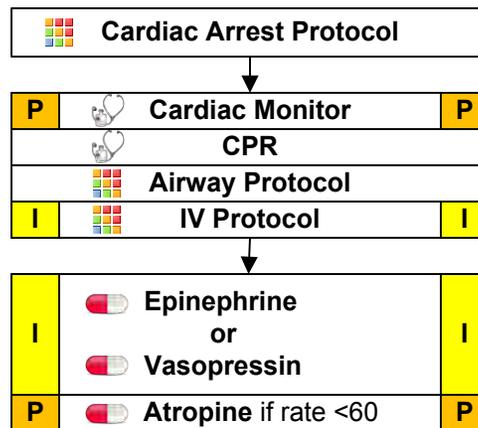
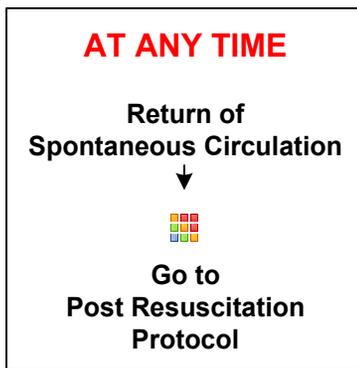
- Past medical history
- Medications
- Events leading to arrest
- End stage renal disease
- Estimated downtime
- Suspected hypothermia
- Suspected overdose
  - Tricyclics
  - Digitalis
  - Beta blockers
  - Calcium channel blockers
- DNR, MOST, of Living Will

## Signs and Symptoms

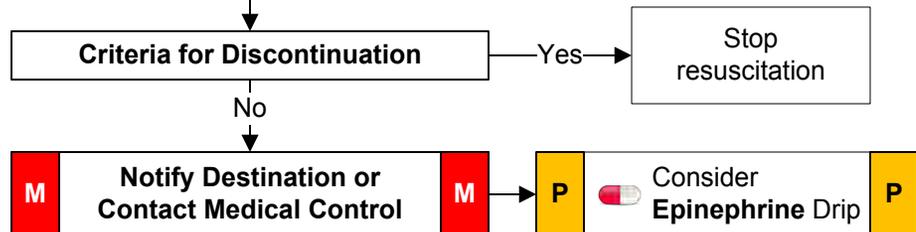
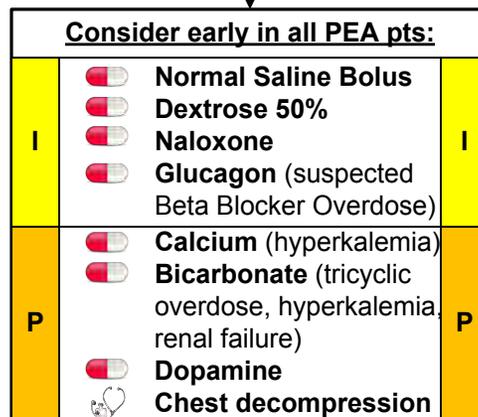
- Pulseless
- Apneic
- Electrical activity on ECG
- No heart tones on auscultation

## 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.



# Respiratory Distress



## History

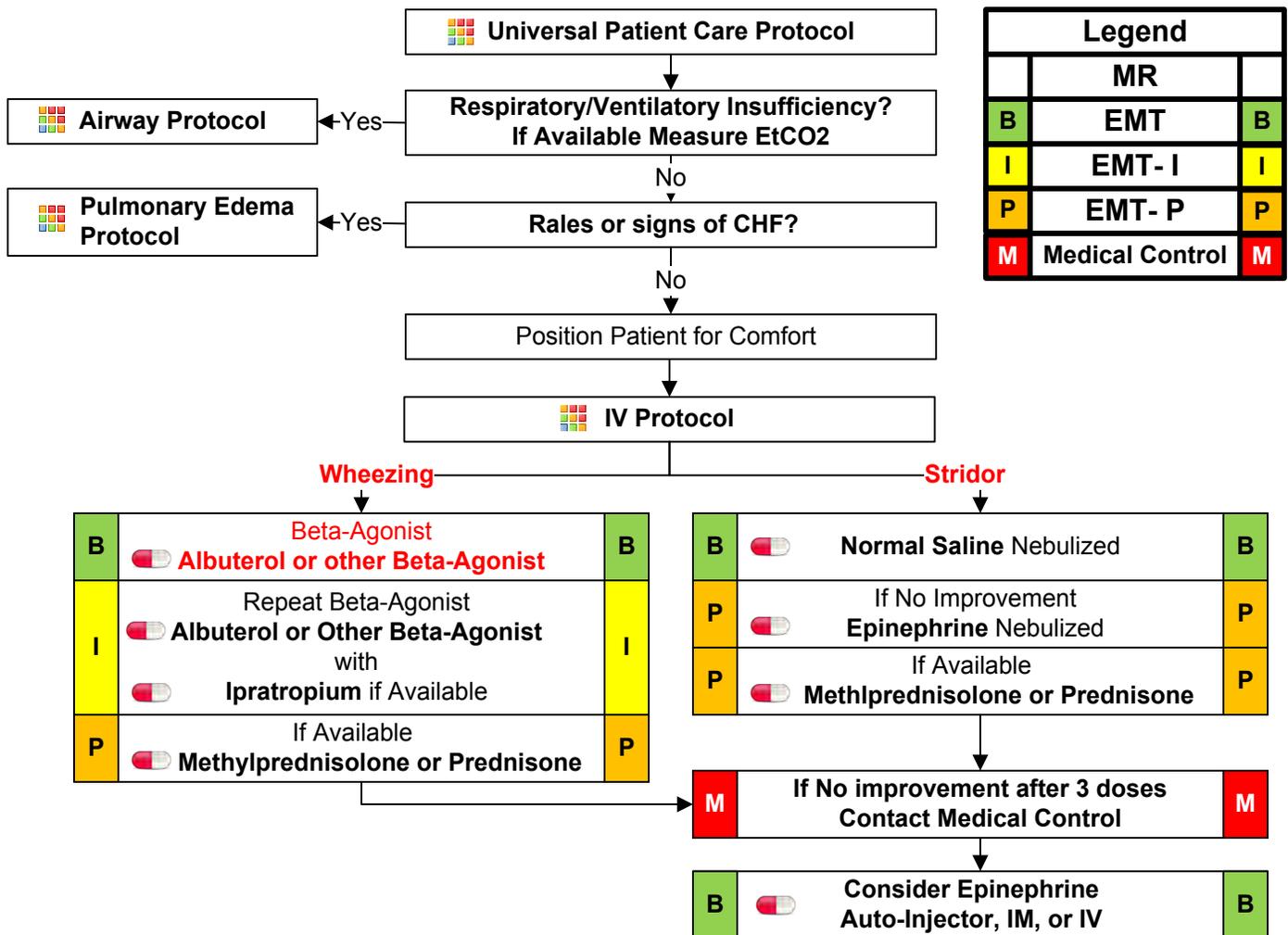
- Asthma; COPD -- chronic bronchitis, emphysema, congestive heart failure
- Home treatment (oxygen, nebulizer)
- Medications (theophylline, steroids, inhalers)
- Toxic exposure, smoke inhalation

## 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.)



Medical Protocols

## 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.



# Seizure



## History

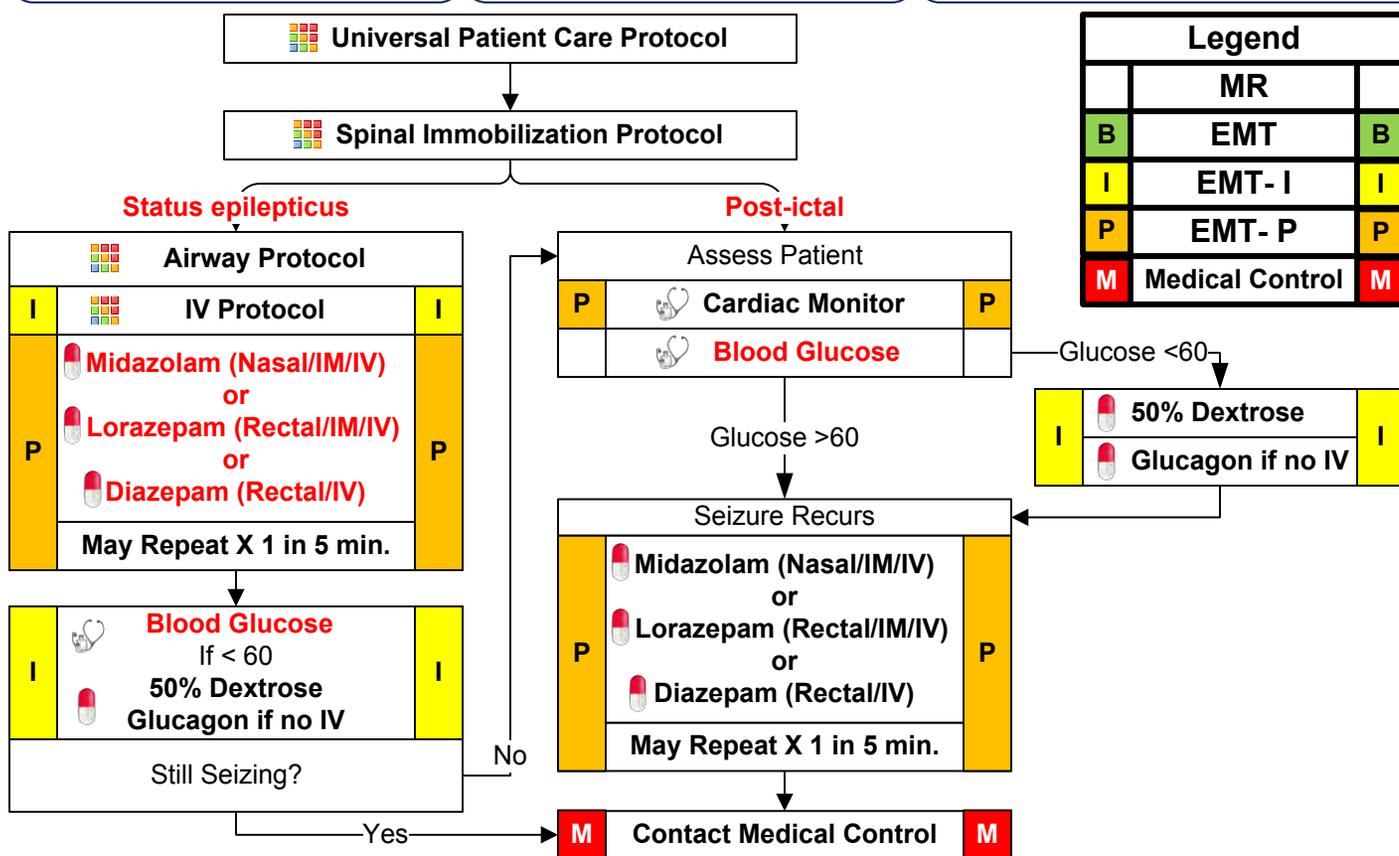
- Reported / witnessed seizure activity
- Previous seizure history
- Medical alert tag information
- Seizure medications
- History of trauma
- History of diabetes
- History of pregnancy

## 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



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

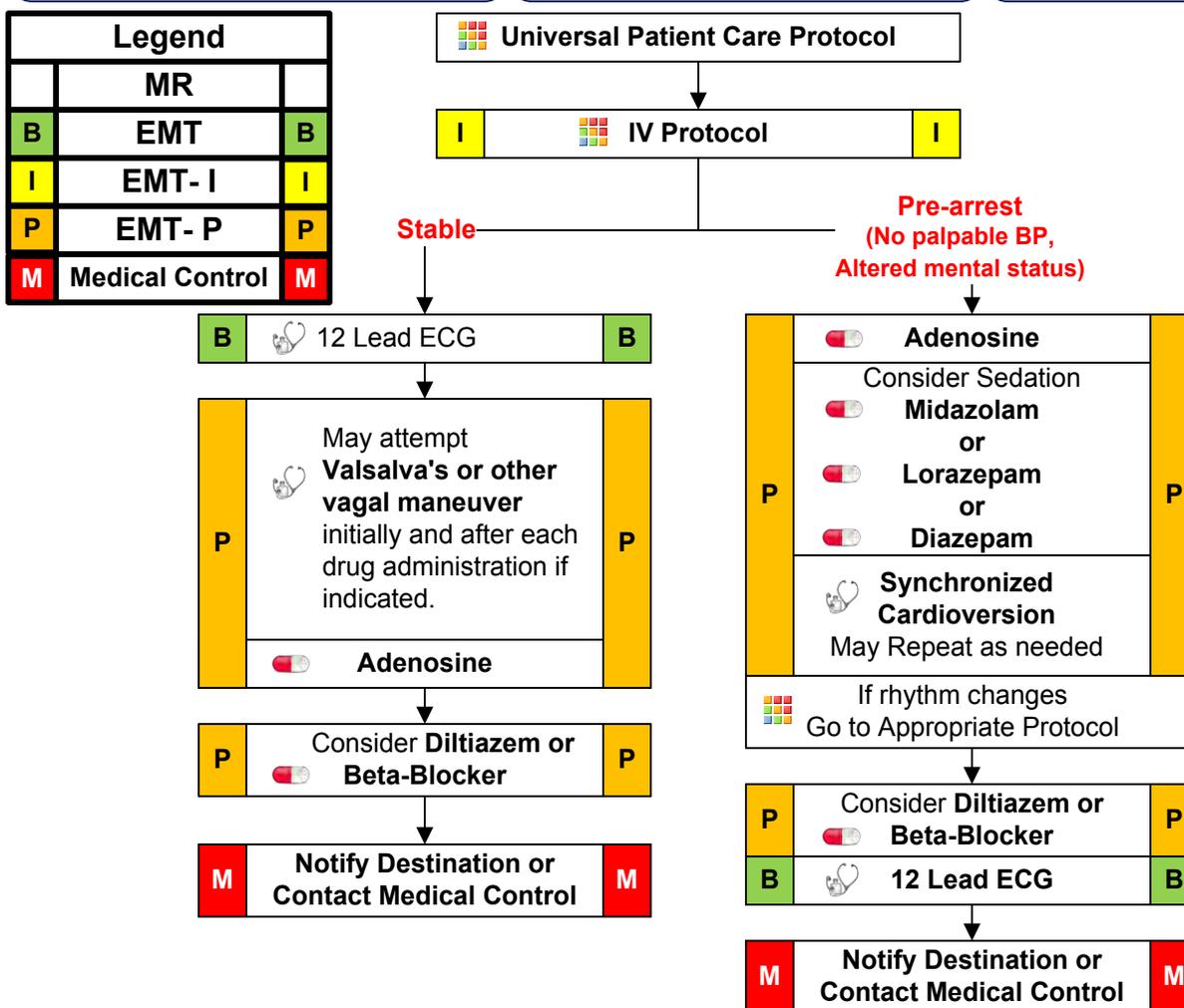
- Medications (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)
- Diet (caffeine, chocolate)
- Drugs (nicotine, cocaine)
- Past medical history
- History of palpitations / heart racing
- Syncope / near syncope

## 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



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

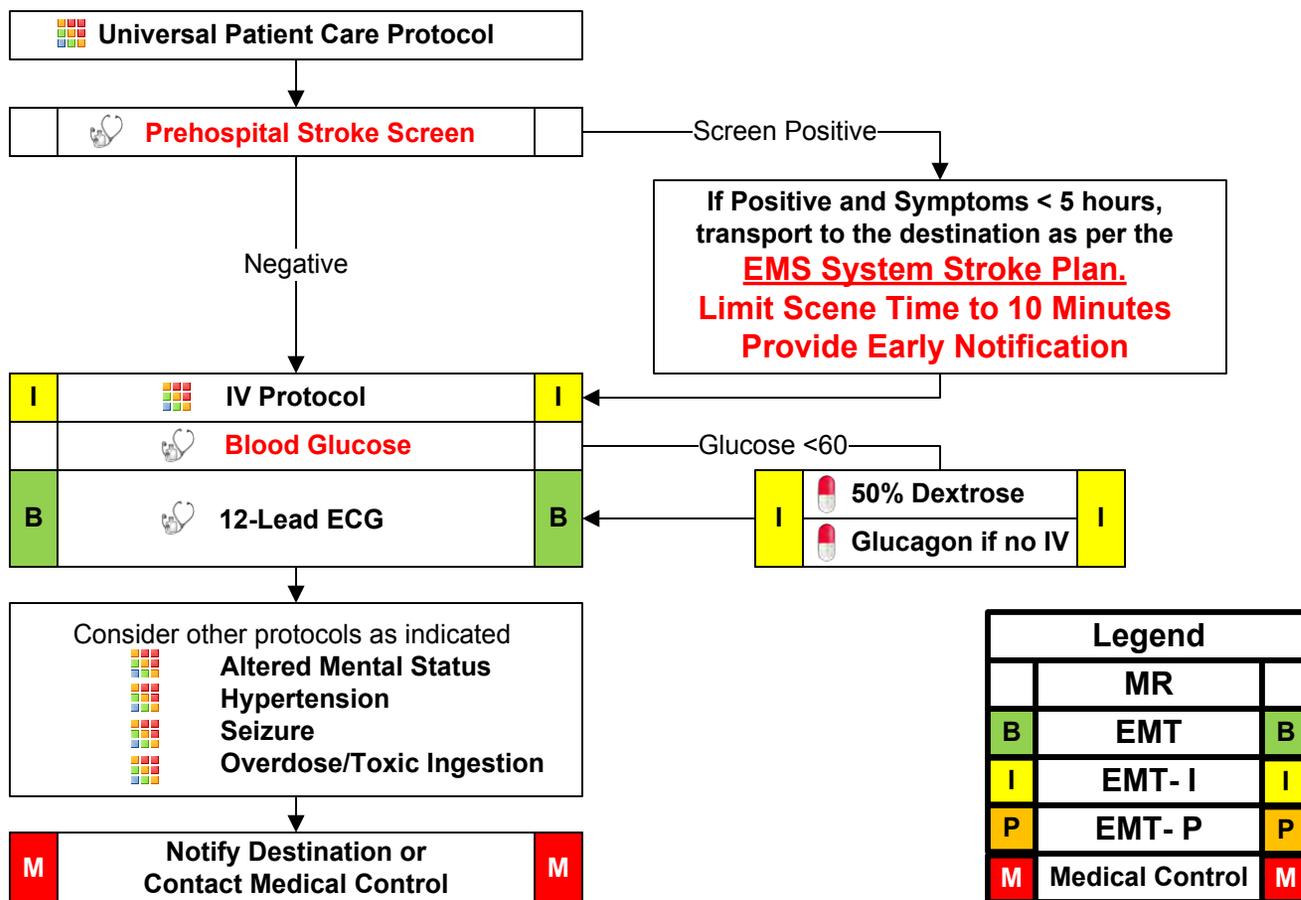
- Previous CVA, TIA's
- Previous cardiac / vascular surgery
- Associated diseases: diabetes, hypertension, CAD
- Atrial fibrillation
- Medications (blood thinners)
- History of trauma

## 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 or 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

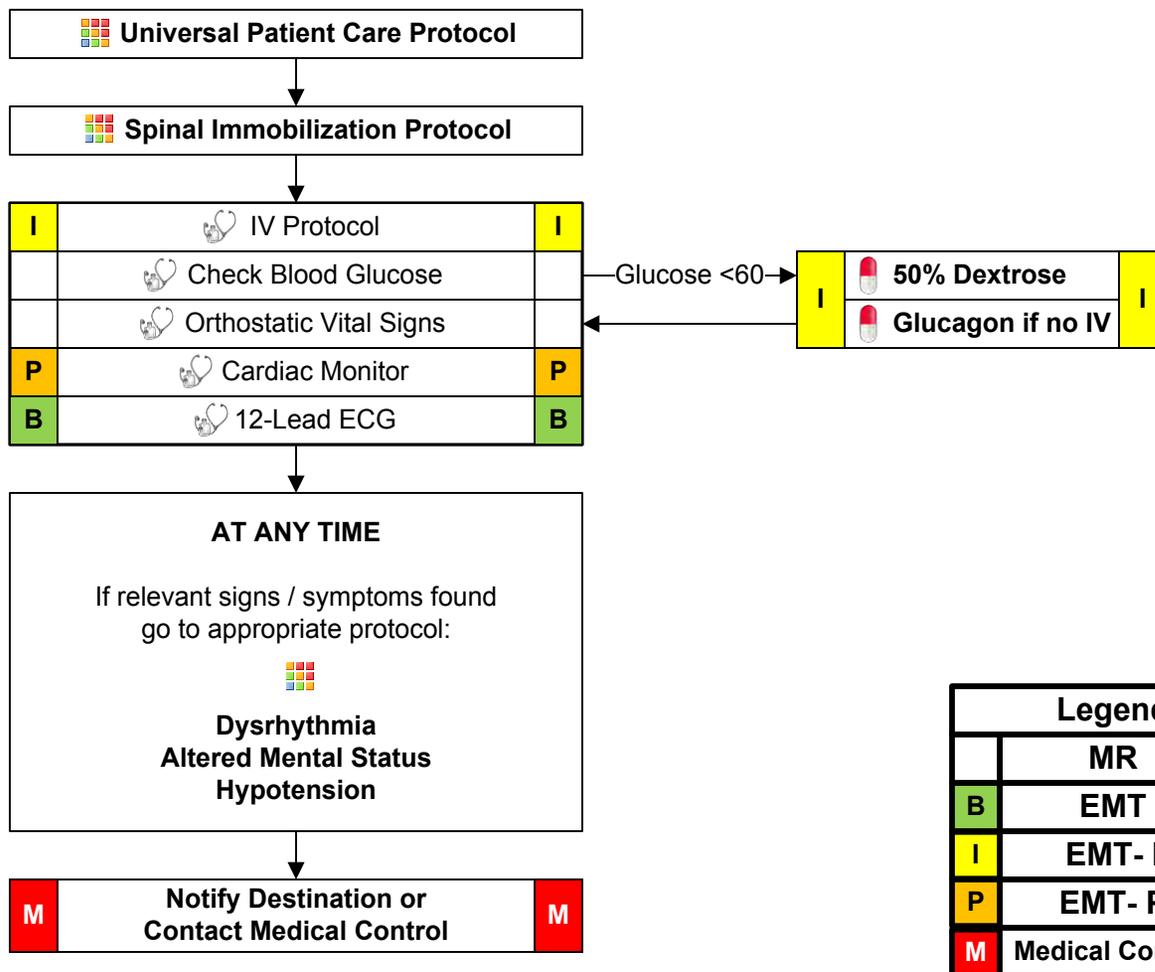
- Cardiac history, stroke, seizure
- Occult blood loss (GI, ectopic)
- Females: LMP, vaginal bleeding
- Fluid loss: nausea, vomiting, diarrhea
- Past medical history
- Medications

## 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

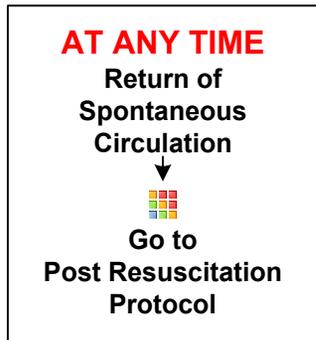
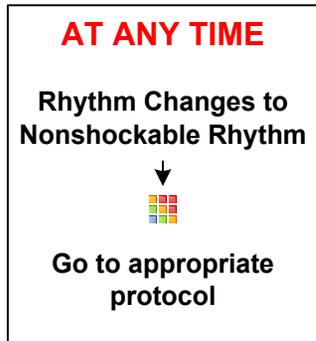
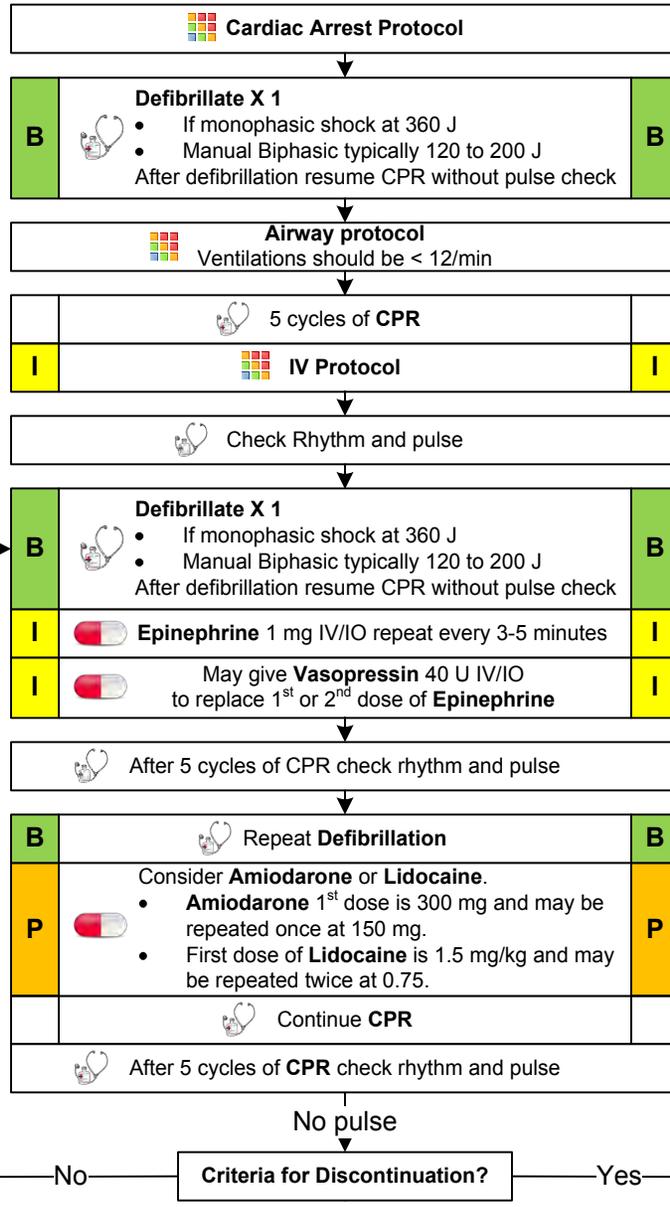
## Signs and Symptoms

- 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

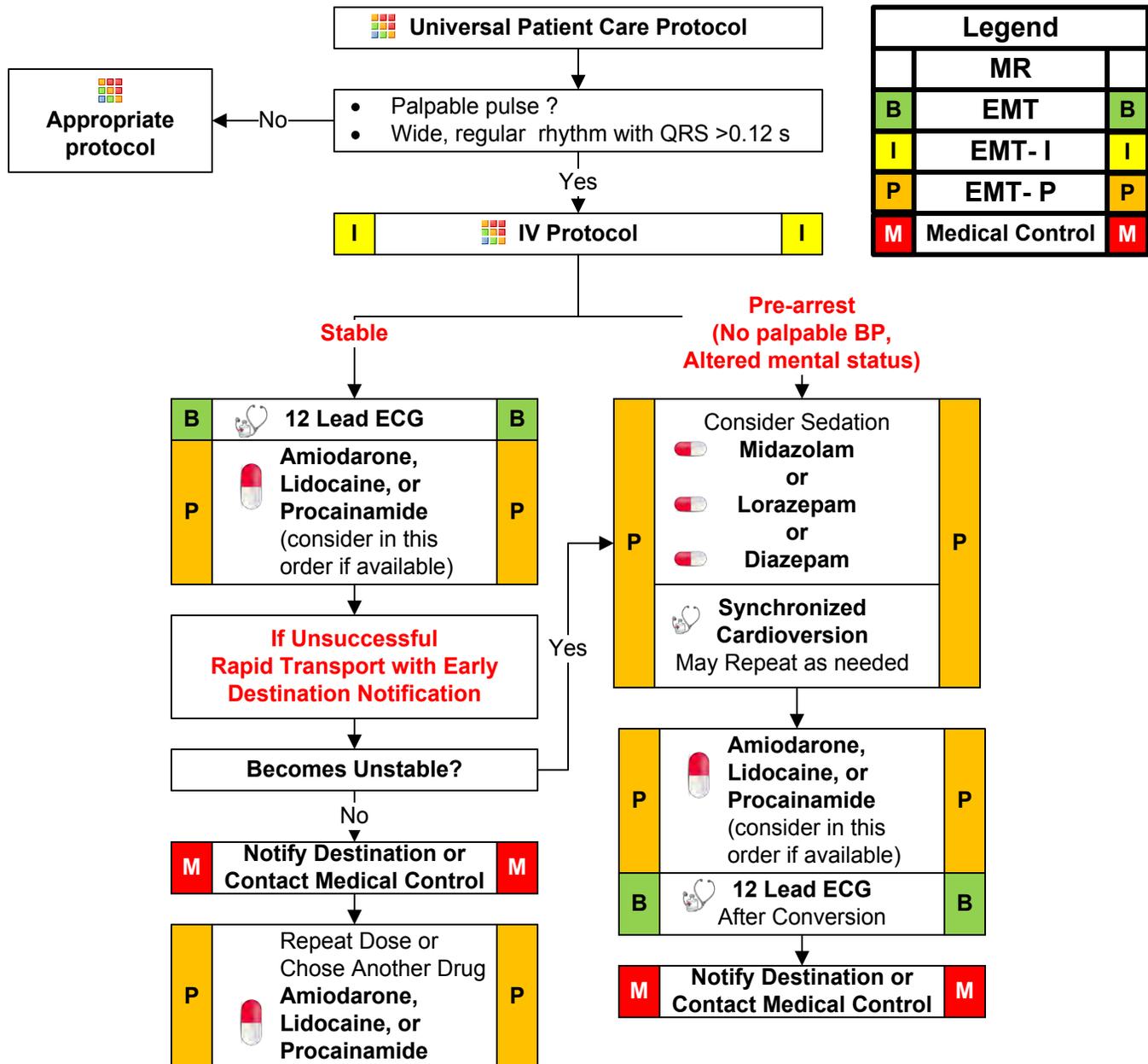
- Past medical history / medications, diet, drugs.
- Syncope / near syncope
- CHF
- Palpitations
- Pacemaker
- Allergies: lidocaine / novacaine

## 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

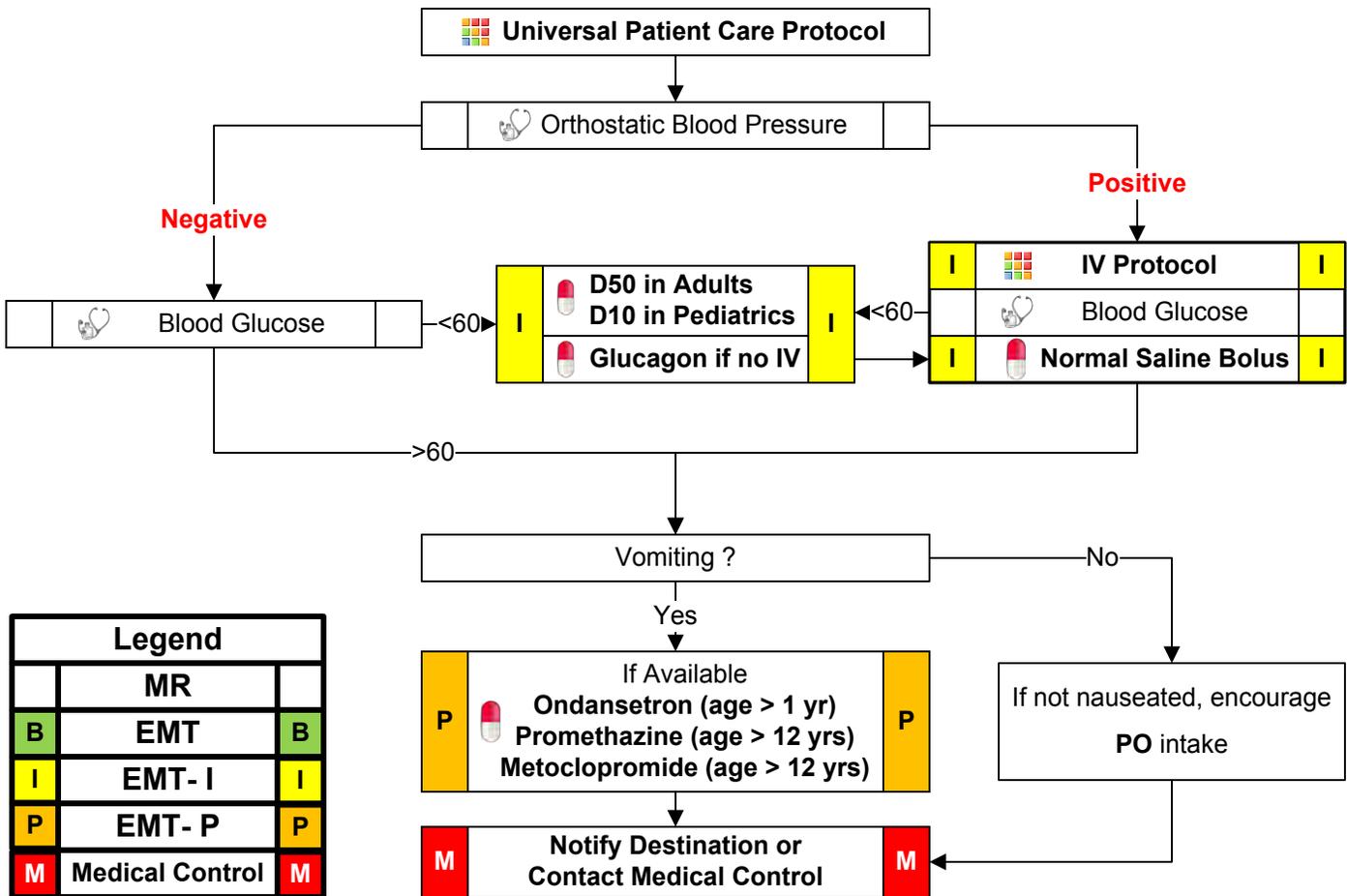
- Pain
- Character of pain (constant, intermittent, sharp, dull, etc.)
- Distention
- Constipation
- Diarrhea
- Anorexia
- Radiation

### 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.



# Childbirth / Labor



## History

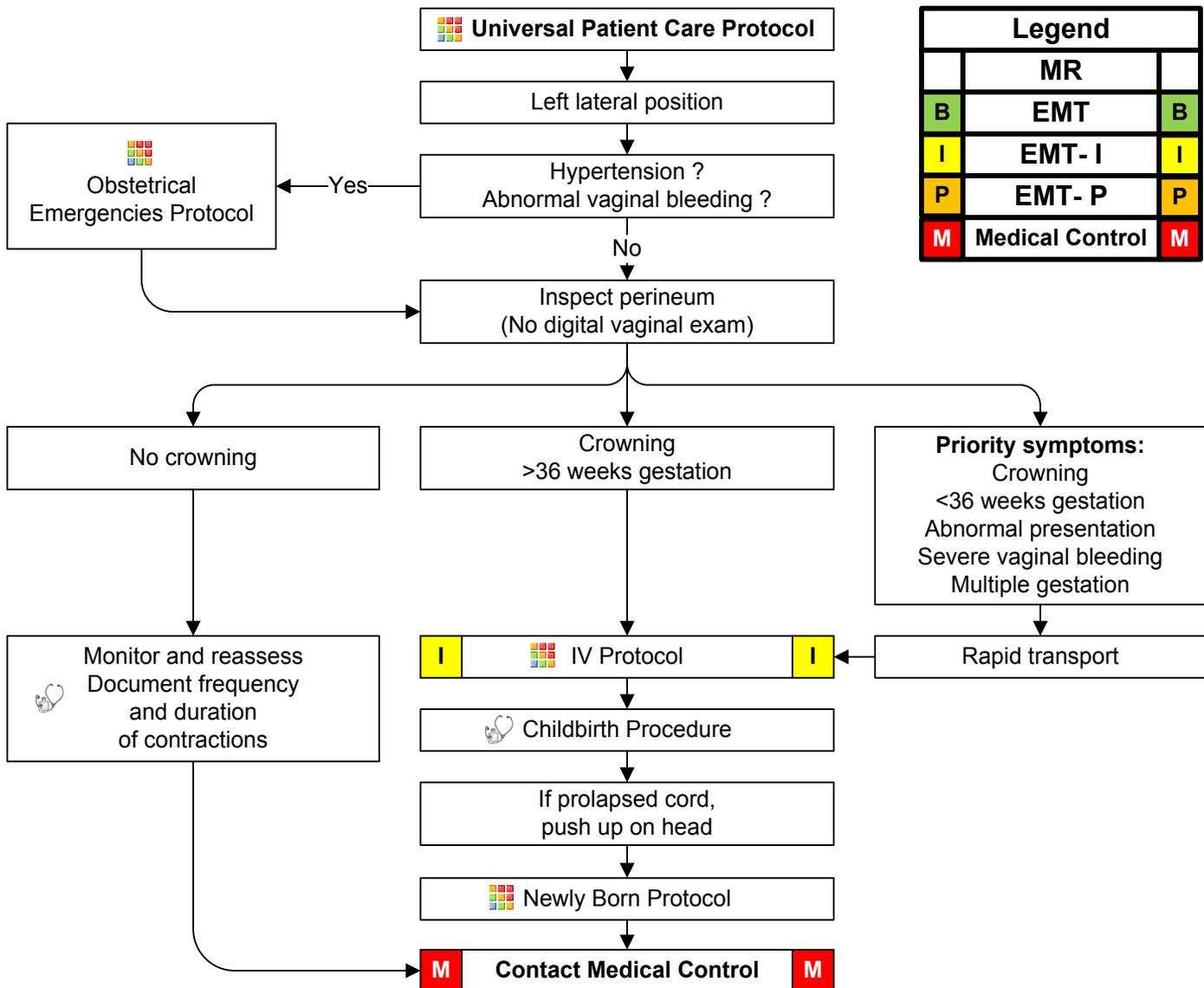
- Due date
- Time contractions started / how often
- Rupture of membranes
- Time / amount of any vaginal bleeding
- Sensation of fetal activity
- Past medical and delivery history
- Medications
- Gravida/Para Status
- High Risk pregnancy

## Signs and Symptoms

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

## Differential

- **Abnormal presentation**  
Buttock  
Foot  
Hand
- **Prolapsed cord**
- **Placenta previa**
- **Abruptio placenta**



Pediatric and OB Protocols

## Pearls

- **Recommended Exam (of Mother): Mental Status, Heart, Lungs, Abdomen, Neuro**
- Document all times (delivery, contraction frequency, and length).
- If maternal seizures occur, refer to the Obstetrical Emergencies Protocol.
- After delivery, massaging the uterus (lower abdomen) will promote uterine contraction and help to control postpartum bleeding.
- Some perineal bleeding is normal with any childbirth. Large quantities of blood or free bleeding are abnormal.
- Record APGAR at 1 minute and 5 minutes after birth.

## Protocol 38

Any local EMS System changes to this document must follow the NC OEMS Protocol Change Policy and be approved by OEMS

2009



# Newly Born



## History

- Due date and gestational age
- Multiple gestation (twins etc.)
- Meconium
- Delivery difficulties
- Congenital disease
- Medications (maternal)
- Maternal risk factors
  - substance abuse
  - smoking

## Signs and Symptoms

- Respiratory distress
- Peripheral cyanosis or mottling (normal)
- Central cyanosis (abnormal)
- Altered level of responsiveness
- Bradycardia

## Differential

- Airway failure
- Secretions
- Respiratory drive
- Infection
- Maternal medication effect
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia

### Universal Patient Care Protocol (for mother)

Thick Meconium in amniotic fluid?

**Yes**

<b>B</b>	<b>Airway Suction</b>	<b>B</b>
<b>I</b>	Visualize hypopharynx and Perform Deep Suction Repeat until free of meconium <b>Oral Intubation</b>	<b>I</b>

**No** Dry infant and keep warm. Bulb syringe suction mouth / nose

Stimulate infant and note **APGAR Score**

Respirations present?

**Yes**

**Heart rate**

HR > 100

Reassess and Give report to receiving hospital

HR < 60      HR 60-100      HR > 100

**Peds Airway Protocol / CPR**

**IV Protocol**

Appropriate Protocol  
**Pediatric Bradycardia**  
**Pediatric Pulseless Arrest**

**D10, Naloxone and NS bolus**

**Pediatric Airway Protocol**

Reassess heart rate

HR 60-100

**IV Protocol**

**Notify Destination or Contact Medical Control**

Legend		
	<b>MR</b>	
<b>B</b>	<b>EMT</b>	<b>B</b>
<b>I</b>	<b>EMT- I</b>	<b>I</b>
<b>P</b>	<b>EMT- P</b>	<b>P</b>
<b>M</b>	<b>Medical Control</b>	<b>M</b>

Pediatric and OB Protocols

HR < 100  
**BVM 30 seconds** at 40-60 Breaths/minute with 100% Oxygen

Monitor Reassess 5 Minute **APGAR**

**Continue Oxygen**

## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Neck, Chest, Heart, Abdomen, Extremities, Neuro**
- CPR in infants is 120 compressions/minute with a 3:1 compression to ventilation ratio
- It is extremely important to keep infant warm
- Maternal sedation or narcotics will sedate infant (Naloxone effective but may precipitate seizures).
- Consider hypoglycemia in infant.
- Document 1 and 5 minute Apgars in PCR
- D10 = D50 diluted (1 ml of D50 with 4 ml of Normal Saline)



# Obstetrical Emergency



## History

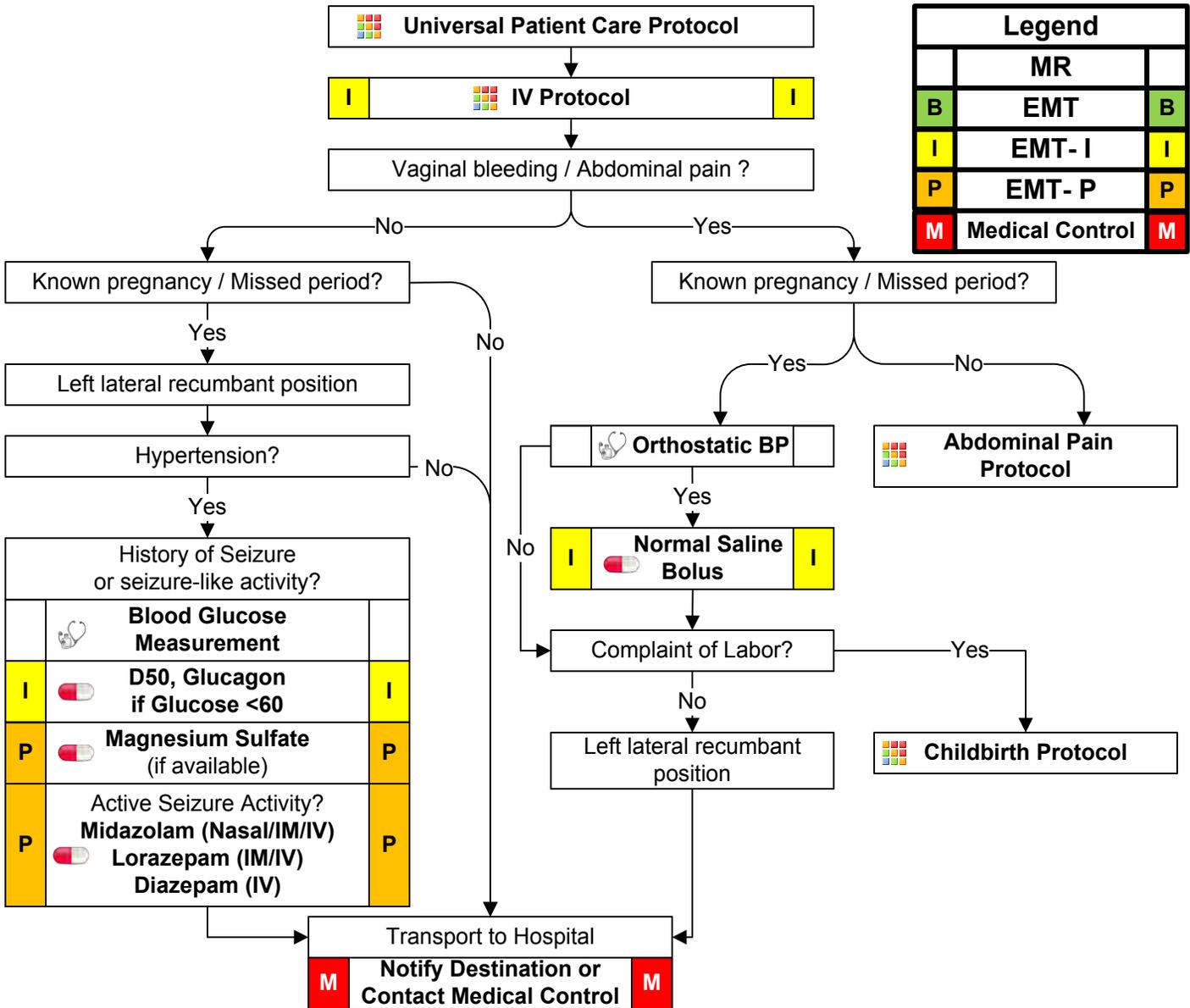
- Past medical history
- Hypertension meds
- Prenatal care
- Prior pregnancies / births
- Gravida / Para

## Signs and Symptoms

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

## Differential

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



Pediatric and OB Protocols

## Pearls

- **Recommended Exam: Mental Status, Abdomen, Heart, Lungs, Neuro**
- Severe headache, vision changes, or RUQ pain may indicate preeclampsia.
- In the setting of pregnancy, hypertension is defined as a BP greater than 140 systolic or greater than 90 diastolic, or a relative increase of 30 systolic and 20 diastolic from the patient's normal (pre-pregnancy) blood pressure.
- Maintain patient in a left lateral position to minimize risk of supine hypotensive syndrome.
- Ask patient to quantify bleeding - number of pads used per hour.
- Any pregnant patient involved in a MVC should be seen immediately by a physician for evaluation and fetal monitoring.
- Magnesium may cause hypotension and decreased respiratory drive. Use with caution.

## Protocol 40

Any local EMS System changes to this document must follow the NC OEMS Protocol Change Policy and be approved by OEMS

2009



# Pediatric Bradycardia



## History

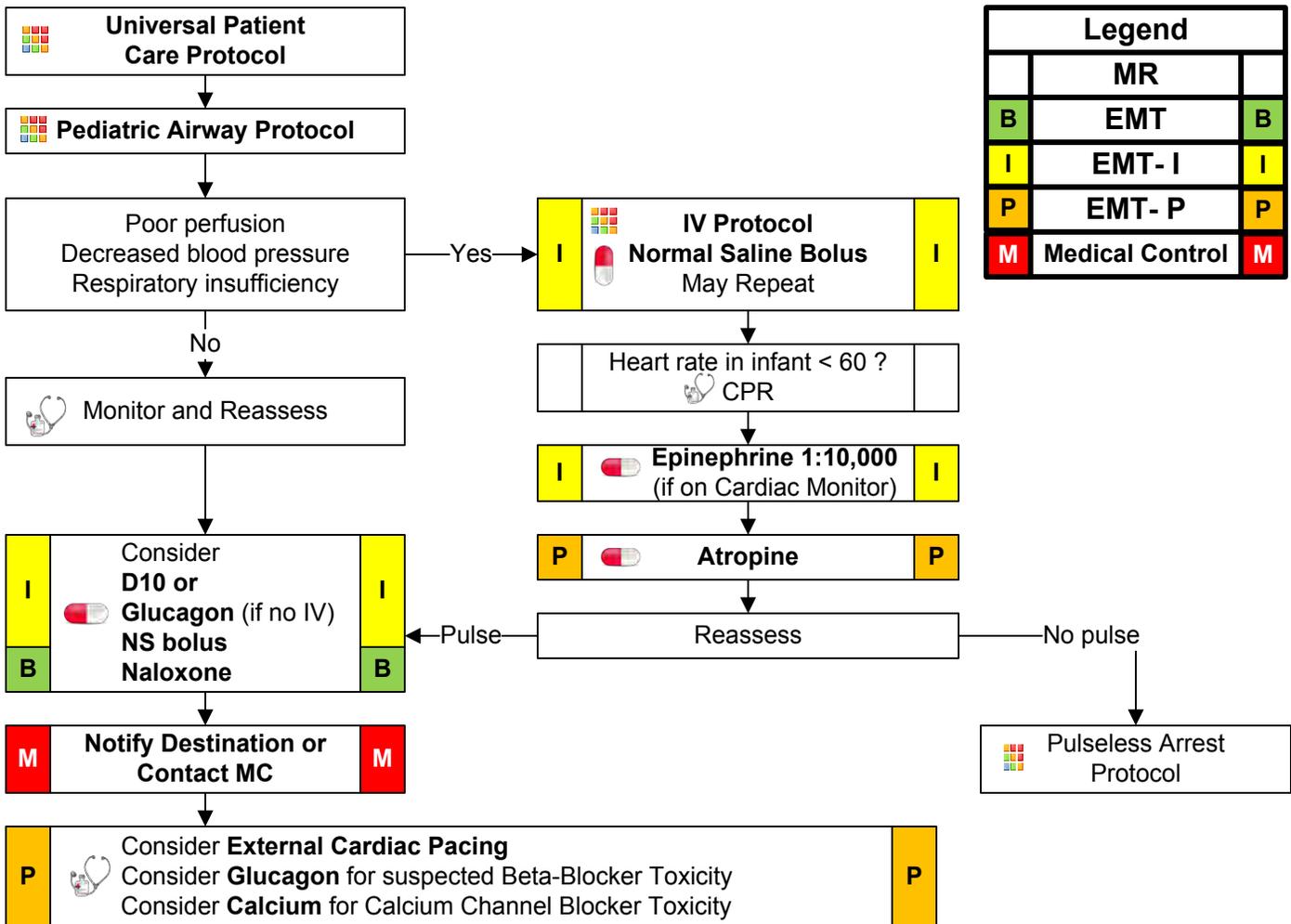
- Past medical history
- Foreign body exposure
- Respiratory distress or arrest
- Apnea
- Possible toxic or poison exposure
- Congenital disease
- Medication (maternal or infant)

## Signs and Symptoms

- Decreased heart rate
- Delayed capillary refill or cyanosis
- Mottled, cool skin
- Hypotension or arrest
- Altered level of consciousness

## Differential

- Respiratory failure
- Foreign body
- Secretions
- Infection (croup, epiglottitis)
- Hypovolemia (dehydration)
- Congenital heart disease
- Trauma
- Tension pneumothorax
- Hypothermia
- Toxin or medication
- Hypoglycemia
- Acidosis



Pediatric and OB Protocols

## Pearls

- **Recommended Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro**
- **Use Broselow-Luten Tape for Drug Dosages.**
- Infant = < 1 year of age
- The majority of pediatric arrests are due to airway problems.
- Most maternal medications pass through breast milk to the infant.
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia.
- Pediatric patients requiring external transcutaneous pacing require the use of pads appropriate for pediatric patients per the manufacturers guidelines.
- Minimum Atropine dose is 0.1 mg IV.



# Pediatric Head Trauma



## History

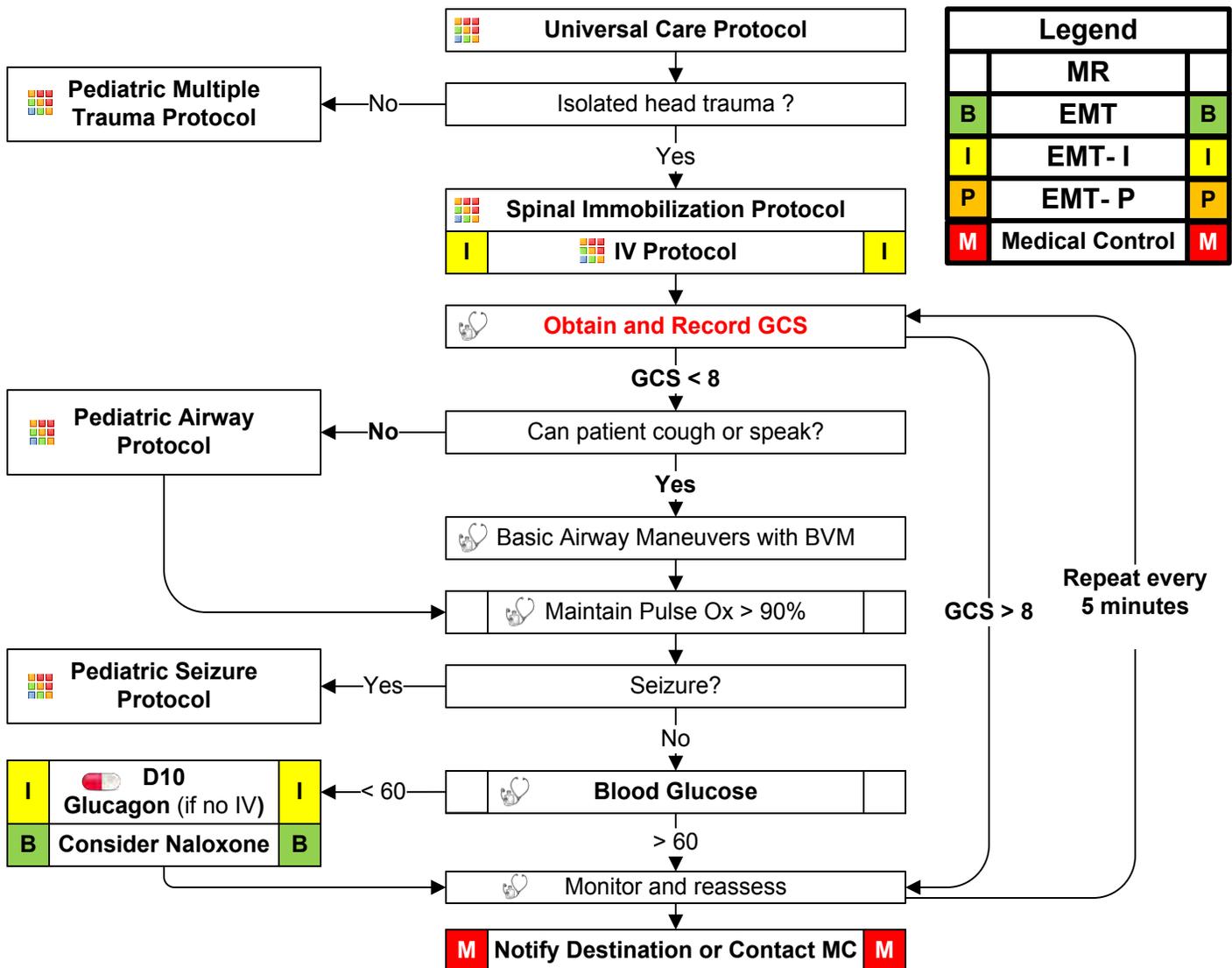
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence for multi-trauma

## Signs and Symptoms

- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure

## Differential

- **Skull fracture**
- **Brain injury (Concussion, Contusion, Hemorrhage or Laceration)**
- **Epidural hematoma**
- **Subdural hematoma**
- **Subarachnoid hemorrhage**
- **Spinal injury**
- **Abuse**



Pediatric and OB Protocols

## Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro**
- If GCS < 12 consider air / rapid transport and if GCS < 8 intubation should be anticipated.
- Hyperventilate the patient only if evidence of herniation (blown pupil, decorticate / decerebrate posturing, bradycardia, decreasing GCS). If hyperventilation is needed (35/minute for infants <1 year and 25/minute for children >1 year)
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury.
- The most important item to monitor and document is a change in the level of consciousness.
- Concussions are periods of confusion or LOC associated with trauma which may have resolved by the time EMS arrives. Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.

## Protocol 42

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2009



# Pediatric Hypotension



## History

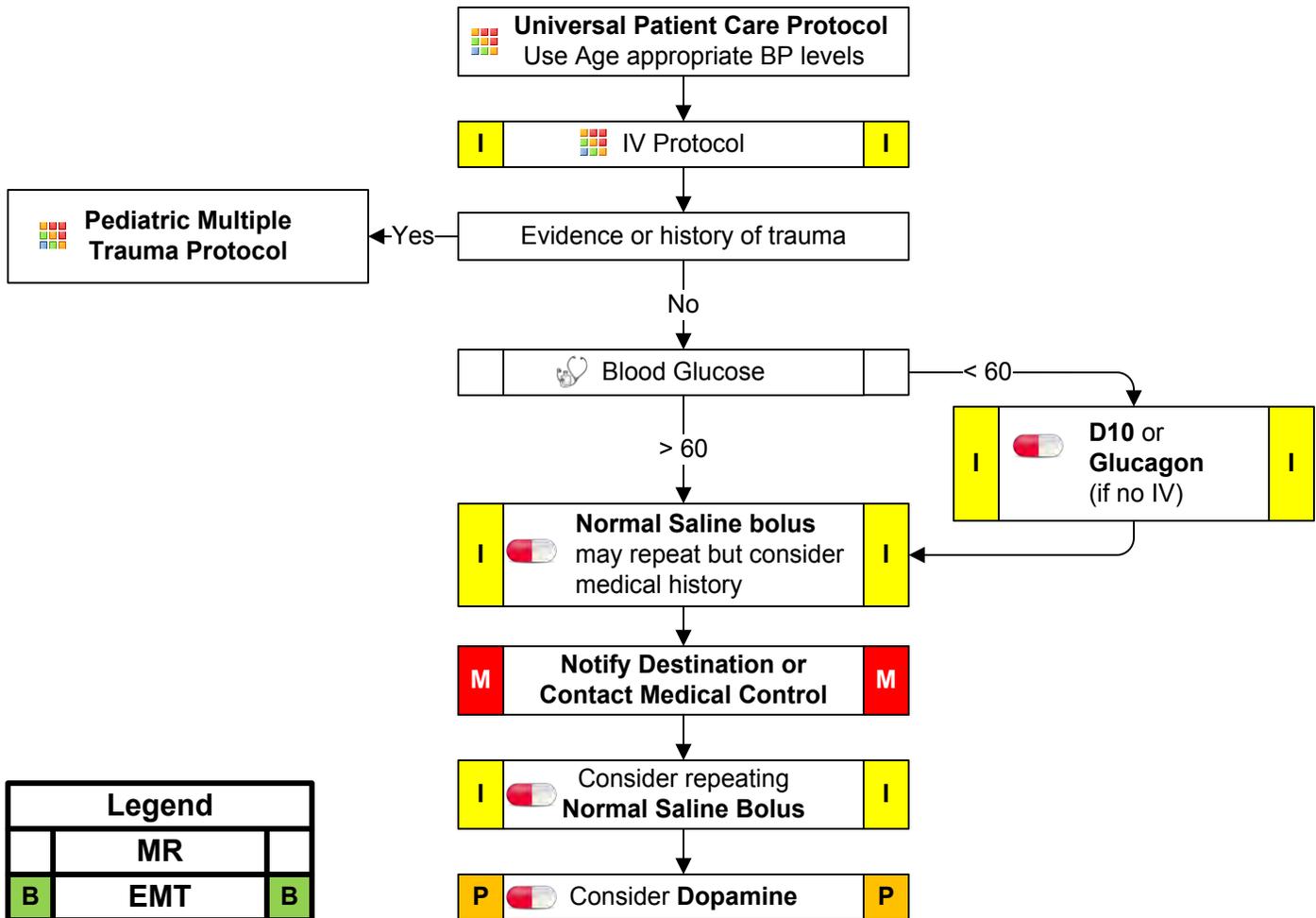
- Blood loss
- Fluid loss
  - Vomiting
  - Diarrhea
  - Fever
- Infection

## Signs and Symptoms

- Restlessness, confusion, weakness
- Dizziness
- Increased HR, rapid pulse
- Decreased BP
- Pale, cool, clammy skin
- Delayed capillary refill

## Differential

- Trauma
- Infection
- Dehydration
  - Vomiting
  - Diarrhea
  - Fever
- Congenital heart disease
- Medication or Toxin
- Allergic reaction



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

## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro**
- Consider all possible causes of shock and treat per appropriate protocol.
- Decreasing heart rate and hypotension occur late in children and are signs of imminent cardiac arrest.
- Most maternal medications pass through breast milk to the infant. Examples: Narcotics, Benzodiazepines.
- Consider possible allergic reaction or early anaphylaxis
- If patients has a history cardiac disease, (prematurity) chronic lung disease, or renal disease limit Normal Saline bolus to 10 ml/kg



# Pediatric Multiple Trauma



## History

- Time and mechanism of injury
- Height of any fall
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / Protective equipment
  - Carseat
  - Helmet
  - Pads
- Ejection
- Past medical history
- Medications

## Signs and Symptoms

- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status
- Unconscious
- Hypotension or shock
- Arrest

## Differential (Life Threatening)

- **Chest**
  - Tension pneumothorax
  - Flail chest
  - Pericardial tamponade
  - Open chest wound
  - Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- Head injury (see Head Trauma)
- Extremity fracture / dislocation
- HEENT (Airway obstruction)
- Hypothermia

**Universal Patient Care Protocol**

**Pediatric Assessment Procedure** focusing on initial ABC and level of responsiveness

**Spinal Immobilization Protocol**

**Pediatric Airway Protocol** if appropriate

**Vital Signs including GCS**

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

Abnormal

Normal

**Rapid Transport** to appropriate destination using **EMS System Trauma Plan**  
**Limit Scene Time to 10 minutes**  
**Provide Early Notification**

I	<b>IV Protocol</b> <b>Normal Saline Bolus</b> May repeat for hypotension	I
	<b>Splint Suspected Fractures</b> <b>Control External Hemorrhage</b>	
P	Tension Pneumothorax? <b>Chest Decompression</b>	P
	Consider <b>Pediatric Head Injury Protocol</b>	

**Complete Pediatric Assessment**

<b>Splint Suspected Fractures</b> <b>Control External Hemorrhage</b>	
<b>Transport</b> to appropriate destination using <b>EMS System Trauma Plan</b>	
<b>Continually Reassess</b>	

**M** **Notify Destination or Contact Medical Control** **M**

## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Trauma Care Toolkit**
- **Transport Destination is chosen based on the EMS System Trauma Plan with EMS pre-arrival notification.**
- Mechanism is the most reliable indicator of serious injury. Examine all restraints / protective equipment for damage.
- In prolonged extrications or serious trauma consider air transportation for transport times and the ability to give blood.
- Do not overlook the possibility for child abuse.
- Scene times should not be delayed for procedures. These should be performed en route when possible.
- Bag valve mask is an acceptable method of managing the airway if pulse oximetry can be maintained above 90%.

Pediatric and OB Protocols



# Pediatric Pulseless Arrest



## History

- Time of arrest
- Medical history
- Medications
- Possibility of foreign body
- Hypothermia

## Signs and Symptoms

- Unresponsive
- Cardiac arrest

## Differential

- **Respiratory failure**  
Foreign body, Secretions, Infection (croup, epiglottitis)
- **Hypovolemia (dehydration)**
- **Congenital heart disease**
- **Trauma**
- **Tension pneumothorax, cardiac tamponade, pulmonary embolism**
- **Hypothermia**
- **Toxin or medication**
- **Electrolyte abnormalities (Glucose, K)**
- **Acidosis**

**Universal Patient Care Protocol**

**CPR**

**P** **Cardiac Monitor** **P**

**Ventricular Fibrillation / Tachycardia**

Give 1 shock  
 Manual: 2J/Kg  
 May use AED if >1 year of age (use pediatric AED if available for ages 1-8 years)  
 Immediately start CPR, do not check for pulse

**I** Airway Protocol **I**  
 IV Protocol **I**

Give 5 cycles of CPR

Check rhythm, Check pulse  
Shockable rhythm?

Yes

Give 1 shock 4 J/Kg or use AED as described above  
 Resume CPR immediately after shock  
**Epinephrine IV/IO/ET**  
 and repeat every 3-5 minutes  
 Continue with 5 cycles of CPR after shock  
 Check rhythm, Check pulse  
Shockable rhythm?

Yes

Give 1 shock 4 J/Kg or use AED as described above  
 Resume CPR immediately  
 Consider **Amiodarone, Procainamide, or Lidocaine**  
 Continue with 5 cycles of CPR after shock  
 Check rhythm, Check pulse

**AT ANY TIME**

**Return of Spontaneous Circulation**

**Go to Post Resuscitation Protocol**

**Legend**

	<b>MR</b>	
<b>B</b>	<b>EMT</b>	<b>B</b>
<b>I</b>	<b>EMT- I</b>	<b>I</b>
<b>P</b>	<b>EMT- P</b>	<b>P</b>
<b>M</b>	<b>Medical Control</b>	<b>M</b>

**Asystole / PEA**

**I** Airway Protocol **I**  
 IV Protocol **I**  
**Epinephrine** every 3-5 minutes **I**

Consider **D10**  
 Continue CPR 5 cycles at a time  
 Check rhythm between cycles of CPR  
 Only check for pulse between cycles of CPR and if there is a perfusing rhythm

**If at any time rhythm becomes shockable then go to left column of this protocol**

**Try to Identify and treat the cause:**

Hypoxemia  
 Acidosis  
 Volume depletion  
 Tension pneumothorax  
 Hypothermia  
 Hypoglycemia  
 Hypokalemia  
 Hyperkalemia

**M** **Notify Destination or Contact Medical Control** **M**

Pediatric and OB Protocols

## Pearls

- **Recommended Exam: Mental Status**
- Monophasic and Biphasic waveform defibrillators should use the same energy levels noted above.
- In order to be successful in pediatric arrests, a cause must be identified and corrected.
- Airway is the most important intervention. This should be accomplished immediately. Patient survival is often dependent on airway management success.



# Pediatric Respiratory Distress



## History

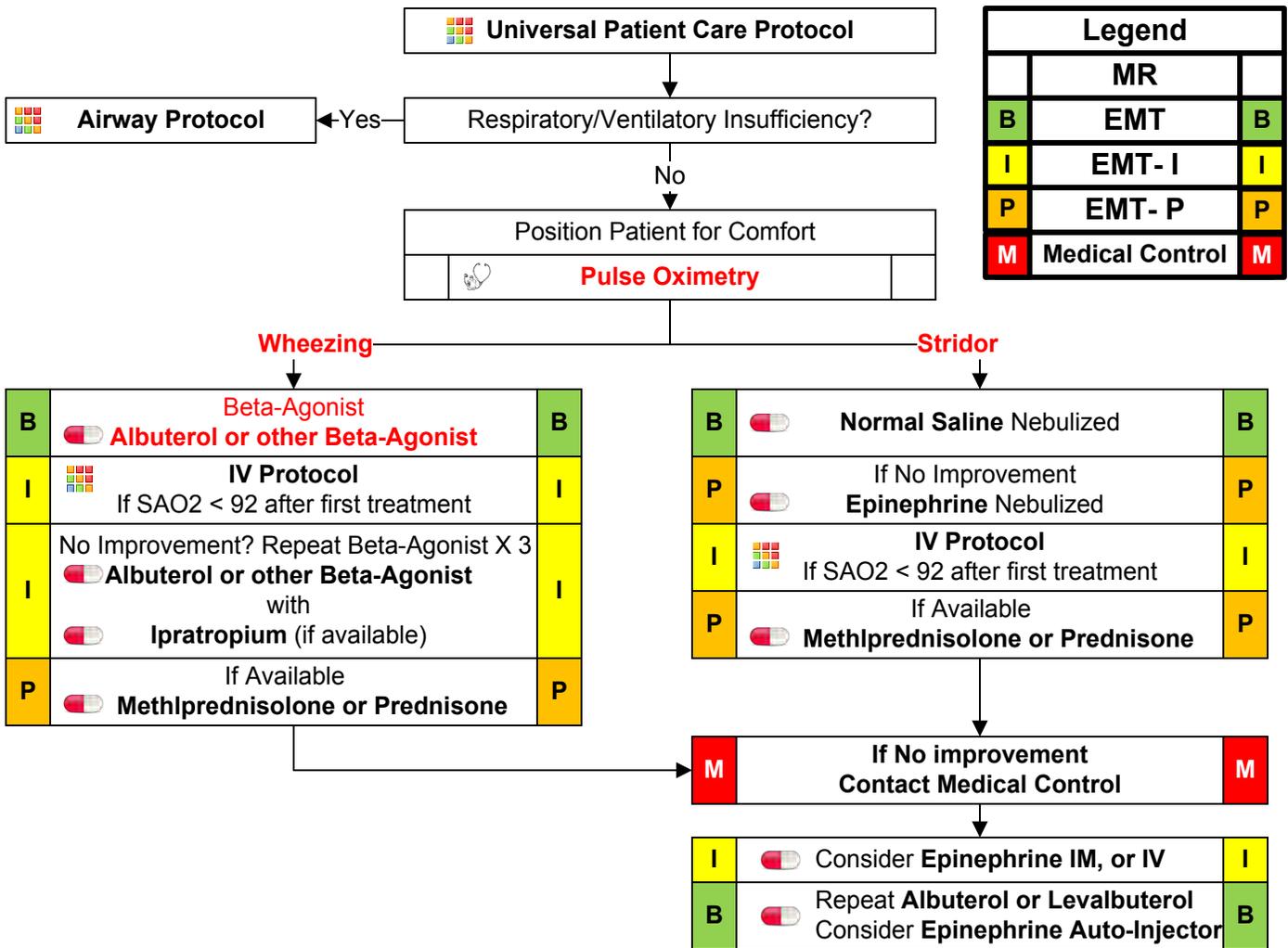
- Time of onset
- Possibility of foreign body
- Medical history
- Medications
- Fever or respiratory infection
- Other sick siblings
- History of trauma

## Signs and Symptoms

- Wheezing or stridor
- Respiratory retractions
- Increased heart rate
- Altered level of consciousness
- Anxious appearance

## Differential

- Allergic Reaction
- Asthma
- Aspiration
- Foreign body
- Infection
  - Pneumonia
  - Croup
  - Epiglottitis
- Congenital heart disease
- Medication or Toxin
- Trauma



Pediatric and OB Protocols

## 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**
- **Pulse oximetry** should be monitored continuously if initial saturation is ≤ 96%, or there is a decline in patient status despite normal pulse oximetry readings.
- Do not force a child into a position. They will protect their airway by their body position.
- The most important component of respiratory distress is airway control.
- Bronchiolitis is a viral infection typically affecting infants which results in wheezing which may not respond to beta-agonists. Consider Epinephrine if patient < 18 months and not responding to initial beta-agonist treatment.
- Croup typically affects children < 2 years of age. It is viral, possible fever, gradual onset, no drooling is noted.
- Epiglottitis typically affects children > 2 years of age. It is bacterial, with fever, rapid onset, possible stridor, patient wants to sit up to keep airway open, drooling is common. Airway manipulation may worsen the condition.



# Pediatric Seizure



## History

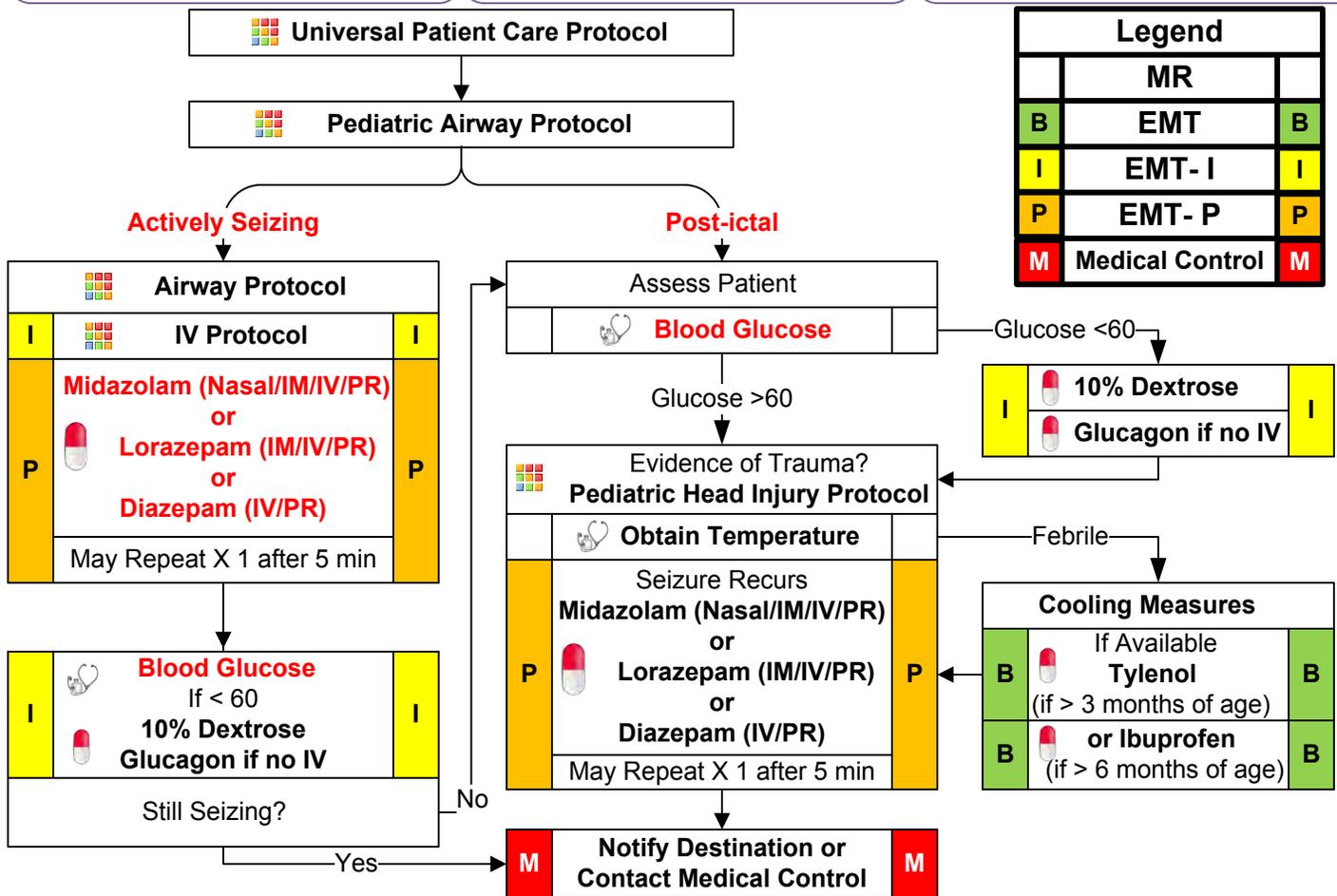
- Fever
- Prior history of seizures
- Seizure medications
- Reported seizure activity
- History of recent head trauma
- Congenital abnormality

## Signs and Symptoms

- Observed seizure activity
- Altered mental status
- Hot, dry skin or elevated body temperature

## Differential

- **Fever**
- **Infection**
- **Head trauma**
- **Medication or Toxin**
- **Hypoxia or Respiratory failure**
- **Hypoglycemia**
- **Metabolic abnormality / acidosis**
- **Tumor**



Pediatric and OB 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**
- **Addressing the ABCs and verifying blood glucose is more important than stopping the seizure**
- **Avoiding hypoxemia is extremely important**
- **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 do not usually result in a loss of consciousness.
- **Jacksonian seizures** are seizures which start as a focal seizure and become generalized.
- Be prepared to assist ventilations especially if a benzodiazepine is used.
- If evidence or suspicion of trauma, spine should be immobilized.
- In an infant, a seizure may be the only evidence of a closed head injury.
- **Rectal Diazepam/Fentanyl/Lorazepam:** Draw drug dose up in a 3 ml syringe. Remove needle from syringe and attached syringe to an IV extension tube. Cut of the distal end of the extension tube leaving about 3 or 4 inches of length. Insert tube in rectum and inject drug. Flush extension tube with 3 ml of air and remove.



# Pediatric Supraventricular Tachycardia



## History

- Past medical history
- Medications or Toxic Ingestion (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin)
- Drugs (nicotine, cocaine)
- Congenital Heart Disease
- Respiratory Distress
- Syncope or Near Syncope

## Signs and Symptoms

- Heart Rate: Child > 180/bpm  
Infant > 220/bpm
- Pale or Cyanosis
- Diaphoresis
- Tachypnea
- Vomiting
- Hypotension
- Altered Level of Consciousness
- Pulmonary Congestion
- Syncope

## Differential

- Heart disease (Congenital)
- Hypo / Hyperthermia
- Hypovolemia or Anemia
- Electrolyte imbalance
- Anxiety / Pain / Emotional stress
- Fever / Infection / Sepsis
- Hypoxia
- Hypoglycemia
- Medication / Toxin / Drugs (see HX)
- Pulmonary embolus
- Trauma
- Tension Pneumothorax

**Universal Patient Care Protocol**

**P** Continuous Cardiac Monitor  
Attempt to Identify Cause  
Narrow QRS duration < 0.08 s **P**

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

Stable

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

**I** IV Protocol **I**

**P** May attempt Valsalva's maneuver and / or Carotid Massage initially and after each drug administration if indicated. **P**

**P** Adenosine  
May Repeat X 1 **P**

**P** Synchronized Cardioversion (0.5 joules/kg) **P**

**I** Consider IV Protocol **I**

**P** For sedation consider Diazepam or Midazolam or Lorazepam **P**

**P** If unsuccessful Repeat Cardioversion (1.0 - 2.0 joules/kg) **P**

If rhythm changes  
Go to Appropriate Protocol

**M** Notify Destination or Contact Medical Control **M**

Pediatric and OB Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- Carefully evaluate the rhythm to distinguish Sinus Tachycardia, Supraventricular Tachycardia, and Ventricular Tachycardia
- Separating the child from the caregiver may worsen the child's clinical condition.
- Pediatric paddles should be used in children < 10 kg or Broselow-Luten color Purple
- Monitor for respiratory depression and hypotension associated if Diazepam or Midazolam is used.
- Continuous pulse oximetry is required for all SVT Patients if available.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.
- As a rule of thumb, the maximum sinus tachycardia rate is 220 – the patient's age in years.



# Bites and Envenomations



## History

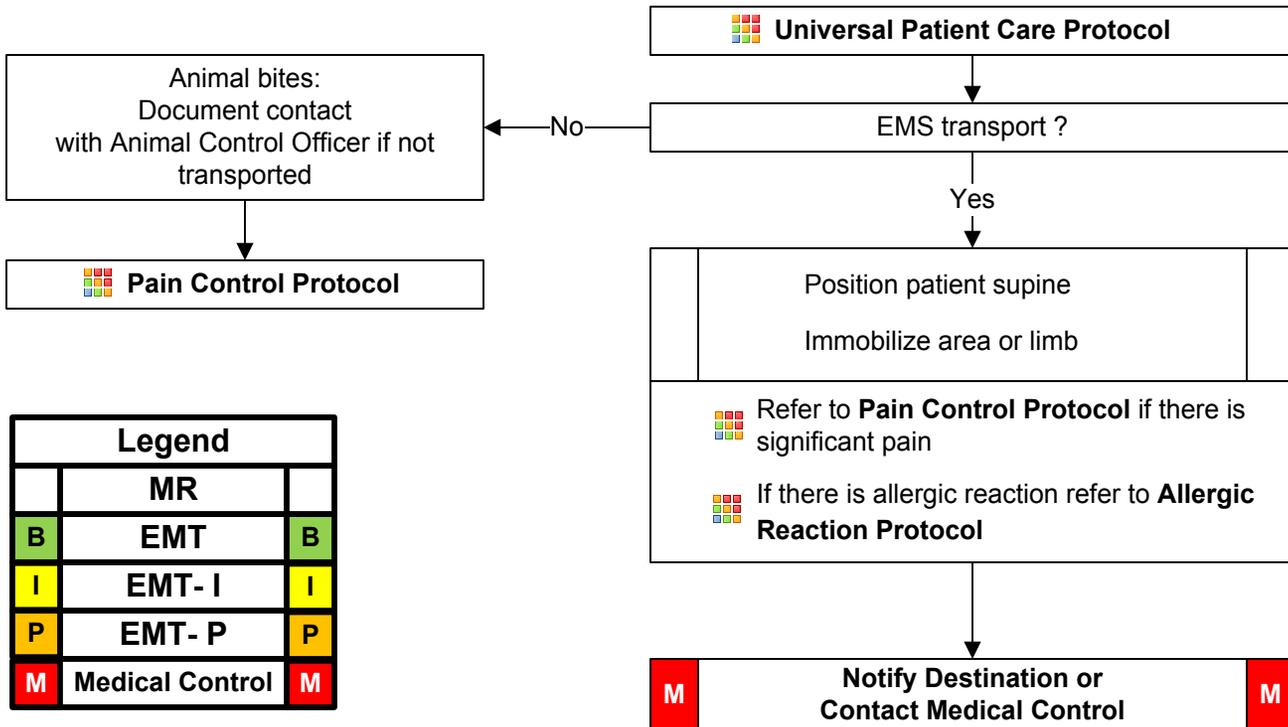
- Type of bite / sting
- Description or bring creature / photo with patient for identification
- Time, location, size of bite / sting
- Previous reaction to bite / sting
- Domestic vs. Wild
- Tetanus and Rabies risk
- Immunocompromised patient

## Signs and Symptoms

- Rash, skin break, wound
- Pain, soft tissue swelling, redness
- Blood oozing from the bite wound
- Evidence of infection
- Shortness of breath, wheezing
- Allergic reaction, hives, itching
- Hypotension or shock

## Differential

- **Animal bite**
- **Human bite**
- **Snake bite (poisonous)**
- **Spider bite (poisonous)**
- **Insect sting / bite (bee, wasp, ant, tick)**
- **Infection risk**
- **Rabies risk**
- **Tetanus risk**



Trauma Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, Extremities (Location of injury), and a complete Neck, Lung, Heart, Abdomen, Back, and Neuro exam if systemic effects are noted**
- Human bites have higher infection rates than animal bites due to normal mouth bacteria.
- Carnivore bites are much more likely to become infected and all have risk of Rabies exposure.
- Cat bites may progress to infection rapidly due to a specific bacteria (Pasteurella multocida).
- Poisonous snakes in this area are generally of the pit viper family: rattlesnake, copperhead, and water moccasin.
  - Coral snake bites are rare: Very little pain but very toxic. "Red on yellow - kill a fellow, red on black - venom lack."
  - Amount of envenomation is variable, generally worse with larger snakes and early in spring.
  - If no pain or swelling, envenomation is unlikely.
- Black Widow spider bites tend to be minimally painful, but over a few hours, muscular pain and severe abdominal pain may develop (spider is black with red hourglass on belly).
- Brown Recluse spider bites are minimally painful to painless. Little reaction is noted initially but tissue necrosis at the site of the bite develops over the next few days (brown spider with fiddle shape on back).
- Evidence of infection: swelling, redness, drainage, fever, red streaks proximal to wound.
- Immunocompromised patients are at an increased risk for infection: diabetes, chemotherapy, transplant patients.
- Consider contacting the North Carolina Poison Control Center for guidance (1-800-84-TOXIN).

## History

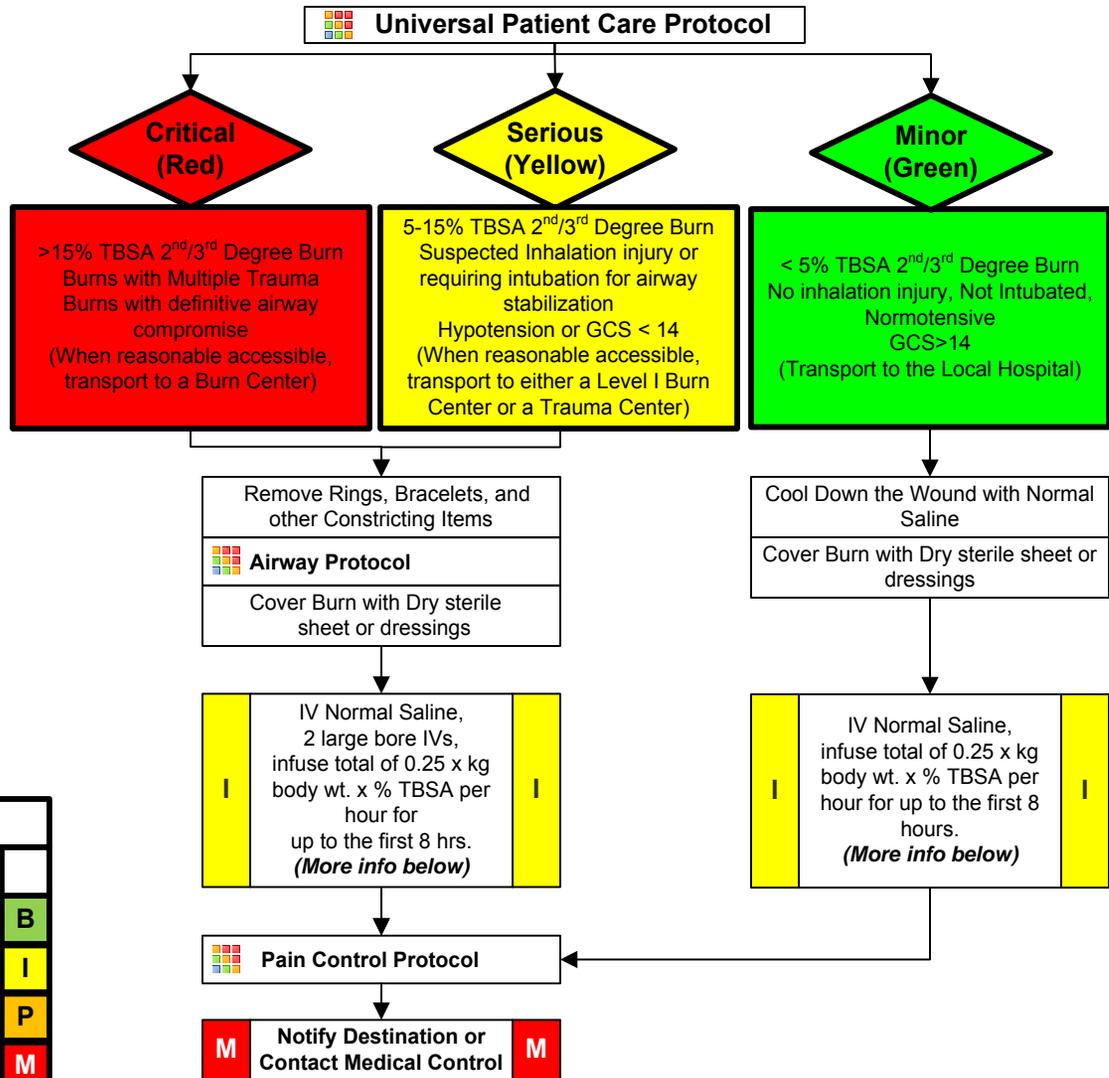
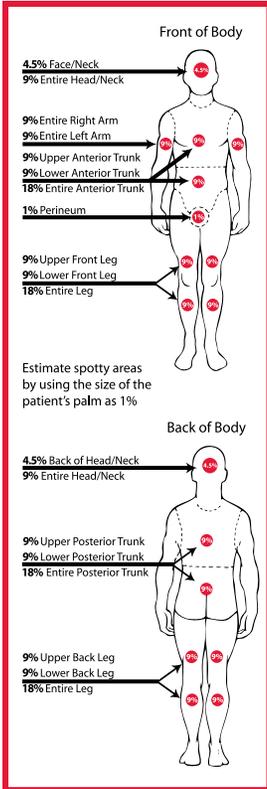
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of injury
- Past medical history and Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

## Signs and Symptoms

- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress
- singed facial or nasal hair
- Hoarseness / wheezing

## Differential

- **Superficial (1<sup>st</sup> Degree)** red and painful
- **Partial Thickness (2<sup>nd</sup> Degree)** blistering
- **Full Thickness (3<sup>rd</sup> Degree)** painless/charred or leathery skin
- **Thermal**
- **Chemical**
- **Electrical**
- **Radiation**



Legend		
	<b>MR</b>	
<b>B</b>	<b>EMT</b>	<b>B</b>
<b>I</b>	<b>EMT- I</b>	<b>I</b>
<b>P</b>	<b>EMT- P</b>	<b>P</b>
<b>M</b>	<b>Medical Control</b>	<b>M</b>

1. The IV solution should be changed to Lactated Ringers if it is available. It is preferred over Normal Saline.
2. Formula example and a rule of thumb is; an 80 kg patient with 50% TBSA will need 1000 cc of fluid per hour.

- **Critical or Serious Burns**
- > 5-15% total body surface area (TBSA); 2<sup>nd</sup> or 3<sup>rd</sup> degree burns, or 3<sup>rd</sup> degree burns > 5% TBSA for any age group, or circumferential burns of extremities, or electrical or lightning injuries, or suspicion of abuse or neglect, or inhalation injury, or chemical burns, or burns of face, hands, perineum, or feet, or any burn requiring hospitalization.

(These burns will require direct transport to a burn center, or transfer once seen at a local facility where the patient can be stabilized with interventions such as airway management or pain relief if this is not available in the field or the distance to a Burn Center is significant.)

## 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, and Neuro**
- Early intubation is required when the patient experiences significant inhalation injuries.
- Potential CO exposure should be treated with 100% oxygen. (For patients with 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.
- Burn patients are prone to hypothermia - never apply ice or cool burns, must maintain normal body temperature.
- Evaluate the possibility of child abuse with children and burn injuries.

### History

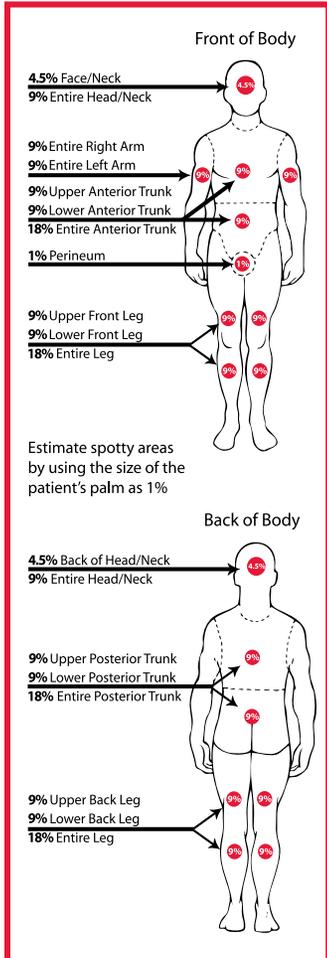
- Type of exposure (heat, gas, chemical)
- Inhalation injury
- Time of Injury
- Past medical history and Medications
- Other trauma
- Loss of Consciousness
- Tetanus/Immunization status

### Signs and Symptoms

- Burns, pain, swelling
- Dizziness
- Loss of consciousness
- Hypotension/shock
- Airway compromise/distress
- singed facial or nasal hair
- Hoarseness / wheezing

### Differential

- **Superficial (1<sup>st</sup> Degree)** red and painful
- **Partial Thickness (2<sup>nd</sup> Degree)** blistering
- **Full Thickness (3<sup>rd</sup> Degree)** painless/charred or leathery skin
- **Thermal**
- **Chemical**
- **Electrical**
- **Radiation**



### Universal Patient Care Protocol

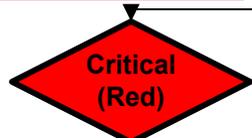
P	Cardiac Monitor	P
---	-----------------	---

I	<p>Eye Involvement? Continuous saline flush in affected eye. Flush are with water or Normal Saline for 10-15 minutes</p> <p>Remove Rings, Bracelets, and other Constricting Items. Remove clothing or expose area</p> <p>Identify entry and exit sites, apply sterile dressings</p>	I
---	---	---

I	<ul style="list-style-type: none"> <li> Pain Control Protocol (IV only for Burn Patients)</li> <li> IV Protocol</li> <li> Normal Saline Bolus</li> </ul>	I
---	--	---

**Chemical and Electrical Burn Patients Must be Triageed using the Guidelines below and their care must conclude in the Thermal Burn Protocol**

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



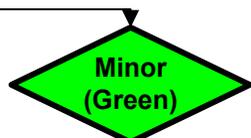
**Critical (Red)**

>15% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn  
Burns with Multiple Trauma  
Burns with definitive airway compromise  
(When reasonable accessible, transport to a Burn Center)



**Serious (Yellow)**

5-15% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn  
Suspected Inhalation injury or requiring intubation for airway stabilization  
Hypotension or GCS < 14  
(When reasonable accessible, transport to either a Level I Burn Center or a Trauma Center)



**Minor (Green)**

< 5% TBSA 2<sup>nd</sup>/3<sup>rd</sup> Degree Burn  
No inhalation injury, Not Intubated, Normotensive  
GCS > 14  
(Transport to the Local Hospital)

### Pearls Chemical

- Refer to Decontamination Standard Procedure (Skill) WMD Page
- Certainly 0.9% NaCl Soln or Sterile Water is preferred, 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.

### 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.



# Drowning



## History

- Submersion in water regardless of depth
- Possible trauma to C-spine
- Possible history of trauma ie: diving board
- Duration of immersion
- Temperature of water or possibility of hypothermia

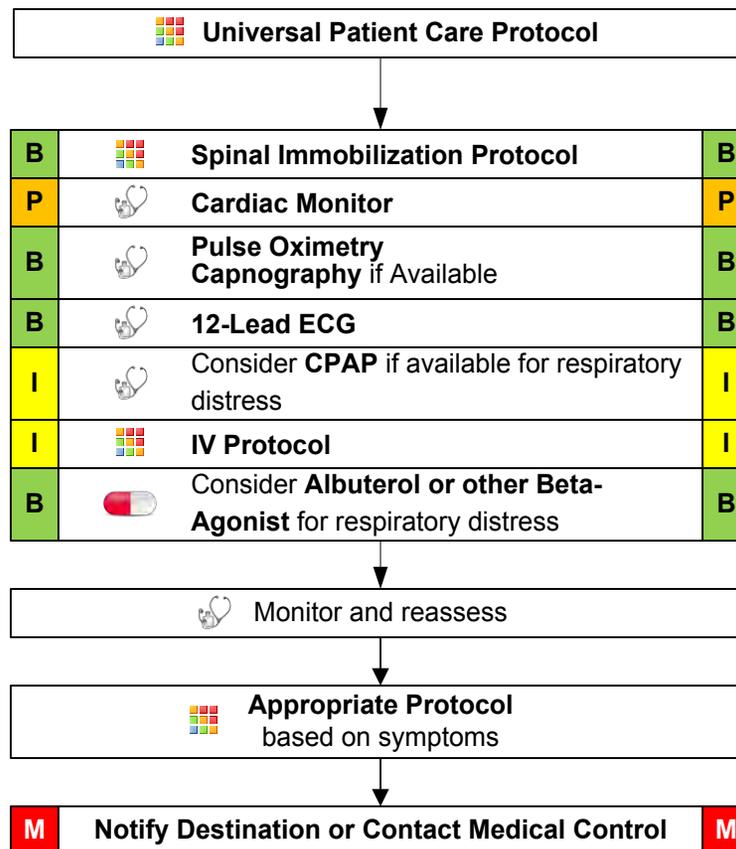
## Signs and Symptoms

- Unresponsive
- Mental status changes
- Decreased or absent vital signs
- Vomiting
- Coughing
- Apnea
- Stridor
- Wheezing
- Rhales

## Differential

- Trauma
- Pre-existing medical problem
- Pressure injury (diving)
  - Barotrauma
  - Decompression sickness
- Post-immersion syndrome

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



## Pearls

- **Recommended Exam: Trauma Survey, Head, Neck, Chest, Abdomen, Pelvis, Back, Extremities, Skin, Neuro**
- Have a high index of suspicion for possible spinal injuries
- With cold water no time limit -- resuscitate all. These patients have an increased chance of survival.
- **Some patients may develop delayed respiratory distress.**
- All victims should be transported for evaluation due to potential for worsening over the next several hours.
- **Drowning is a leading cause of death among would-be rescuers.**
- **Allow appropriately trained and certified rescuers to remove victims from areas of danger.**
- With pressure injuries (decompression / barotrauma), consider transport to or availability of a hyperbaric chamber.



# Extremity Trauma



## History

- Type of injury
- Mechanism: crush / penetrating / amputation
- Time of injury
- Open vs. closed wound / fracture
- Wound contamination
- Medical history
- Medications

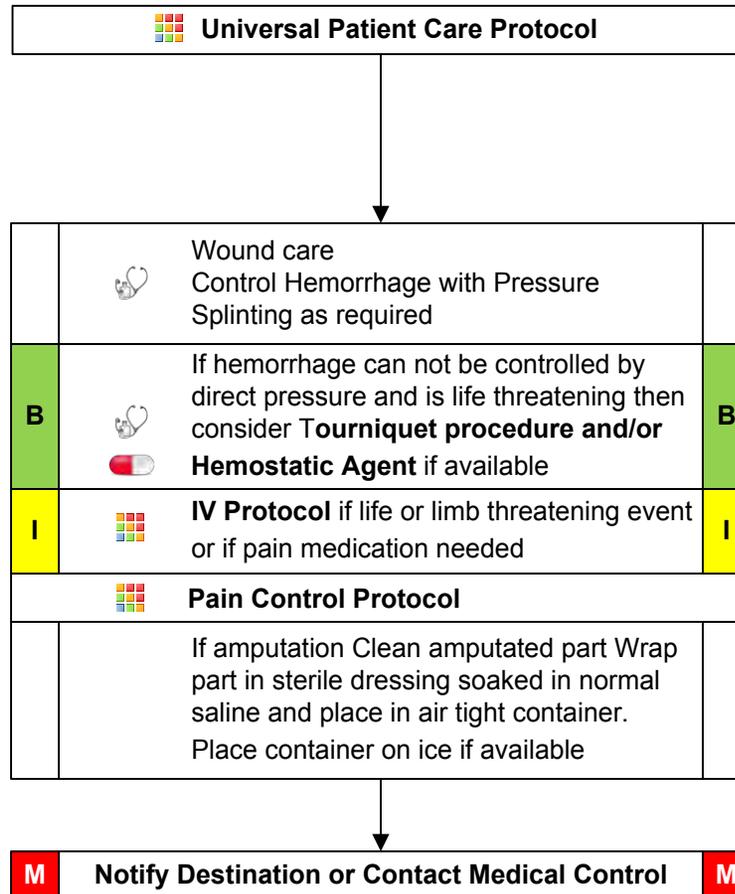
## Signs and Symptoms

- Pain, swelling
- Deformity
- Altered sensation / motor function
- Diminished pulse / capillary refill
- Decreased extremity temperature

## Differential

- Abrasion
- Contusion
- Laceration
- Sprain
- Dislocation
- Fracture
- Amputation

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



Trauma Protocols

## Pearls

- **Recommended Exam: Mental Status, Extremity, Neuro**
- Peripheral neurovascular status is important
- In amputations, time is critical. Transport and notify medical control immediately, so that the appropriate destination can be determined.
- Hip dislocations and knee and elbow fracture / dislocations have a high incidence of vascular compromise.
- Urgently transport any injury with vascular compromise.
- Blood loss may be concealed or not apparent with extremity injuries.
- Lacerations must be evaluated for repair within 6 hours from the time of injury.

## History

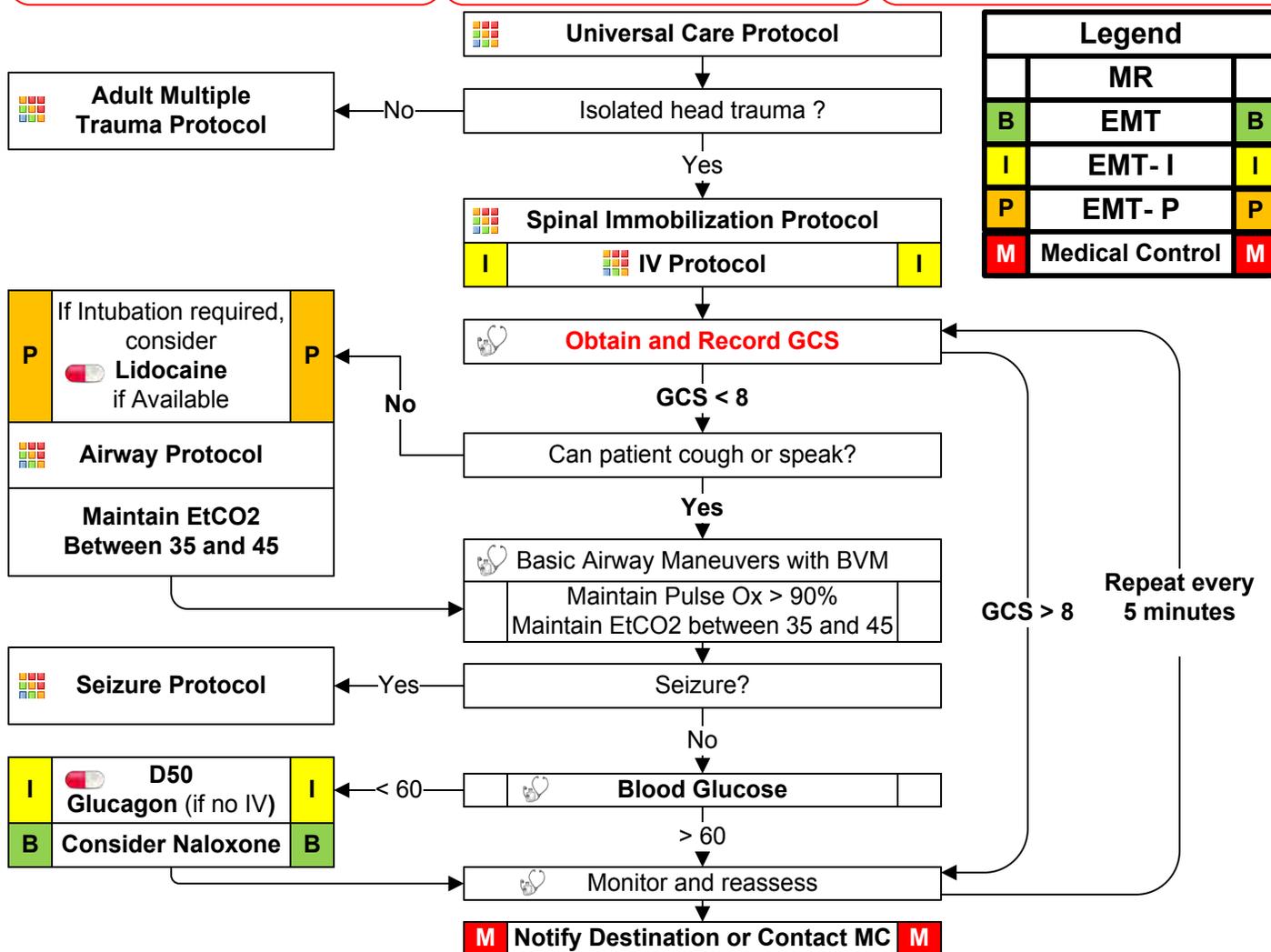
- Time of injury
- Mechanism (blunt vs. penetrating)
- Loss of consciousness
- Bleeding
- Past medical history
- Medications
- Evidence for multi-trauma

## Signs and Symptoms

- Pain, swelling, bleeding
- Altered mental status
- Unconscious
- Respiratory distress / failure
- Vomiting
- Major traumatic mechanism of injury
- Seizure

## Differential

- Skull fracture
- Brain injury (Concussion, Contusion, Hemorrhage or Laceration)
- Epidural hematoma
- Subdural hematoma
- Subarachnoid hemorrhage
- Spinal injury
- Abuse



## Pearls

- **Recommended Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro**
- If GCS < 12 consider air / rapid transport
- In the absence of Capnography, hyperventilate the patient (adult: 20 breaths/min, child: 30, infant: 35) only if ongoing evidence of brain herniation (blown pupil, decorticate or decerebrate posturing, or bradycardia)
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury and should be aggressively treated.
- The most important item to monitor and document is a change in the level of consciousness.
- Consider Restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- Limit IV fluids unless patient is hypotensive.
- Concussions are periods of confusion or LOC associated with trauma which may have resolved by the time EMS arrives. Any prolonged confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be evaluated by a physician ASAP.
- In areas with short transport times, RSI/Drug-Assisted Intubation is not recommended for patients who are spontaneously breathing and who have oxygen saturations of greater than 90% with supplemental oxygen.



# Hyperthermia



## History

- Age
- Exposure to increased temperatures and / or humidity
- Past medical history / medications
- Extreme exertion
- Time and length of exposure
- Poor PO intake
- Fatigue and / or muscle cramping

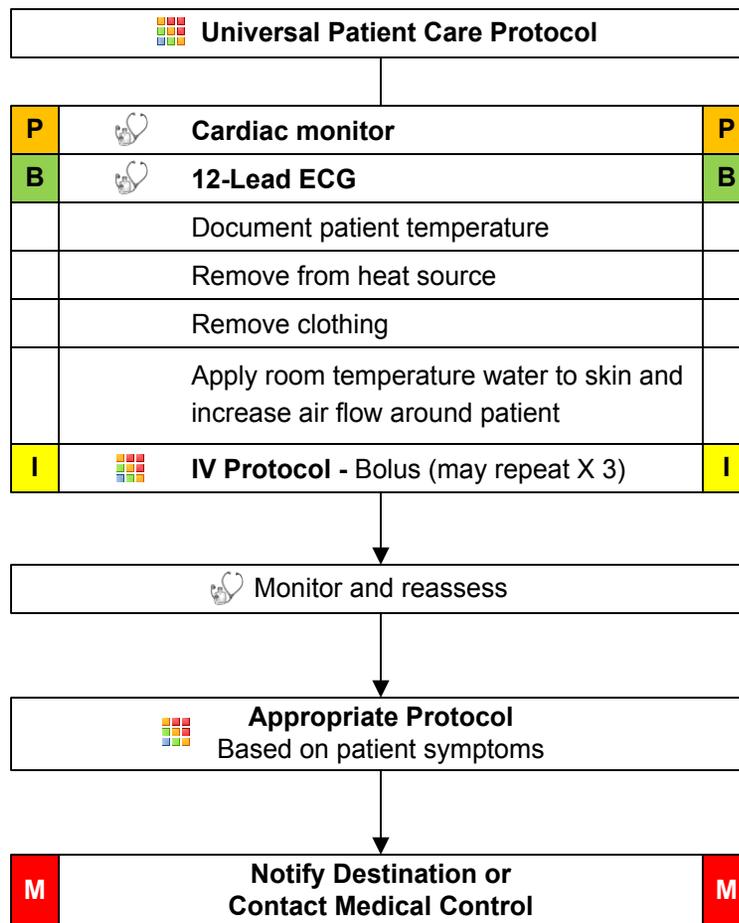
## Signs and Symptoms

- Altered mental status or unconsciousness
- Hot, dry or sweaty skin
- Hypotension or shock
- Seizures
- Nausea

## Differential

- **Fever (Infection)**
- **Dehydration**
- **Medications**
- **Hyperthyroidism (Storm)**
- **Delirium tremens (DT's)**
- **Heat cramps**
- **Heat exhaustion**
- **Heat stroke**
- **CNS lesions or tumors**

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



Trauma Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lungs, Neuro**
- Extremes of age are more prone to heat emergencies (i.e. young and old).
- Predisposed by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol.
- Cocaine, Amphetamines, and Salicylates may elevate body temperatures.
- Sweating generally disappears as body temperature rises above 104° F (40° C).
- Intense shivering may occur as patient is cooled.
- **Heat Cramps** consists of benign muscle cramping 2° to dehydration and is not associated with an elevated temperature.
- **Heat Exhaustion** consists of dehydration, salt depletion, dizziness, fever, mental status changes, headache, cramping, nausea and vomiting. Vital signs usually consist of tachycardia, hypotension, and an elevated temperature.
- **Heat Stroke** consists of dehydration, tachycardia, hypotension, temperature >104° F (40° C), and an altered mental status.



# Hypothermia



## History

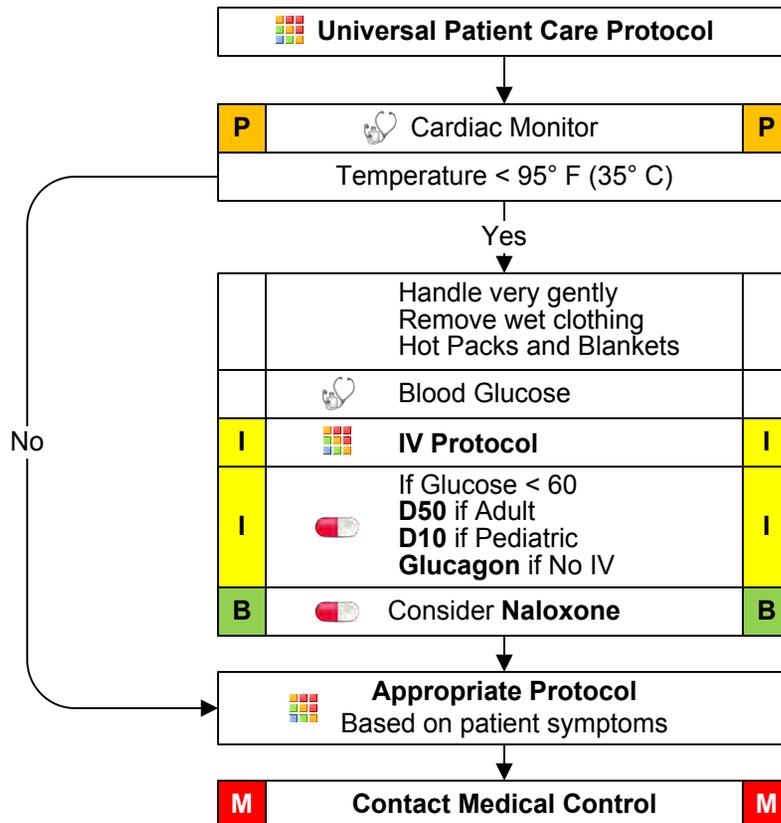
- Past medical history
- Medications
- Exposure to environment even in normal temperatures
- Exposure to extreme cold
- Extremes of age
- Drug use: Alcohol, barbituates
- Infections / Sepsis
- Length of exposure / Wetness

## Signs and Symptoms

- Cold, clammy
- Shivering
- Mental status changes
- Extremity pain or sensory abnormality
- Bradycardia
- Hypotension or shock

## Differential

- Sepsis
- Environmental exposure
- Hypoglycemia
- CNS dysfunction
- Stroke
- Head injury
- Spinal cord injury



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

Trauma Protocols

## Pearls

- **Recommended Exam: Mental Status, Heart, Lungs, Abdomen, Extremities, Neuro**
- **NO PATIENT IS DEAD UNTIL WARM AND DEAD.**
- Defined as core temperature < 35° C (95° F).
- Extremes of age are more susceptible (i.e. young and old).
- With temperature less than 30° C (86° F) ventricular fibrillation is common cause of death. Handling patients gently may prevent this.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe bradycardia so take at least 45 second to palpate a pulse.
- Hot packs can be activated and placed in the armpit and groin area if available. Care should be taken not to place the packs directly against the patient's skin.
- Consider withholding CPR if patient has organized rhythm or has other signs of life. Discuss with **medical control**.
- Intubation can cause ventricular fibrillation so it should be done gently by most experienced person.
- Do not hyperventilate the patient as this can cause ventricular fibrillation.
- If the patient is below 30 degrees C or 86 F then only defibrillate 1 time if defibrillation is required. Normal defibrillation procedure may resume once patient reaches 30 degrees C or 86 F.
- Below 30 degrees C (86 F) antiarrhythmics may not work and if given should be given at reduced intervals contact medical control before they are administered.
- Below 30 C or (86 F) pacing should not be done



# Multiple Trauma



## History

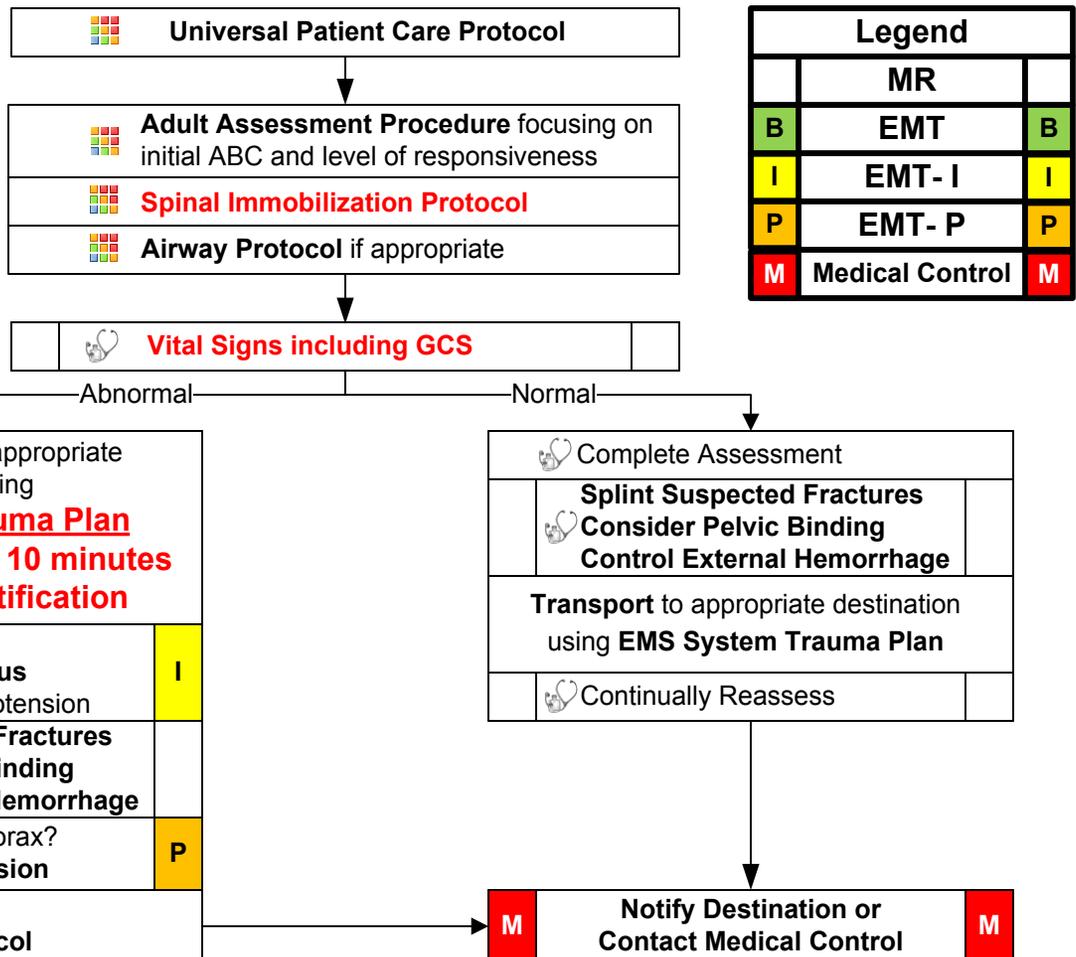
- Time and mechanism of injury
- Damage to structure or vehicle
- Location in structure or vehicle
- Others injured or dead
- Speed and details of MVC
- Restraints / protective equipment
- Past medical history
- Medications

## Signs and Symptoms

- Pain, swelling
- Deformity, lesions, bleeding
- Altered mental status or unconscious
- Hypotension or shock
- Arrest

## Differential (Life threatening)

- **Chest** Tension pneumothorax  
Flail chest  
Pericardial tamponade  
Open chest wound  
Hemothorax
- Intra-abdominal bleeding
- Pelvis / Femur fracture
- Spine fracture / Cord injury
- Head injury (see Head Trauma)
- Extremity fracture / Dislocation
- HEENT (Airway obstruction)
- Hypothermia



<b>Legend</b>		
	<b>MR</b>	
<b>B</b>	<b>EMT</b>	<b>B</b>
<b>I</b>	<b>EMT- I</b>	<b>I</b>
<b>P</b>	<b>EMT- P</b>	<b>P</b>
<b>M</b>	<b>Medical Control</b>	<b>M</b>

Trauma Protocols

## Pearls

- **Recommended Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro**
- **Items in Red Text are key performance measures used in the EMS Acute Trauma Care Toolkit**
- **Transport Destination is chosen based on the EMS System Trauma Plan with EMS pre-arrival notification.**
- Geriatric patients should be evaluated with a high index of suspicion. Often occult injuries are more difficult to recognize and patients can decompensate unexpectedly with little warning.
- Mechanism is the most reliable indicator of serious injury.
- In prolonged extrications or serious trauma, consider air transportation for transport times and the ability to give blood.
- Do not overlook the possibility of associated domestic violence or abuse.
- Scene times should not be delayed for procedures. These should be performed en route when possible. Rapid transport of the unstable trauma patient is the goal.
- Bag valve mask is an acceptable method of managing the airway if pulse oximetry can be maintained above 90%



# WMD-Nerve Agent Protocol



## History

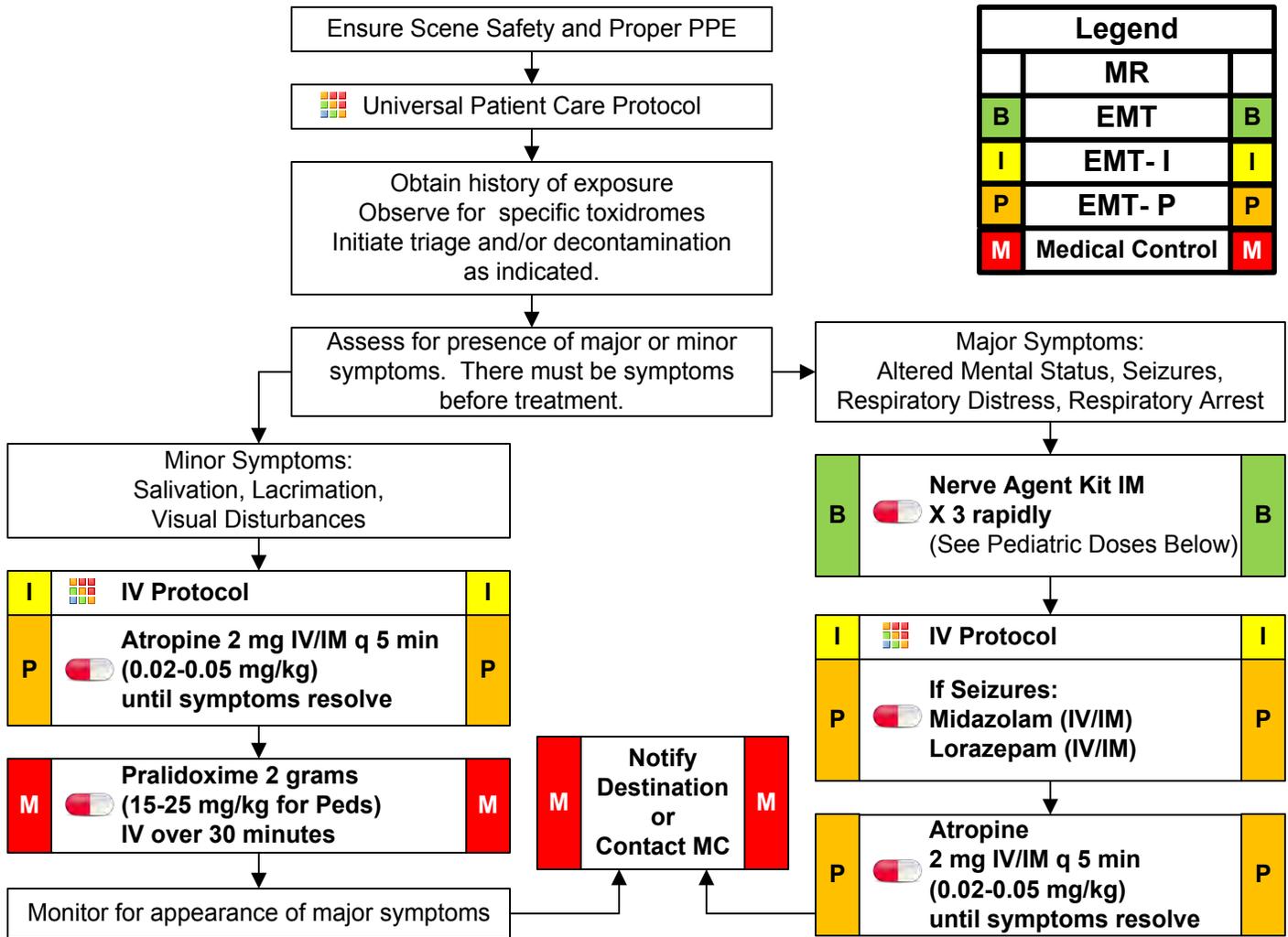
- Exposure to chemical, biologic, radiologic, or nuclear hazard
- Potential exposure to unknown substance/hazard

## Signs and Symptoms

- Visual Disturbances
- Headache
- Nausea/Vomiting
- Salivation
- Lacrimation
- Respiratory Distress
- Diaphoresis
- Seizure Activity
- Respiratory Arrest

## Differential

- Nerve agent exposure (e.g., VX, Sarin, Soman, etc.)
- Organophosphate exposure (pesticide)
- Vesicant exposure (e.g., Mustard Gas, etc.)
- Respiratory Irritant Exposure (e.g., Hydrogen Sulfide, Ammonia, Chlorine, etc.)



Trauma Protocols

## Pearls

- In the face of a bona fide attack, begin with 1 Nerve Agent Kit for patients less than 7 years of age, 2 Nerve Agent Kits from 8 to 14 years of age, and 3 Nerve Agent Kits for patients 15 years of age and over.
- If Triage/MCI issues exhaust supply of Nerve Agent Kits, use pediatric atropens (if available). Use the 0.5 mg dose if patient is less than 40 pounds (18 kg), 1 mg dose if patient weighs between 40 to 90 pounds (18 to 40 kg), and 2 mg dose for patients greater than 90 pounds (>40 kg).
- Follow local HAZMAT protocols for decontamination and use of personal protective equipment
- For patients with major symptoms, there is no limit for atropine dosing.
- Carefully evaluate patients to ensure they not from exposure to another agent (e.g., narcotics, vesicants, etc.)
- **Each Nerve Agent Kit contains 600 mg of Pralidoxime (2-PAM) and 2 mg of Atropine**
- The main symptom that the atropine addresses is excessive secretions so atropine should be given until salivation improves.