

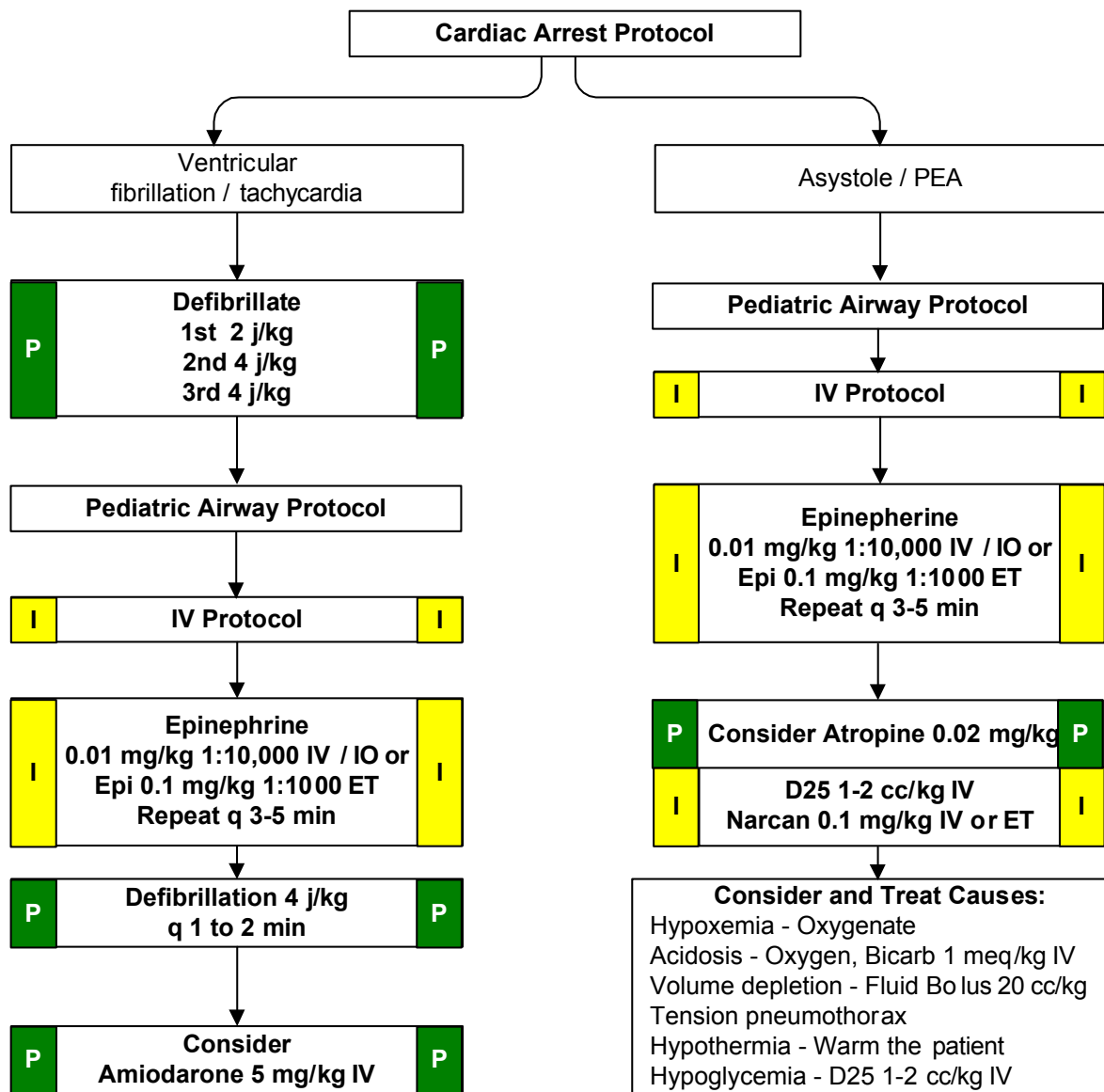


Wake County EMS System



PEDIATRIC PROTOCOLS

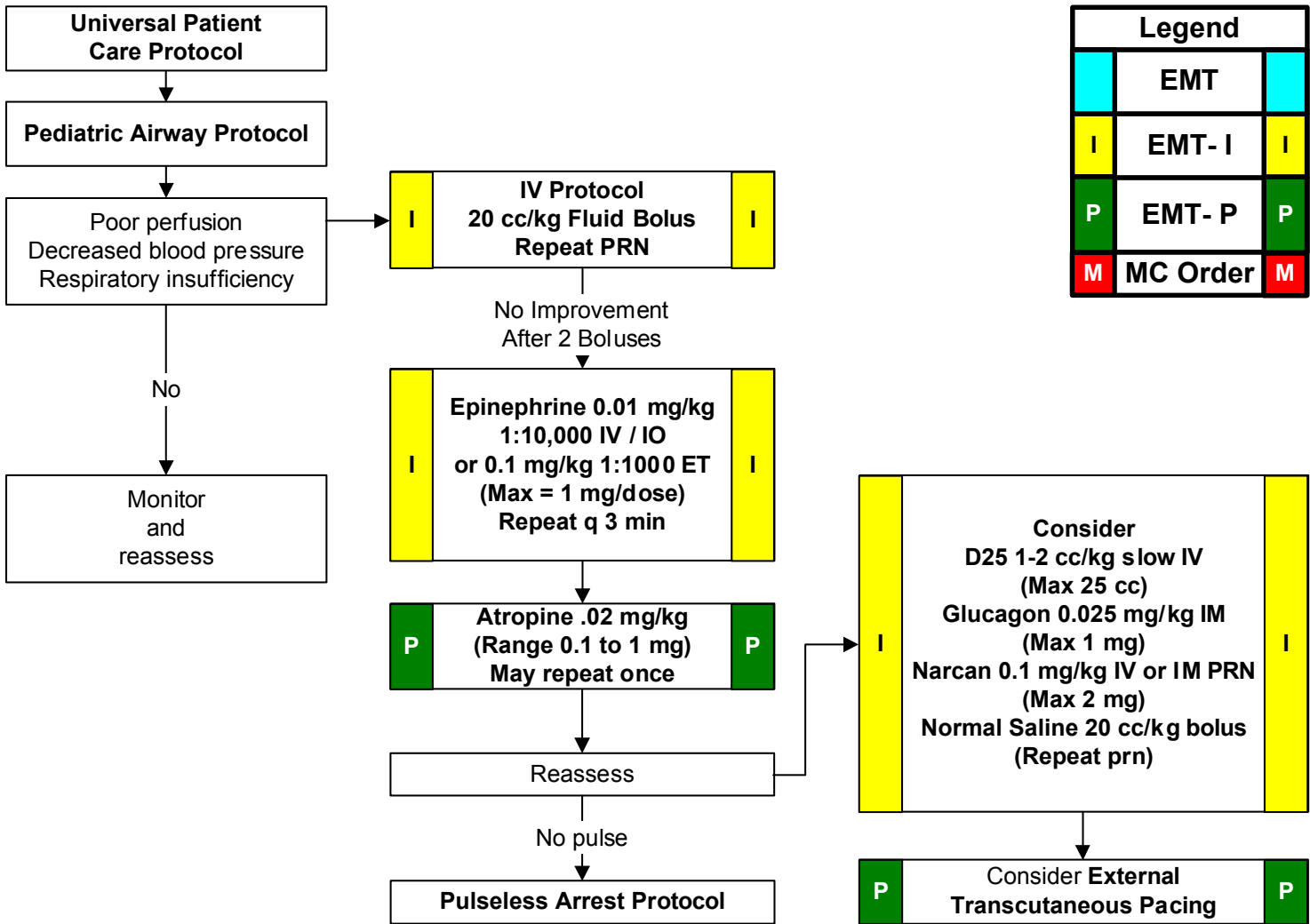
History: <ul style="list-style-type: none"> • Time of arrest • Medical history • Medications • Possibility of foreign body • Hypothermia • Suspected Abuse <ul style="list-style-type: none"> Shaken Baby Syndrome Pattern of Injuries • SIDS 	Signs and Symptoms: <ul style="list-style-type: none"> • Unresponsive • Cardiac arrest 	Differential: <ul style="list-style-type: none"> • Respiratory failure <ul style="list-style-type: none"> Foreign body Secretions Infection (croup, epiglottitis) • Hypovolemia (dehydration) • Congenital heart disease • Trauma • Tension pneumothorax • Hypothermia • Toxin or medication • Hypoglycemia • Acidosis
--	---	---



Legend		
I	E	I
I	E	I
P	E	P
M	E	M

Pearls: <ul style="list-style-type: none"> • Maximum doses: Epinephrine = 1 mg, Amiodarone = 300 mg, D25 = 25 cc, Narcan = 2 mg, Sodium Bicarbonate = 50 meq, Atropine range = 0.1 to 1 mg/dose (maximum of 3 doses). • In order to be successful in pediatric arrests, a cause must be identified and corrected. • Go to post-resuscitation protocol if return of spontaneous circulation occurs at any point.

History: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Decreased heart rate • Delayed capillary refill or cyanosis • Mottled, cool skin • Hypotension or arrest • Altered level of consciousness 	Differential: <ul style="list-style-type: none"> • Respiratory effort • Respiratory obstruction Foreign body / Secretions Croup / Epiglottitis • Hypovolemia • Hypothermia • Infection / Sepsis • Medication or Toxin • Hypoglycemia • Trauma
--	--	--



Pearls:

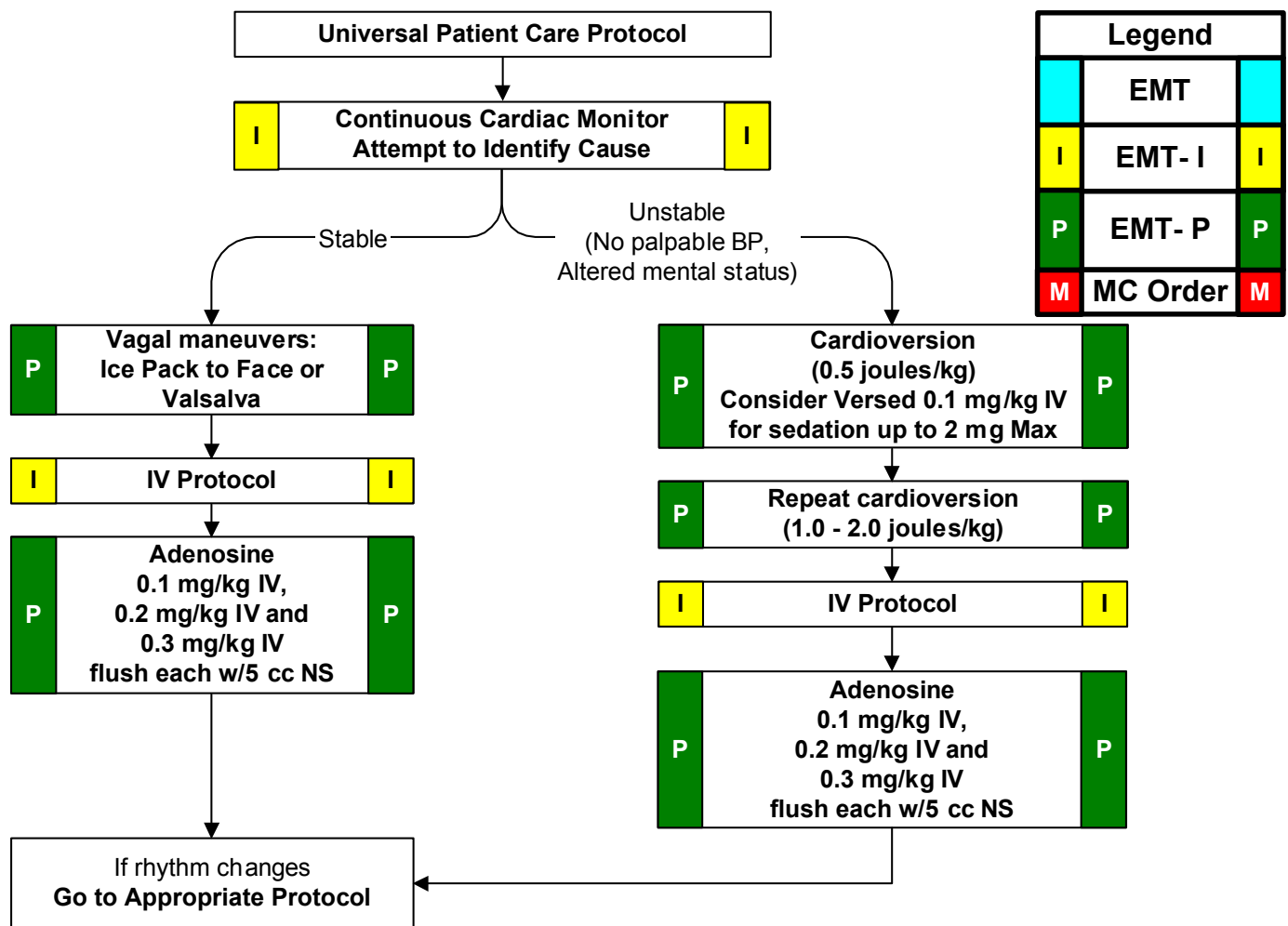
- Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- Infant = < 1year of age
- Most maternal medications pass through breast milk to the infant.
- The majority of pediatric arrests are due to air way problems.
- Hypoglycemia, severe dehydration and narcotic effects may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



Pediatric Supraventricular Tachycardia

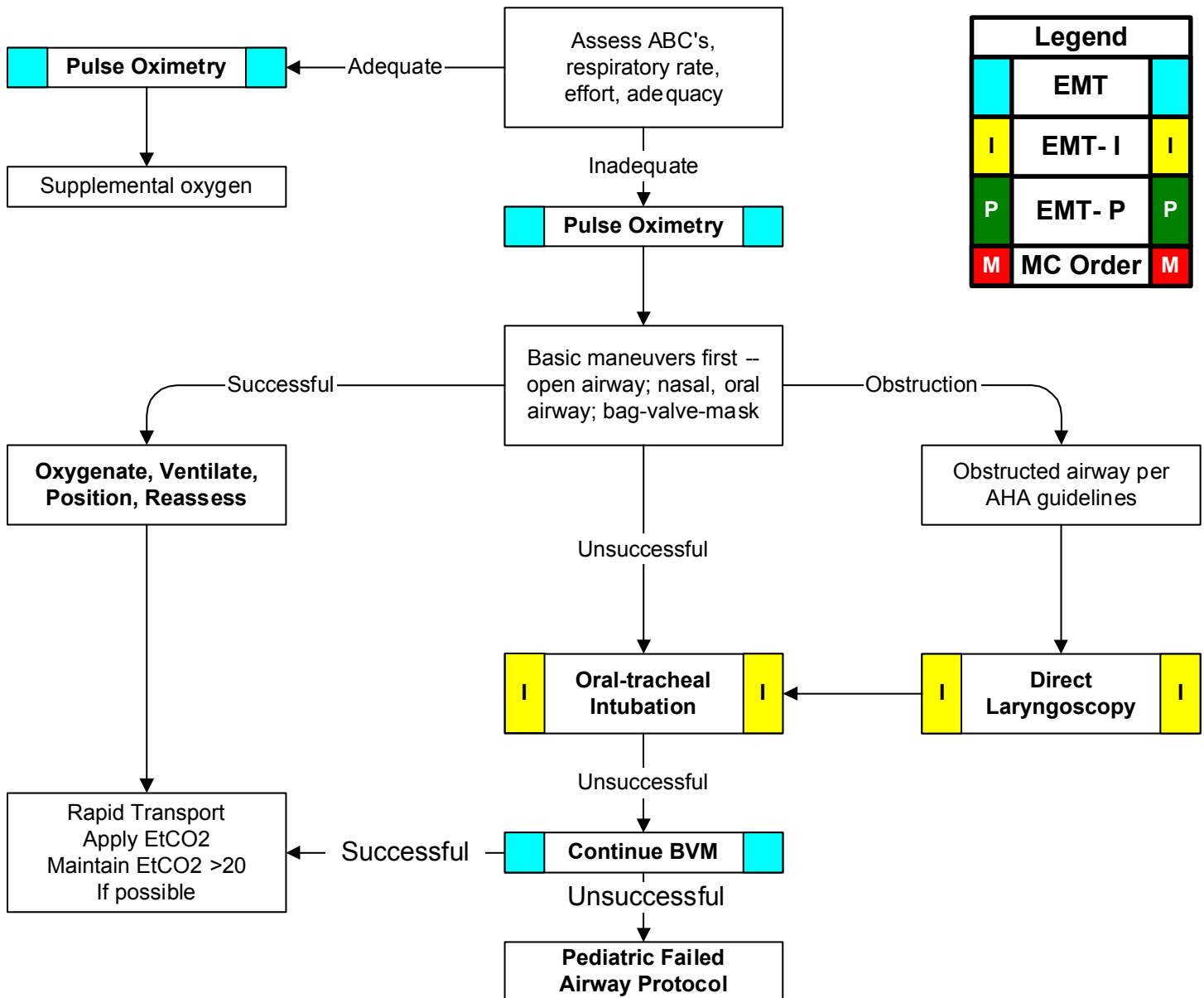


History: <ul style="list-style-type: none"> Past medical history Medications or Toxic Ingestion (Aminophylline, Diet pills, Thyroid supplements, Decongestants, Digoxin) Drugs (nicotine, cocaine) Congenital Heart Disease Respiratory Distress Syncope or Near Syncope 	Signs and Symptoms: <ul style="list-style-type: none"> Heart Rate: Child > 180/bpm Infant > 220/bpm Pale or Cyanosis Diaphoresis Tachypnea Vomiting Hypotension Altered Level of Consciousness Pulmonary Congestion Syncope 	Differential: <ul style="list-style-type: none"> 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
---	---	--



Pearls:

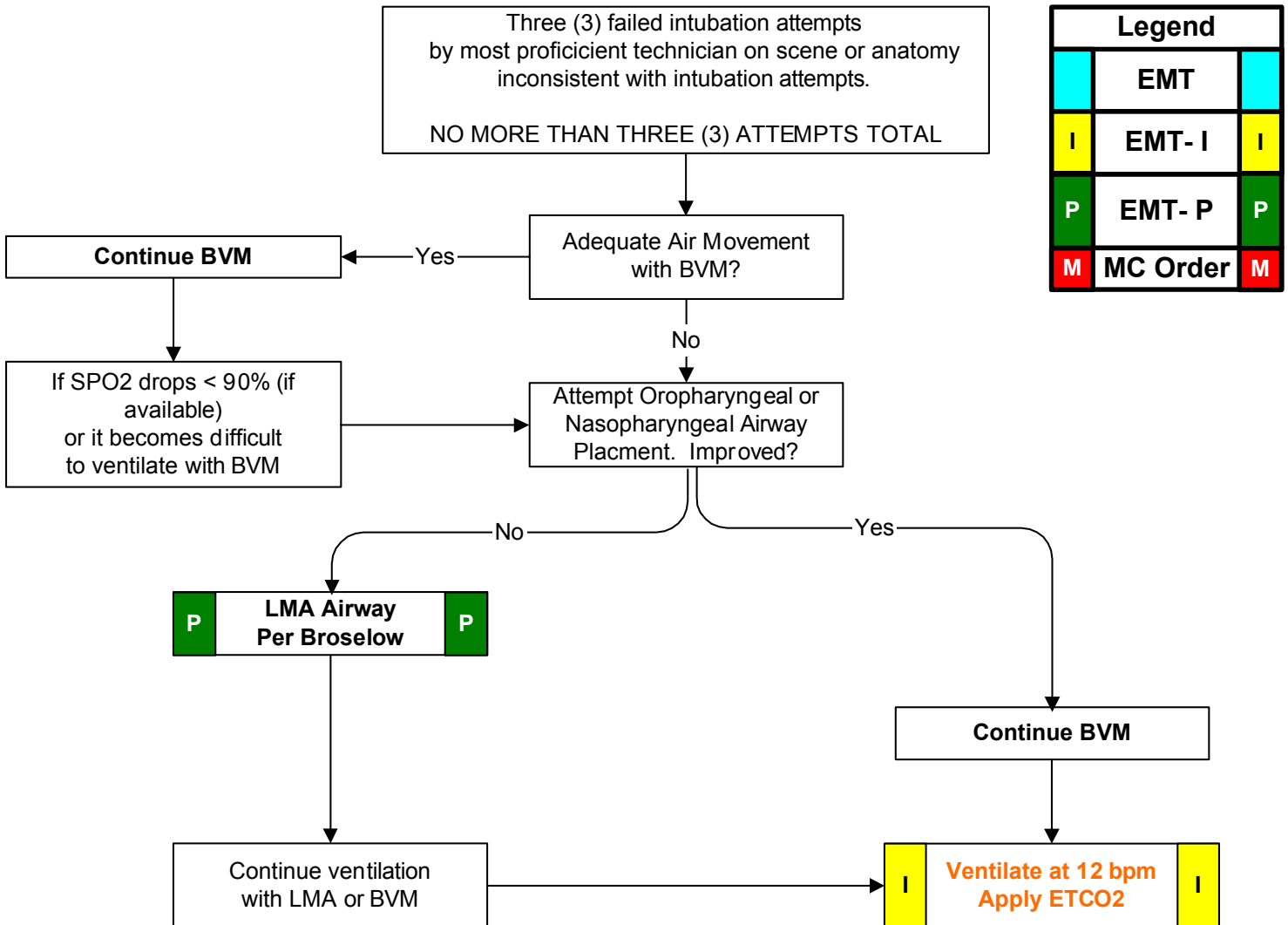
- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro**
- Carefully evaluate the rhythm to distinguish Sinus Tachycardia, Supraventricular Tachycardia, and Ventricular Tachycardia
- Separating the child from the caregiver may worsen the child's clinical condition.
- Pediatric paddles should be used in children < 10 kg or Broselow-Luten color Purple
- Monitor for respiratory depression and hypotension associated if Versed 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 - patient age in years.**



Legend		
	EMT	
I	EMT- I	I
P	EMT- P	P
M	MC Order	M

Pearls:

- For this protocol, pediatric is defined as less than 12 years.
- Capnometry, Esophageal Bulb, or capnography is mandatory with all methods of intubation. Document results.
- If adequate oxygenation and ventilation with BVM, it is acceptable to defer intubation until patient transfer at the hospital. Nasal cannula EtCO₂ should be utilized to monitor ventilations with the BVM.
- Limit intubation attempts to 3 per patient.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic -- use oxygen, not a paper bag.
- Sellick's maneuver should be used to assist with difficult intubations.
- Nasogastric tube placement should be considered in all intubated patients.
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Consider c-collar to maintain ETT placement for all intubated patients (REMOVE COLLAR upon patient TRANSFER).

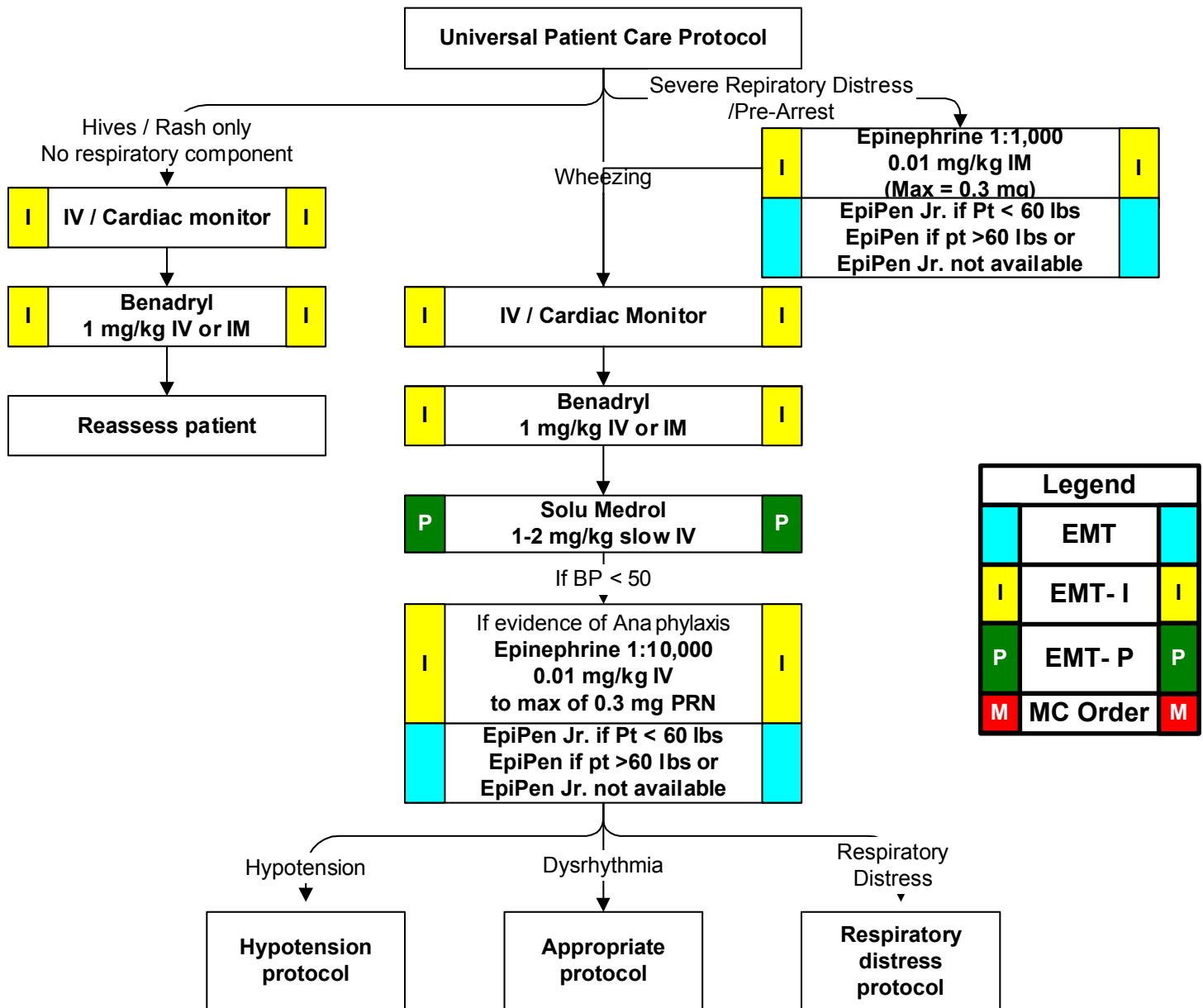


Pearls:

- **If first intubation attempt fails, make an adjustment and then try again:**
 - Different laryngoscope blade
 - 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.
- **Notify Medical Control AS EARLY AS POSSIBLE about the patient's difficult / failed airway.**

Pediatric Allergic Reaction

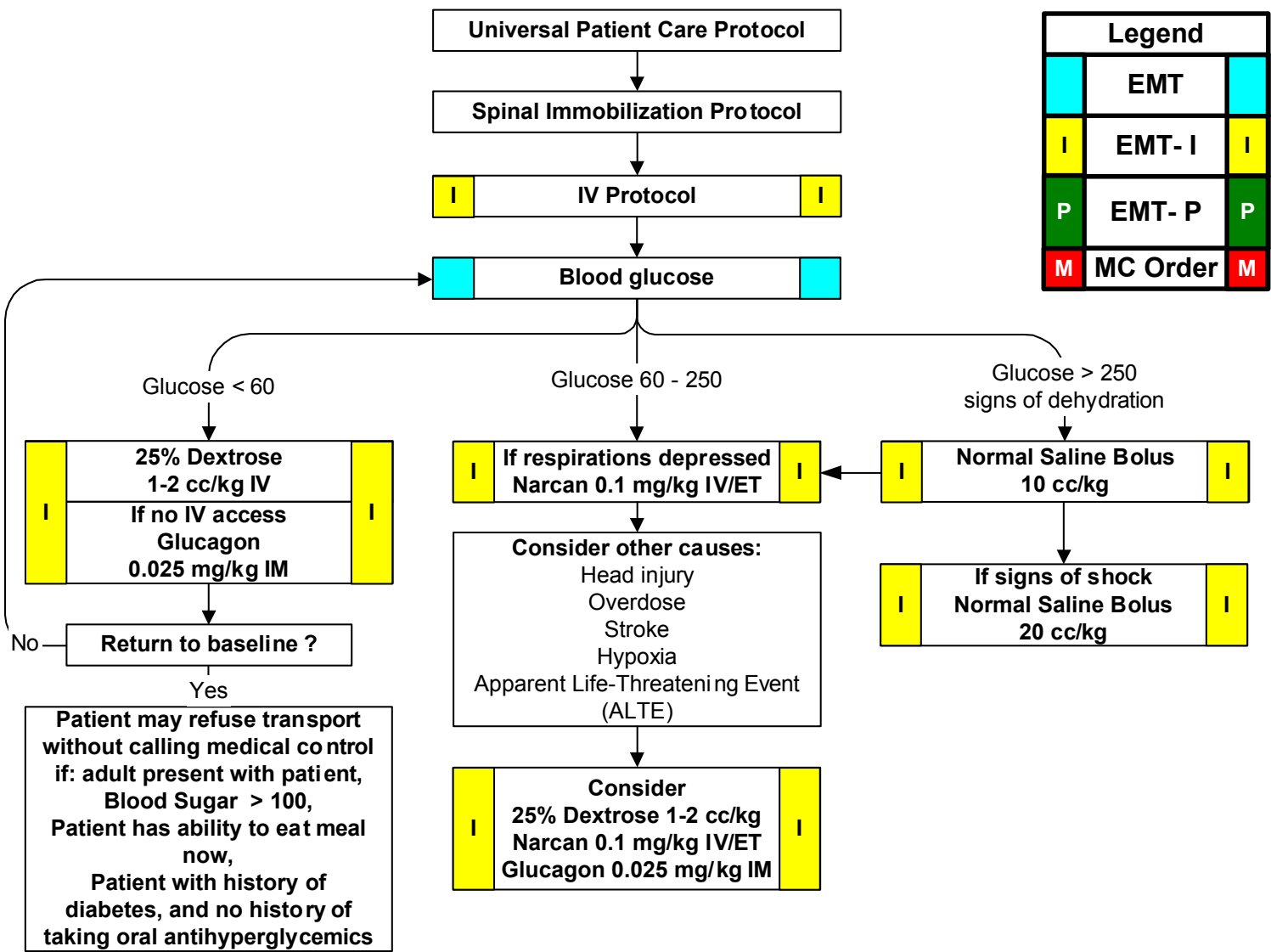
History <ul style="list-style-type: none"> Onset and location Insect sting or bite Food allergy / exposure Medication allergy / exposure New clothing, soap, detergent Past history of reactions Past medical history Medication history 	Signs and Symptoms: <ul style="list-style-type: none"> Itching or hives Coughing / wheezing or respiratory distress Chest or throat constriction Difficulty swallowing Hypotension or shock Edema 	Differential: <ul style="list-style-type: none"> Urticaria (rash only) Anaphylaxis (systemic effect) Shock (vascular effect) Angioedema (drug induced) Aspiration / Airway obstruction Vasovagal event Asthma or COPD CHF
---	--	--



Pearls:

- Exam: Mental Status, Skin, Heart, Lungs**
- Any patient with respiratory symptoms or extensive reaction should receive IV or IM Benadryl.
- The shorter the onset from symptoms to contact, the more severe the reaction.

History: <ul style="list-style-type: none"> • Known diabetic, medic alert tag • Drugs, drug paraphernalia • Report of illicit drug use or toxic ingestion • Past medical history • Medications • History of trauma 	Signs/Symptoms: <ul style="list-style-type: none"> • Decreased mental status • Change in baseline mental status • Bizarre behavior • Hypoglycemia (cool, diaphoretic skin) • Hyperglycemia (warm, dry skin; fruity breath; Kussmaul resps; signs of dehydration) 	Differential: <ul style="list-style-type: none"> • Head trauma • CNS (stroke, tumor, seizure, infection) • Cardiac (MI, CHF) • Infection • Thyroid (hyper / hypo) • Shock (septic, metabolic, traumatic) • Diabetes (hyper / hypoglycemia) • Toxicologic • Acidosis / Alkalosis • Environmental exposure • Pulmonary (Hypoxia) • Electrolyte abnormality • Psychiatric disorder
---	--	---



Legend		
I	EMT	I
I	EMT- I	I
P	EMT- P	P
M	MC Order	M

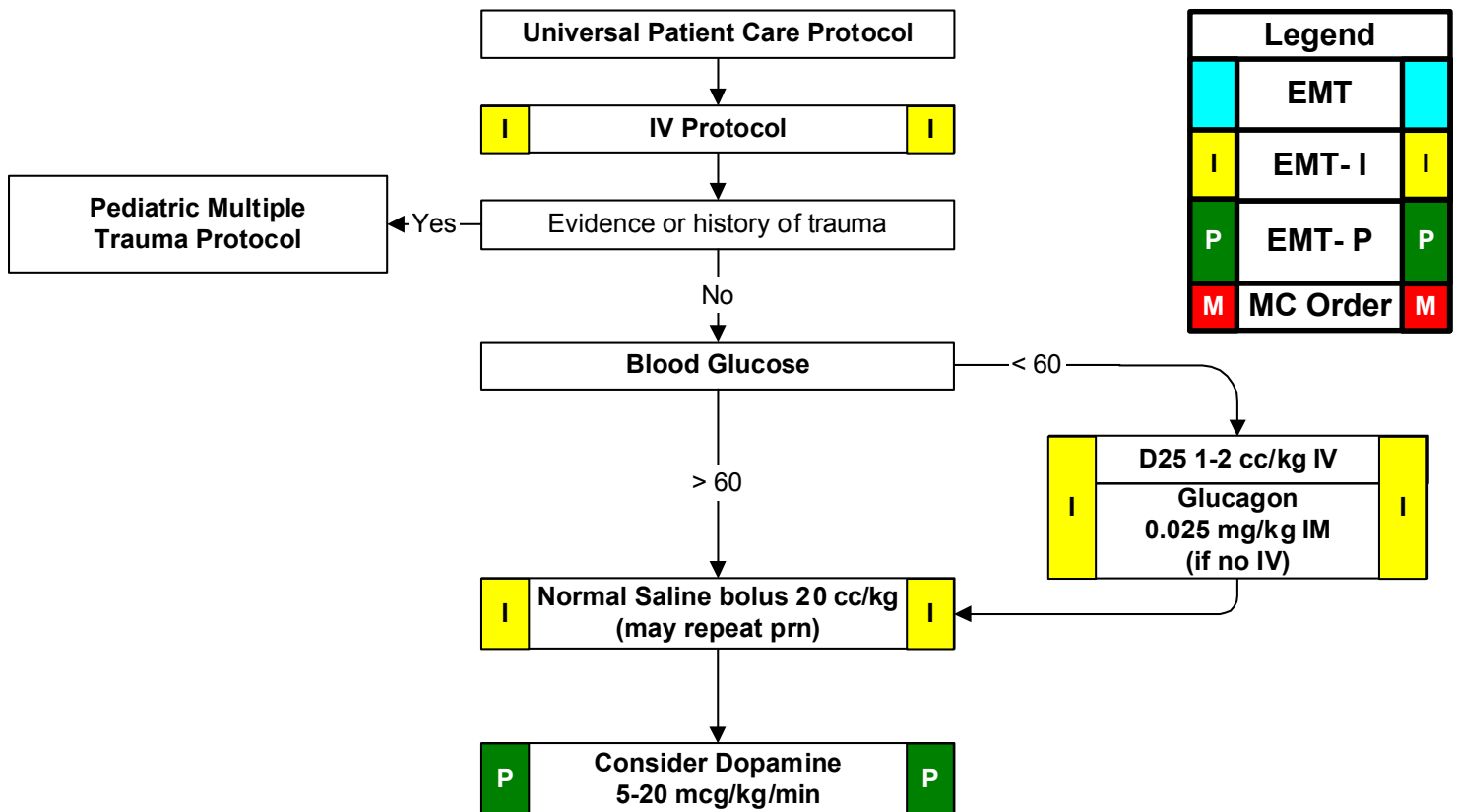
Pearls: <ul style="list-style-type: none"> • Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro • Be aware of AMS as presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety. • It is safer to assume hypoglycemia than hyperglycemia if doubt exists. • 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.
--



Pediatric Hypotension Shock (Non-Trauma)

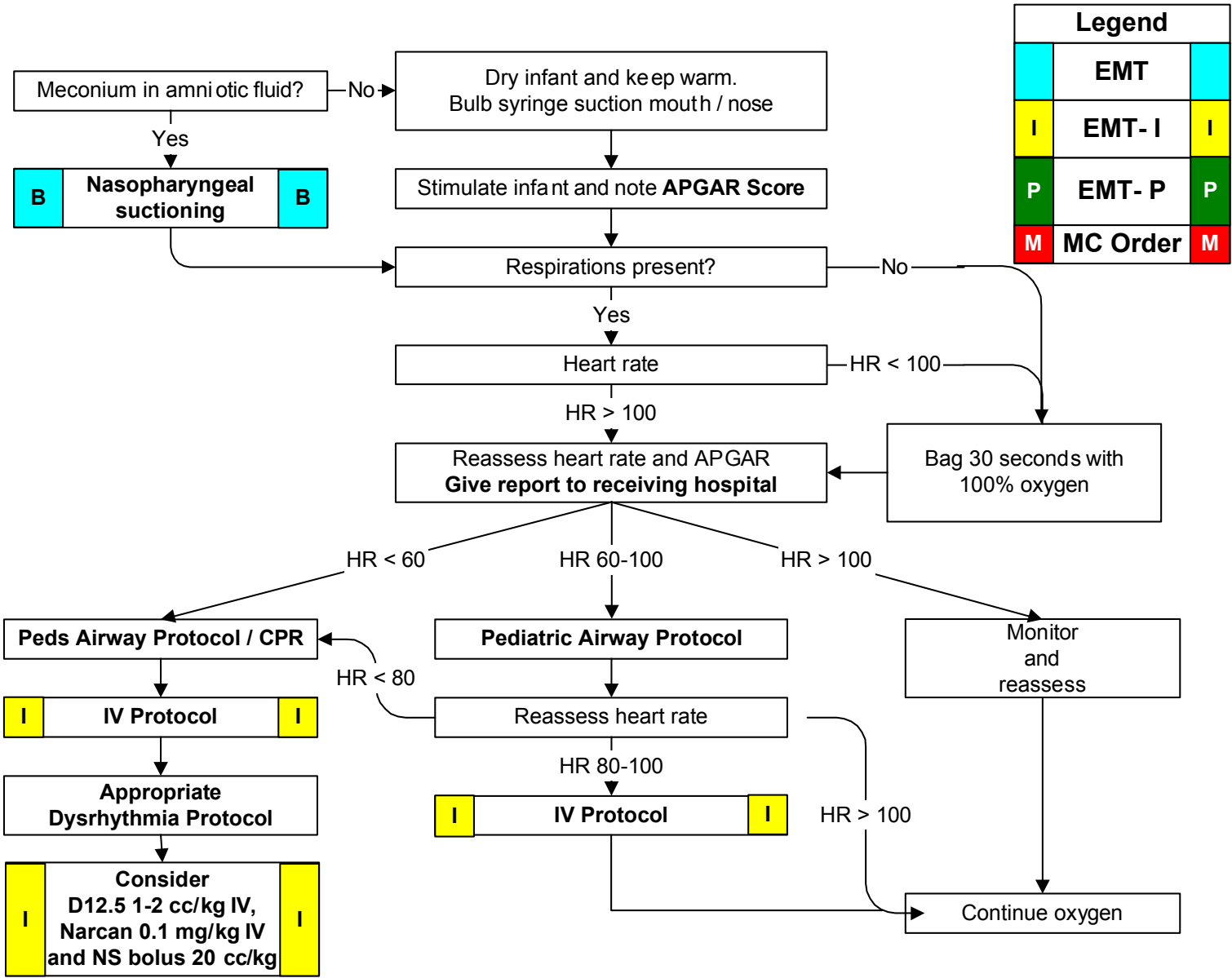


History: <ul style="list-style-type: none"> Blood loss Fluid loss <ul style="list-style-type: none"> Vomiting Diarrhea Fever Infection 	Signs and Symptoms: <ul style="list-style-type: none"> Restlessness, confusion, weakness Dizziness Increased HR, rapid pulse Decreased BP Pale, cool, clammy skin Delayed capillary refill 	Differential: <ul style="list-style-type: none"> Trauma Infection Dehydration <ul style="list-style-type: none"> Vomiting Diarrhea Fever Congenital heart disease Medication or Toxin
--	---	---



Pearls: <ul style="list-style-type: none"> Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro Maximum dose of D25 = 25 cc per dose, glucagon = 1mg Consider all possible causes of shock and treat per appropriate protocol. Decreasing heart rate is a sign of impending collapse. Most maternal medications pass through breast milk to the infant. Examples: Narcotics, Benzodiazepines.

History: <ul style="list-style-type: none"> • Due date and gestational age • Multiple gestation (twins etc.) • Meconium • Delivery difficulties • Congenital disease • Medications (maternal) • Maternal risk factors <ul style="list-style-type: none"> substance abuse smoking 	Signs and Symptoms: <ul style="list-style-type: none"> • Respiratory distress • Peripheral cyanosis or mottling (normal) • Central cyanosis (abnormal) • Altered level of responsiveness • Bradycardia 	Differential: <ul style="list-style-type: none"> • Airway failure • Secretions • Respiratory drive • Infection • Maternal medication effect • Hypovolemia • Hypoglycemia • Congenital heart disease • Hypothermia
---	--	--



Legend		
	E	T
I	E	M
P	E	M
M	M	C

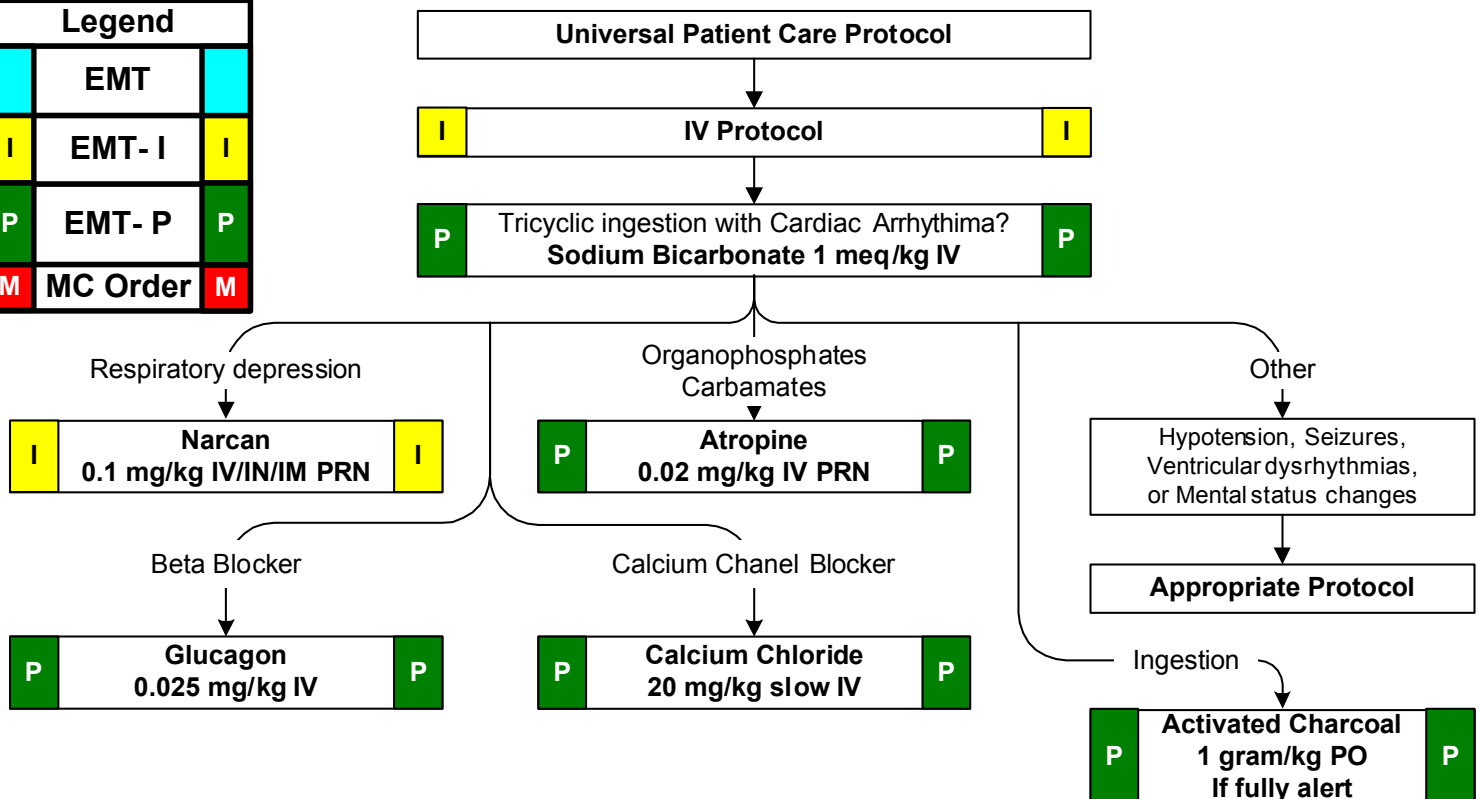
- Pearls:**
- Maternal sedation or narcotics will sedate infant (Narcan effective but may precipitate seizures).
 - Consider hypoglycemia in infant.
 - Document 1 and 5 minute APGAR scores.
 - D12.5 = D50 diluted to 1/4 strength. (1ml D50 with 3 ml Saline.)

Score	0	1	2
Appearance	blue centrally	blue extremities	pink
Pulse	0	<100	>100
Grimace	None	Grimace	pulls away
Activity	absent	arm/leg flexed	active movement
Resp	absent	slow	crying, good

Pediatric Overdose Toxic Ingestion

History: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> Mental status changes Hypotension / hypertension Decreased respiratory rate Tachycardia, dysrhythmias Seizures 	Differential: <ul style="list-style-type: none"> Tricyclic antidepressants (TCAs) Acetaminophen (tylenol) Depressants Stimulants Anticholinergic Cardiac medications Solvents, Alcohols, Cleaning agents Insecticides (organophosphates)
--	---	---

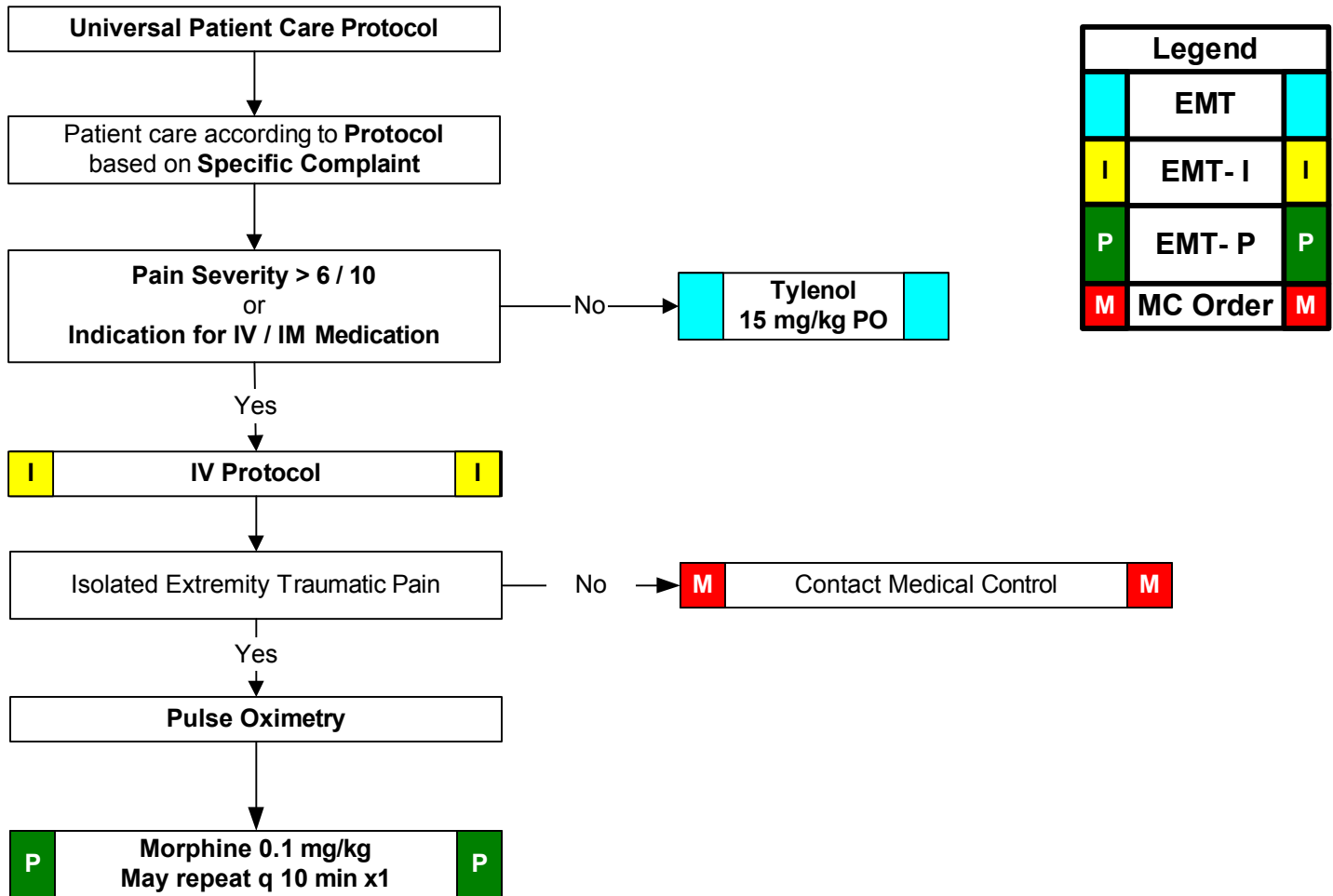
Legend		
	EMT	
I	EMT- I	I
P	EMT- P	P
M	MC Order	M



Pearls:

- Maximum doses:** Narcan 2 mg, glucagon 1 mg, Calcium Chloride 1 gram, Charcoal 50 grams, Sodium Bicarbonate 50 meq, atropine 2 mg/dose (minimum = 0.1 mg).
- Do not rely on patient history of ingestion, especially in suicide attempts.
- 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
- 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 Meds:** dysrhythmias and mental status changes
- Solvents:** nausea, vomiting, and mental status changes
- Insecticides:** increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils
- Charcoal may not be administered by NG Tube. If charcoal is given po and the patient has decreasing mental status, an NG tube may be placed if needed to assist with airway protection.
- Consider restraints if necessary for patient's and/or personnel's protection per the Restraint Procedure.
- Consider contacting the North Carolina Poison Control Center for guidance. 1-800-222-1222

History: <ul style="list-style-type: none"> • Age • Location • Duration • Severity (1 - 10) • Past medical history • Medications • Drug allergies 	Signs and Symptoms: <ul style="list-style-type: none"> • Severity (pain scale) • Quality (sharp, dull, etc.) • Radiation • Relation to movement, respiration • Increased with palpation of area 	Differential: <ul style="list-style-type: none"> • Per the specific protocol • Musculoskeletal • Visceral (abdominal) • Cardiac • Pleural / Respiratory • Neurogenic • Renal (colic)
---	---	--



Pearls:

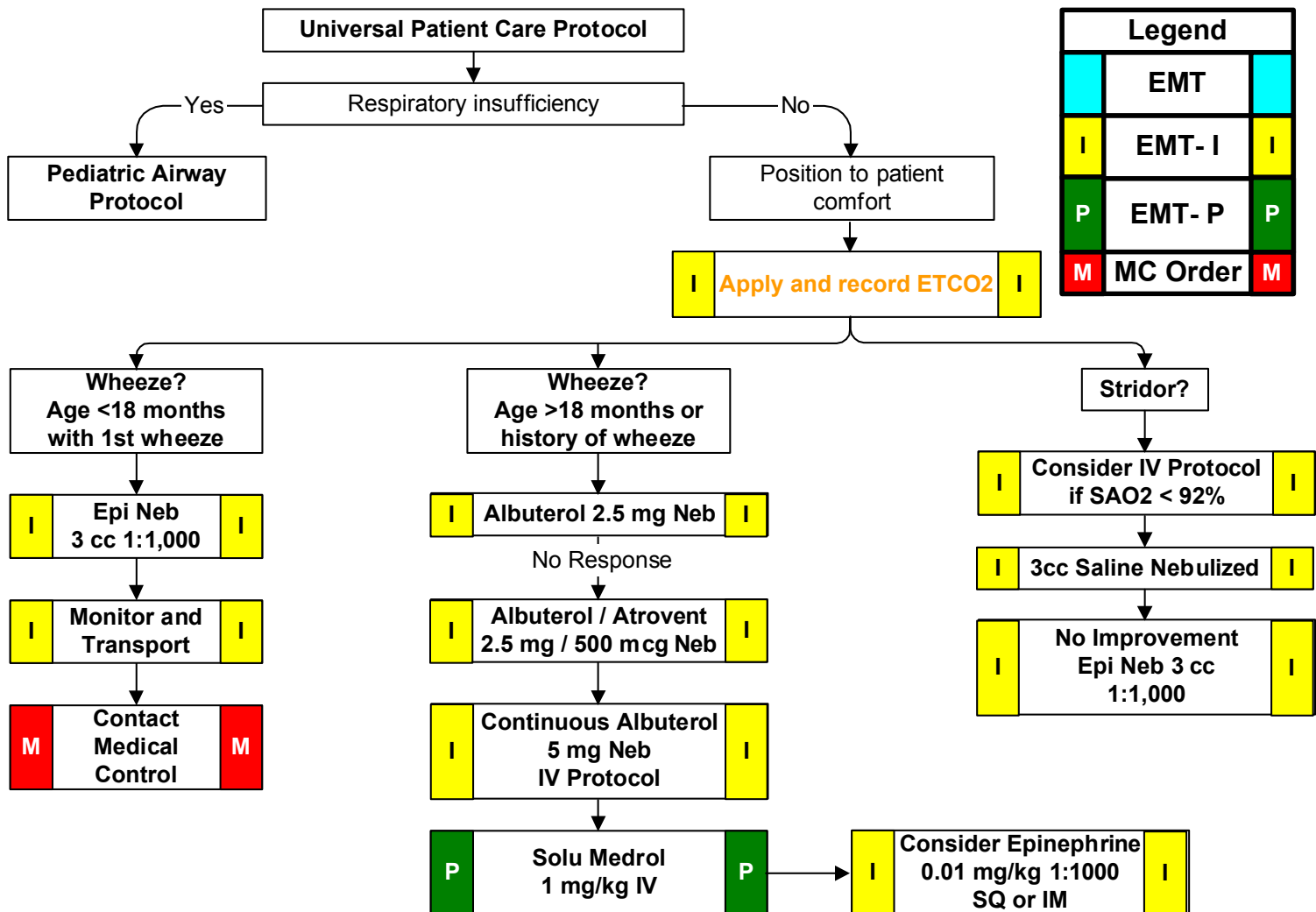
- **Maximum dose: Morphine = 2 mg/dose, Tylenol = 1 gram**
- **Pain severity (0-10) is a vital sign to be recorded pre and post IV or IM medication delivery and at disposition.**
- **Vital signs should be obtained pre, 15 minutes post, and at dispo sition with all pain medications.**
- Contraindications to Morphine use include hypotension, head injury, respiratory distress or severe COPD.
- 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.
- All pain not related to isolated extremity trauma (or on burns protocol) requires medical control consultation prior to morphine administration



Pediatric Respiratory Distress



History: <ul style="list-style-type: none"> • Time of onset • Possibility of foreign body • Medical history • Medications • Fever or respiratory infection • Other sick siblings • History of trauma 	Signs and Symptoms: <ul style="list-style-type: none"> • Wheezing or stridor • Respiratory retractions • Increased heart rate • Altered level of consciousness • Anxious appearance 	Differential: <ul style="list-style-type: none"> • Asthma • Aspiration • Foreign body • Infection <ul style="list-style-type: none"> • Pneumonia • Croup • Epiglottitis • Congenital heart disease • Medication or Toxin • Trauma
--	---	---

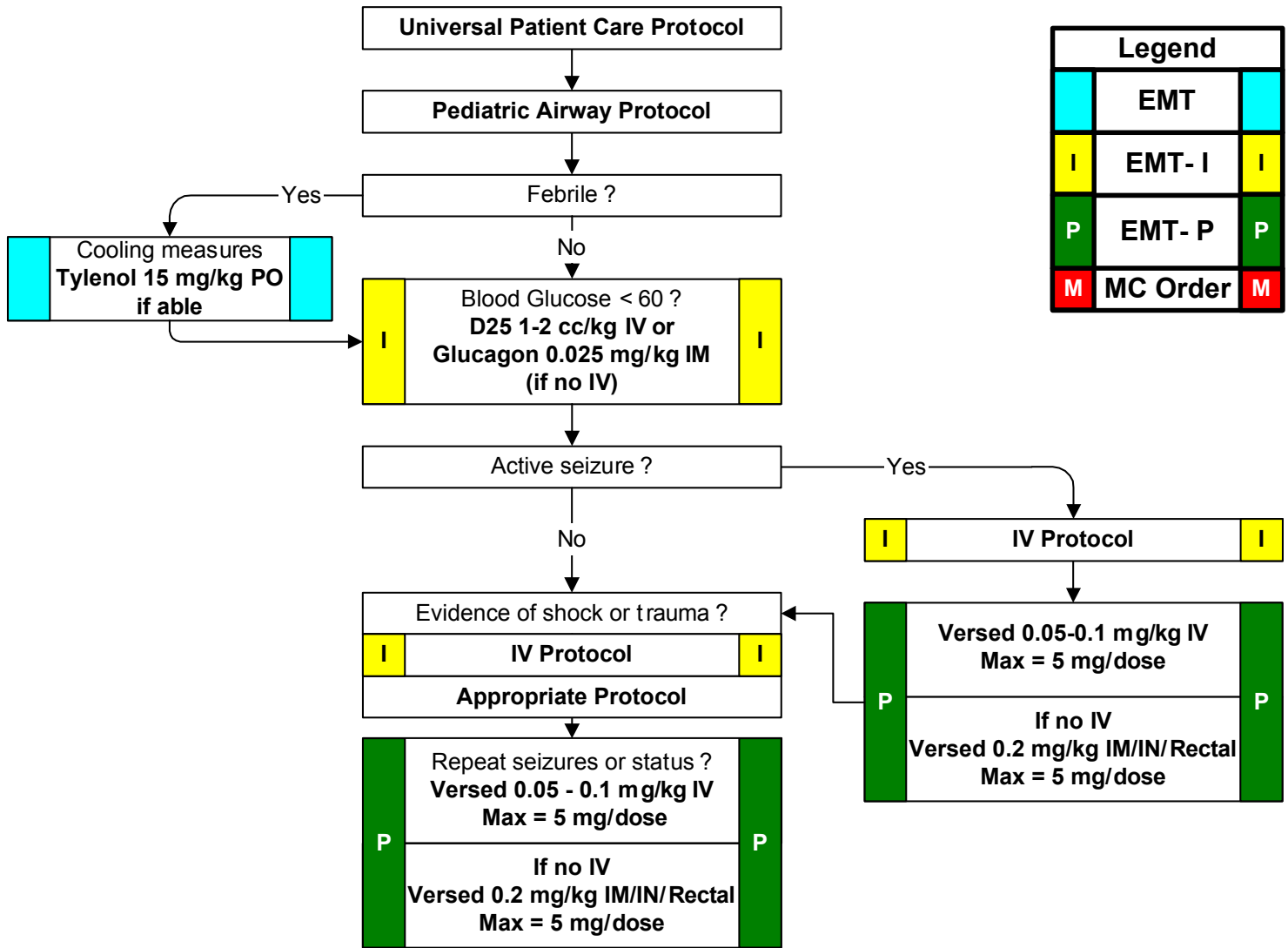


Pearls:

- **Maximum dose of IV epinephrine = 0.3 mg/dose, Maximum dose of Solum edrol = 125 mg**
- **Pulse oximetry** should be monitored continuously if initial saturation is $\leq 96\%$, 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.
- Bronchiolitis is a viral infection typically affecting infants which results in wheezing which may not respond to albuterol
- 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.
- For patients using Xopenex, you may continue a treatment or initiate one treatment in place of Albuterol. Use patient meds and dosing (0.31 mg - 1.25 mg) via nebulizer.

Pediatric Seizure

History: <ul style="list-style-type: none"> • Fever • Prior history of seizures • Seizure medications • Reported seizure activity • History of recent head trauma • Congenital abnormality 	Signs and Symptoms: <ul style="list-style-type: none"> • Observed seizure activity • Altered mental status • Hot, dry skin or elevated body temperature 	Differential: <ul style="list-style-type: none"> • Fever • Infection • Head trauma • Medication or Toxin • Hypoxia or Respiratory failure • Hypoglycemia • Metabolic abnormality / acidosis • Tumor
---	---	--



Pearls:

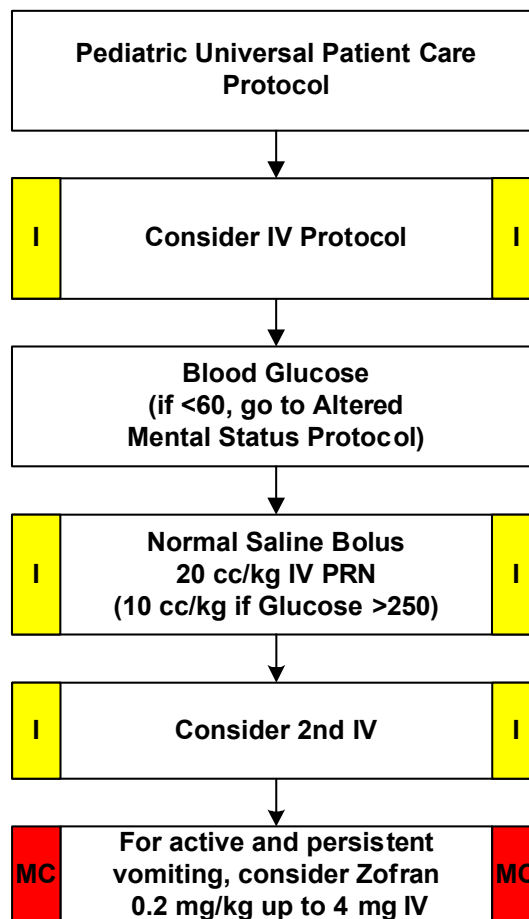
- Maximum dose of D25 = 25 cc, Maximum dose of glu cagon = 1 mg
- **Status Epilepticus** is defined as two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- **Grand mal seizures** (generalized) 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 to assist ventilations especially if a benz odiazepine is used.
- If evidence or suspicion of trauma, spine should be immobilized.
- If febrile, remove clothing and sponge with room temperature water.
- **In an infant, a seizure may be the only evidence of a closed head injury.**



Pediatric Vomiting and Diarrhea



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



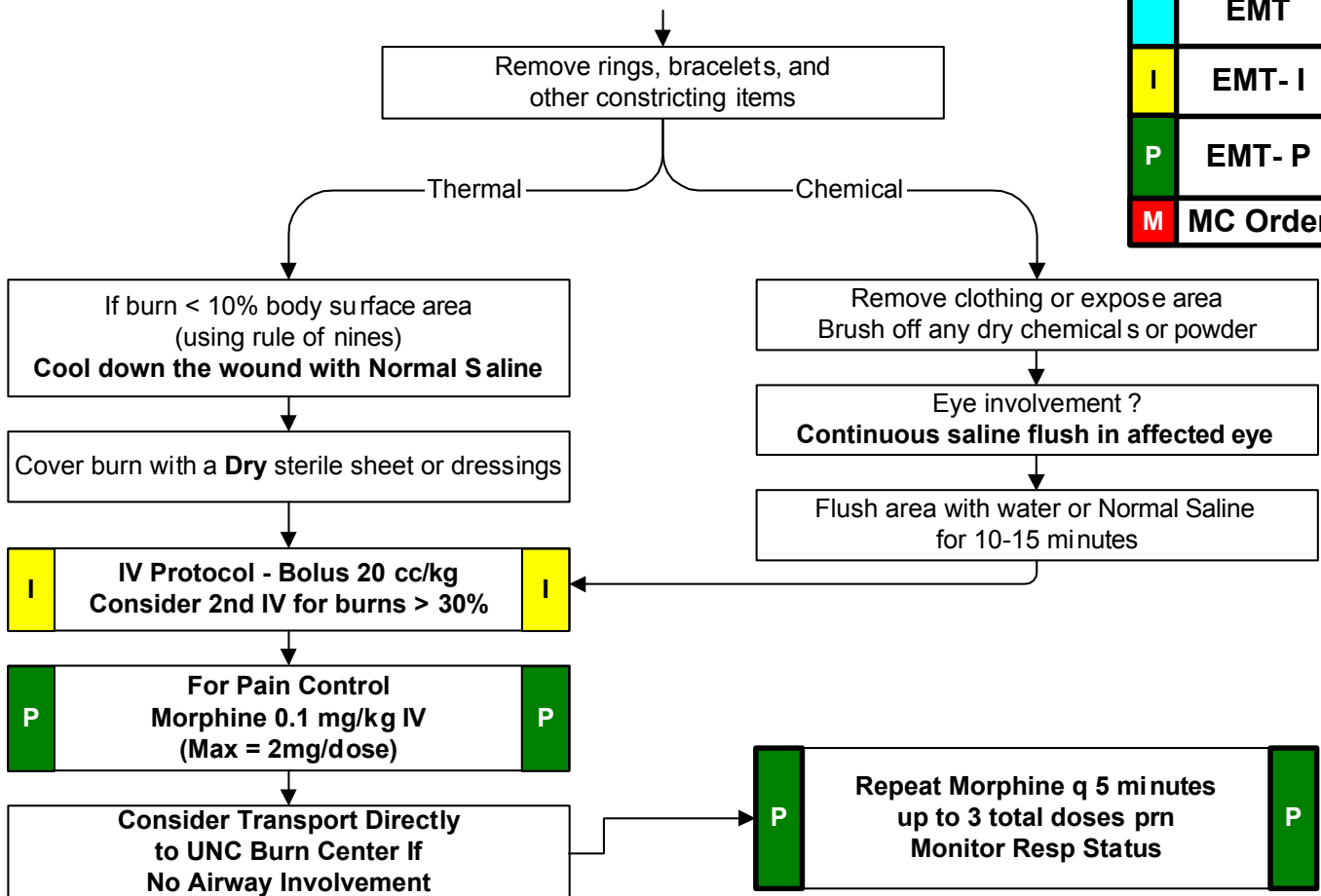
Legend		
	EMT	
I	EMT- I	I
P	EMT- P	P
M	MC Order	M

Pearls: <ul style="list-style-type: none"> • Exam: Mental Status, Skin, HEENT, Neck, Heart, Lungs, Abdomen, Back, Extrem ities, Neuro • Frequent re-assessments are needed to monitor vascular status.

History: <ul style="list-style-type: none"> Type of exposure (heat, gas, chemical) Inhalation injury Time of injury Past medical history Medications Other trauma Loss of consciousness Tetanus/Immunization status 	Signs and Symptoms: <ul style="list-style-type: none"> Burns, pain, swelling Dizziness Loss of consciousness Hypotension / shock Airway compromise / distress Singed facial or nasal hair Hoarseness / wheezing 	Differential: <ul style="list-style-type: none"> Superficial (1°) red and painful Partial thickness (2°) blistering Full thickness (3°) painless and charred or leathery skin Chemical Thermal Electrical Radiation
--	---	--

Universal Patient Care Protocol

Legend		
	EMT	
I	EMT - I	I
P	EMT - P	P
M	MC Order	M

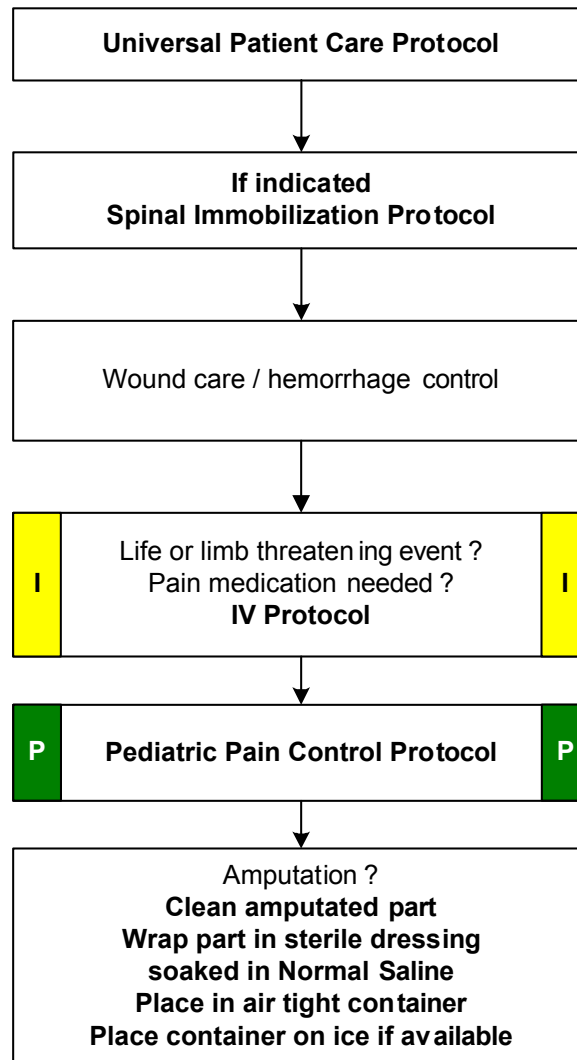


Pearls:

- If Airway Involvement, Consider Transport to Nearest Hospital**
- Critical Burns:** >20% body surface area (BSA) age > 10; >10% BSA age < 10; 3° burns >5% BSA; 2° and 3° burns to face, eyes, hands or feet; electrical burns; respiratory burns; deep chemical burns; burns with extremes of age or chronic disease; and burns with associated major traumatic injury. These burns may require hospital admission or transfer to a burn center.
- Early intubation is required in significant inhalation injuries.
- Potential CO exposure should be treated with 100% oxygen.
- Circumferential burns to extremities are dangerous due to potential vascular compromise 2° to soft tissue swelling.
- Burn patients are prone to hypothermia - Never apply ice or cool burns that involve >10% body surface area.
- Do not overlook the possibility of multiple system trauma.
- Do not overlook the possibility for child abuse with children sustaining burn injuries.

Pediatric Extremity Trauma

<p>History:</p> <ul style="list-style-type: none"> Type of injury Mechanism: crush / penetrating / amputation Time of injury Open vs. closed wound / fracture Wound contamination Medical history Medications 	<p>Signs and Symptoms:</p> <ul style="list-style-type: none"> Pain, swelling Deformity Altered sensation / motor function Diminished pulse / capillary refill Decreased extremity temperature 	<p>Differential:</p> <ul style="list-style-type: none"> Abrasion Contusion Laceration Sprain Dislocation Fracture Amputation
---	---	--

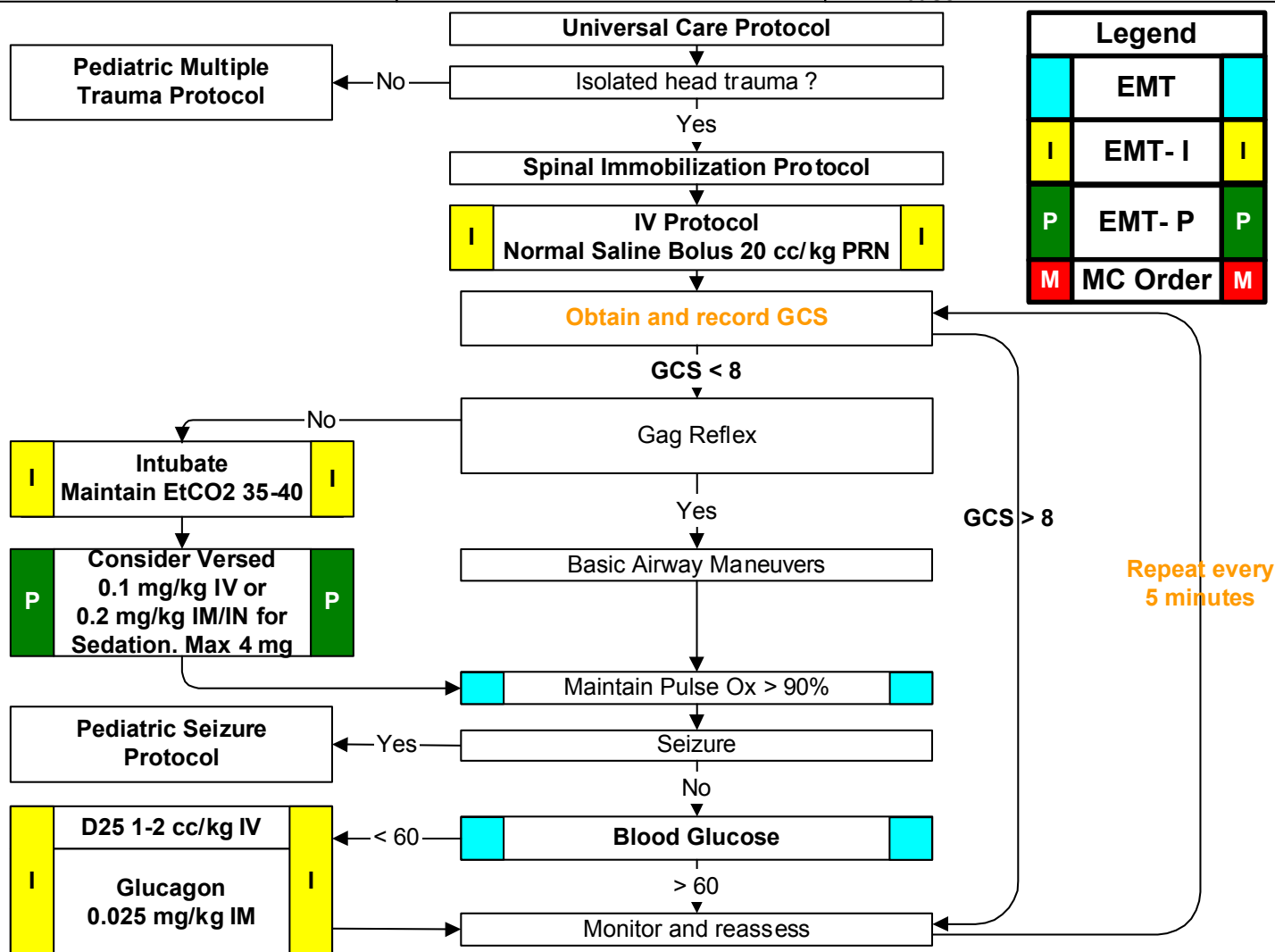


Legend		
	EMT	
I	EMT- I	I
P	EMT- P	P
M	MC Order	M

<p>Pearls:</p> <ul style="list-style-type: none"> Exam: Mental Status, Extremity, Neuro 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. Severe bleeding from an extremity not rapidly controlled may necessitate the application of a tourniquet Lacerations must be evaluated for repair within 6 hours from the time of injury.
--

Pediatric Head Trauma

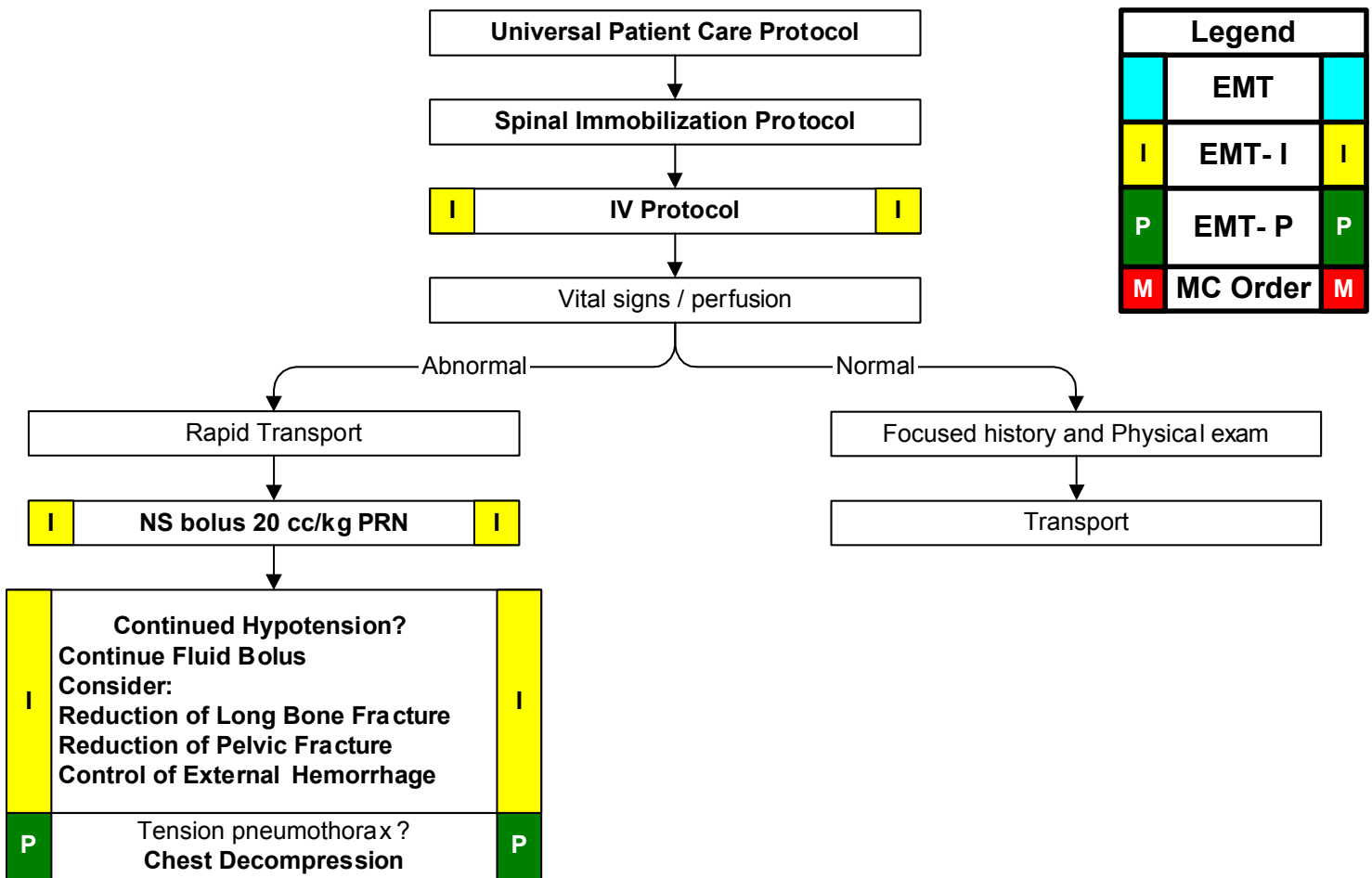
History: <ul style="list-style-type: none"> • Time of injury • Mechanism (blunt vs. penetrating) • Loss of consciousness • Bleeding • Past medical history • Medications • Evidence for multi-trauma 	Signs and Symptoms: <ul style="list-style-type: none"> • Pain, swelling, bleeding • Altered mental status • Unconscious • Respiratory distress / failure • Vomiting • Major traumatic mechanism of injury • Seizure 	Differential: <ul style="list-style-type: none"> • Skull fracture • Brain injury (Concussion, Contusion, Hemorrhage or Laceration) • Epidural hematoma • Subdural hematoma • Subarachnoid hemorrhage • Spinal injury • Abuse
--	---	---



Pearls:

- Maximum D25 dose = 25 cc, Narcan = 2mg, Glucagon = 1mg
- If GCS < 12 consider air / rapid transport and if GCS < 8 intubation should be anticipated.
- In a patient with a GCS < 8 and a stable mid-face, nasotracheal intubation may be considered.
- Hyperventilate the patient only if evidence of herniation (blown pupil, decorticate / decerebrate posturing, bradycardia). 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.

History: <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Carseat • Helmet • Pads • Ejection • Past medical history • Medications 	Signs and Symptoms: <ul style="list-style-type: none"> • Pain, swelling • Deformity, lesions, bleeding • Altered mental status • Unconscious • Hypotension or shock • Arrest 	Differential (Life Threatening): <ul style="list-style-type: none"> • Chest <ul style="list-style-type: none"> • 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
---	---	---



Pearls: Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro <ul style="list-style-type: none"> • 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. • Severe bleeding from an extremity not rapidly controlled may necessitate the application of a tourniquet. • Do not overlook the possibility of child abuse.



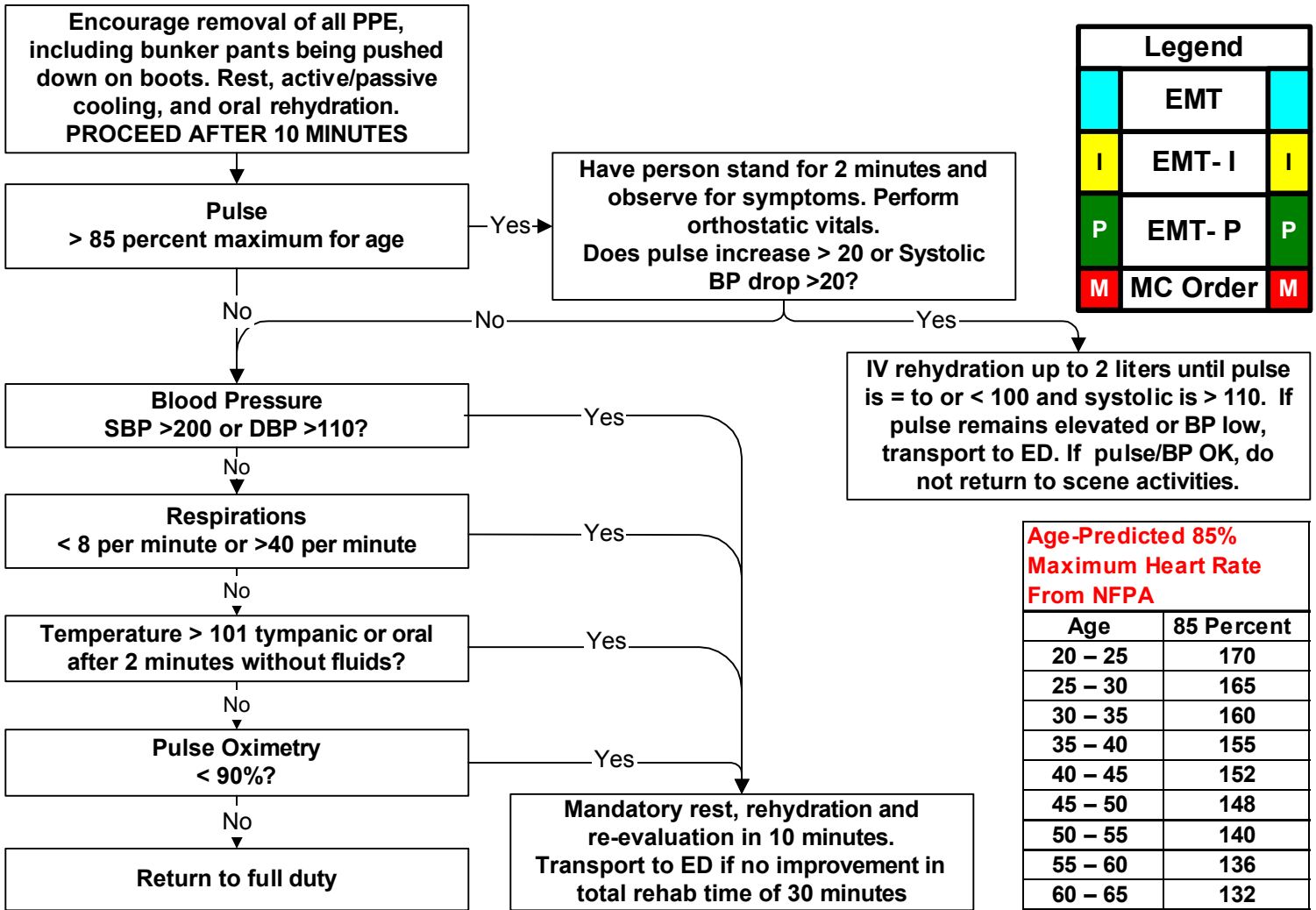
Wake County EMS System



SPECIAL RESPONSE PROTOCOLS



Scene Rehabilitation Protocol



Pearls:

- This protocol may be applied to adult patients on fire scenes and any gathering approved by Medical Director
- Exam: Mental Status, Skin, Neck, Heart, Lungs, Abdomen, Back, Extremities, Neuro
- When used for firefighter rehab, firefighters should report to rehab for evaluation after 45 minutes (2 thirty minute or 1 sixty minute cylinder), or earlier if the firefighter or incident commander desires.
- Any person complaining of shortness of breath, confusion, combativeness or headache will be treated with highflow oxygen and be transported to the hospital.
- **Automatic Transport Criteria:**
 - Chest Pain
 - Shortness of breath unresolved by 10 minutes on high flow oxygen.
 - Heart rhythm other than NSR or sinus tach
 - A syncopal episode, disorientation, or confusion
 - Vital signs that have not returned to normal after 30 minutes of rest
 - Inability to hold fluids down or an episode of vomiting
 - Request for transport for any reason
- **Cooling Techniques**
 - Expose by full gear removal
 - Immerse forearms in water in rehab chairs when available (most effective technique)
 - Do not apply wet towels to neck or head of firefighters- risk of steam burns is increased
 - Cooling fans, ambient evaporative cooling
- **Medical Control contact is not required to discontinue IV therapy to adult Emergency Services personnel treated under this protocol. For other approved gatherings contact requirements are determined at approval.**



Wake County EMS System

Special Response Protocol



WMD Protocol - Cyanide

Indications:

Any patient in which cyanide poisoning is known or suspected.

Mechanism of poisoning:

Blocks the patient's ability to use oxygen as an energy source at the cellular level.

Equipment:

1. Cyanide antidote kit:
 - Amyl nitrate capsule
 - Sodium nitrite 300 mg in 10mL
 - Sodium thiosulfate 12.5 g in 50mL
2. Standard ALS Equipment

Clinical signs and symptoms, severe:

1. Neurologic:
 - a. Seizures
 - b. Coma
2. Pulmonary
 - a. Increased respiratory rate
 - b. Apnea
3. Cardiovascular
 - a. Tachycardia/Hypertension (early)
 - b. Bradycardia/Hypotension/Arrest (late)

Treatment Protocol:

1. High flow O₂ via NRB or BVM
2. If no IV access, use amyl nitrate capsule (this is not needed if IV medications can be given immediately).
3. Sodium nitrite 300mg in 10mL IV
4. Sodium thiosulfate 12.5gms in 50mL IV
5. If patient remains symptomatic, repeat at ½ of initial dose.



Wake County EMS System

Special Response Protocol



WMD Protocol – Cyanide (Continued)

Clinical Signs and Symptoms, mild:

1. Headache
2. Drowsiness
3. Burning of tongue/mucous membranes
4. Smell of bitter almonds
5. GI distress

Treatment Protocol:

1. Establish IV and prepare antidotes
2. Due to the toxicity of the antidotes, patients with minimal symptoms should not be treated unless severe symptoms develop.

Pediatric Considerations:

1. Sodium nitrite dose is 0.33mL/kg IV of the 300 mg in 10mL preparation
2. Sodium thiosulfate dose is 1.65mL/kg of the 12.5 grams in 50mL preparation

Notes on Medications:

1. Profound hypotension may result from the use of nitrates. Monitor vital signs frequently after administration of nitrates.
2. Methemoglobin is formed during treatment of cyanide poisoning. This may result in cyanosis, particularly in children. Treat with high flow O₂.



Wake County EMS System

Special Response Protocol



WMD Protocol - HAZMAT

	EMT	
I	EMT- I	I
P	EMT- P	P

Indications:

- This protocol applies to any scene with the potential for contamination. This includes but is not limited to industrial chemical accidents, radiological accidents, and incidents involving weapons of mass destruction. The Raleigh Fire Dept Hazardous Materials Team will direct decontamination. For the purposes of this protocol, patients are considered to be in the Hot Zone prior to gross decontamination, in the Warm Zone after gross decontamination but prior to technical decontamination, and in the Cold Zone after technical decontamination.

Equipment:

- Any responding unit will be equipped with the following:
 1. #10 Mark I auto injecting antidote kits for chemical agents
 2. 100 mg of Valium
 3. 6 additional 1 mg doses of atropine
 4. Level C protective equipment for all crew members
 5. Standard ALS equipment
- Second tier response will include a shift supervisor and/or the medical director. Second tier units should be equipped with:
 1. #30 Mark I auto injecting antidote kits for chemical agents
 2. 300 mg of Valium
 3. 30 additional 1 mg doses of atropine
 4. Five cyanide antidote kits
 5. Level C protective equipment for second tier personnel

Treatment Protocol:

1. Raleigh Fire Department HAZMAT Personnel will manage gross decontamination. This consists of high volume water rinse applied to victims prior to removal of clothing. In the event of a nerve agent event, fire personnel may administer Mark I auto injectors to victims prior to gross decontamination according to guidelines in the Nerve Agent Protocol.
2. Patients entering the Warm Sector are to be evaluated by EMS personnel in Level C protective equipment. This Primary Triage Sector will be staffed with at least 2 paramedics:
 - The Triage Officers will triage patients as for other mass causality incidents, with the following guidelines:
 - Red Tag – Symptomatic, severe. This includes patients with altered mental status, respiratory distress, respiratory arrest with a pulse, patients with seizures, or other signs of severe exposure. These patients are assigned to the Acute Care Sector.



Wake County EMS System

Special Response Protocol



WMD Protocol – HAZMAT (Continued)

- Yellow Tag – Symptomatic, minor. This includes ambulatory patients with minor symptoms (e.g., increased tearing, eye complaints, vomiting, runny nose) but who do not have severe symptoms. These patients are given priority to technical decon and assessment in the Secondary Triage Sector.
- Green Tag – Asymptomatic ambulatory patients. These patients are assigned to Technical Decontamination.
- Black Tag – Patients with cardiopulmonary arrest or other standard criteria for obvious death.
-

Acute Care Sector Treatment Officer, Pharmacy.

- Patients with severe symptoms from nerve agent exposure will be treated by Mark I IM injection and Versed 2-4 mg IM or Valium 5-10 mg IM. Repeat dosing may be required.
- Patients with severe symptoms from cyanide poisoning will be treated with one amyl nitrate capsule.

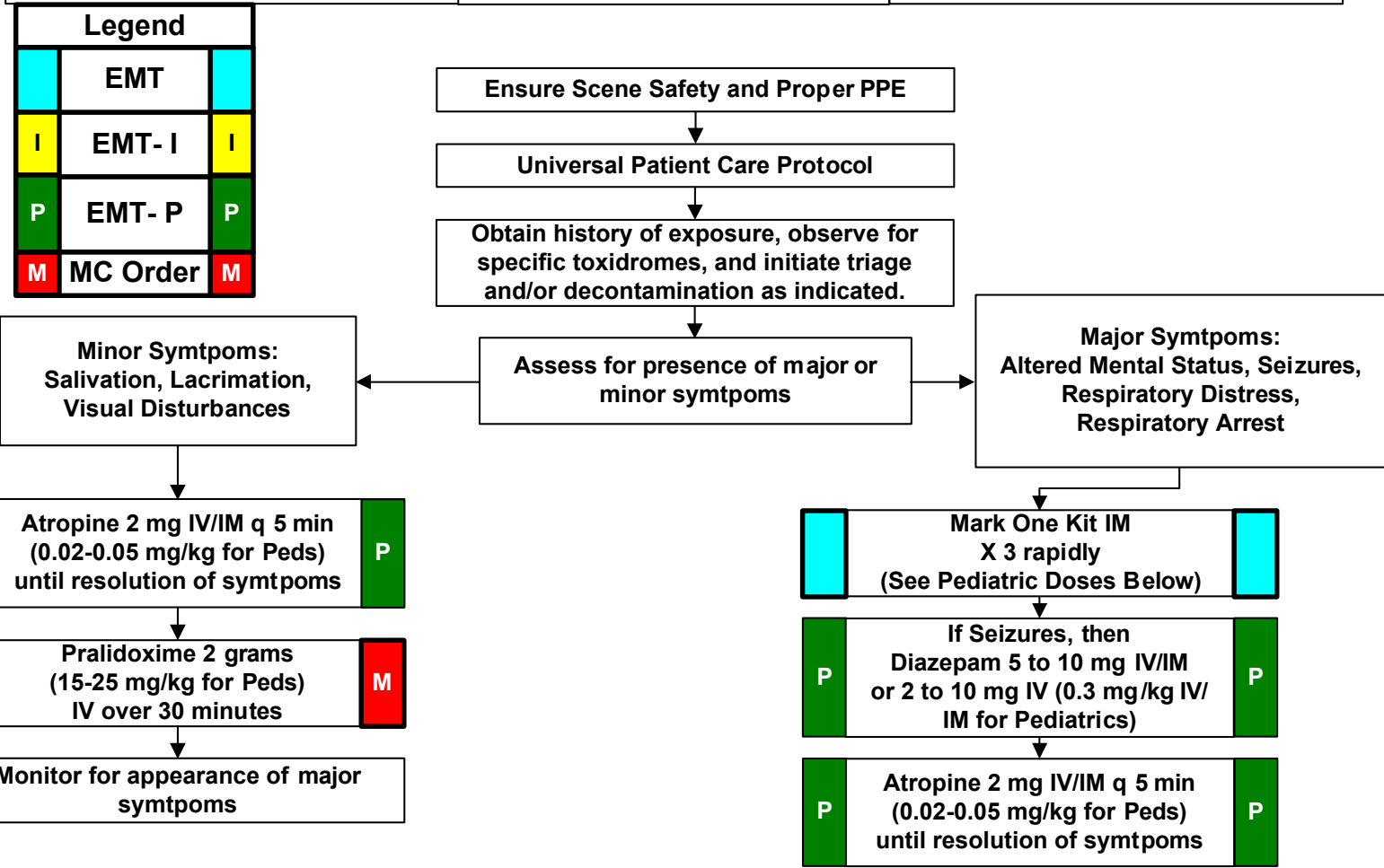
Acute Care Sector Treatment Officer, Airway

- Patients with respiratory arrest will be provided with an oral or nasal airway and bag-valve mask respiratory assistance. If appropriate, patients may receive endotracheal intubation at this point. If rapid technical decon is available, consideration should be given to rapid decon followed by immediate intubation in the cold zone.
- Patients with respiratory distress should receive Rapid Technical Decontamination

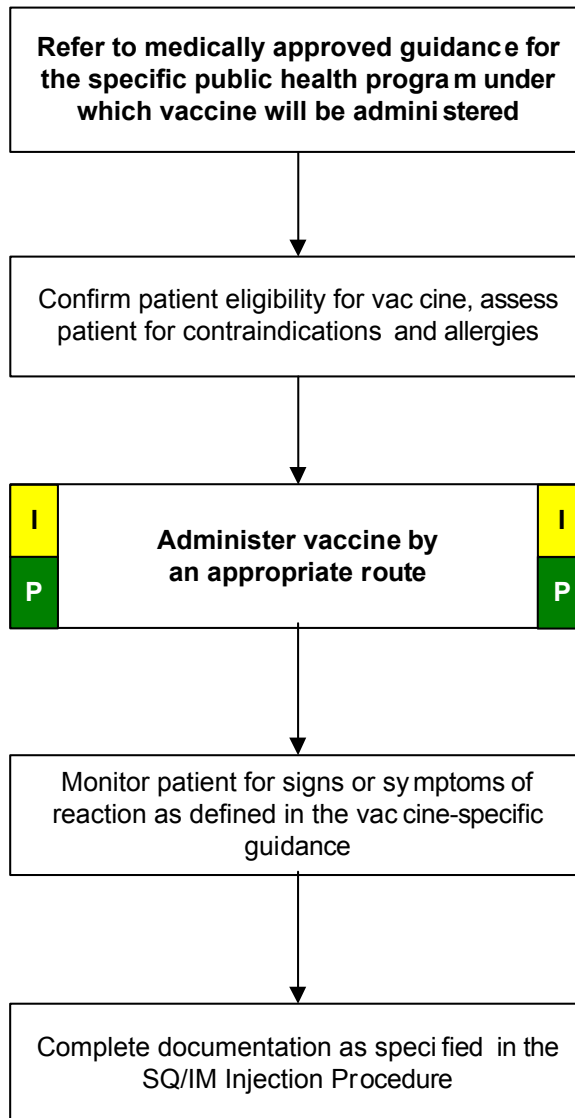
In the Cold Sector, all patients will receive secondary triage before proceeding to the EMS Treatment and Transport Sectors. WMD treatment protocols for particular agents are provided as a resource for personnel in the EMS Treatment Sector.

Nerve Agent Protocol

History: <ul style="list-style-type: none"> Exposure to chemical, biologic, radiologic, or nuclear hazard Potential exposure to unknown substance/hazard 	Signs and Symptoms: <ul style="list-style-type: none"> Salivation Lacrimation Visual Disturbances Respiratory Distress Diaphoresis Seizure Activity Respiratory Arrest 	Differential: <ul style="list-style-type: none"> 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.)
---	--	--



- Pearls:**
- In the face of a bona fide attack, begin with 1 Mark One kit for patients less than 7 years of age, 2 Mark One kits from 8 to 14 years of age, and 3 Mark One kits for patients 15 years of age and over.
 - If Triage/MCI issues exhaust supply of Mark One kits, use pediatric atropens (if available). Use the 0.5 mg dose if patient is less than 39 pounds, 1 mg dose if patient weighs between 40 to 90 pounds, and 2 mg dose for patients greater than 90 pounds.
 - 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 Mark One kit contains 600 mg of Pralidoxime (2-PAM) and 2 mg of Atropine



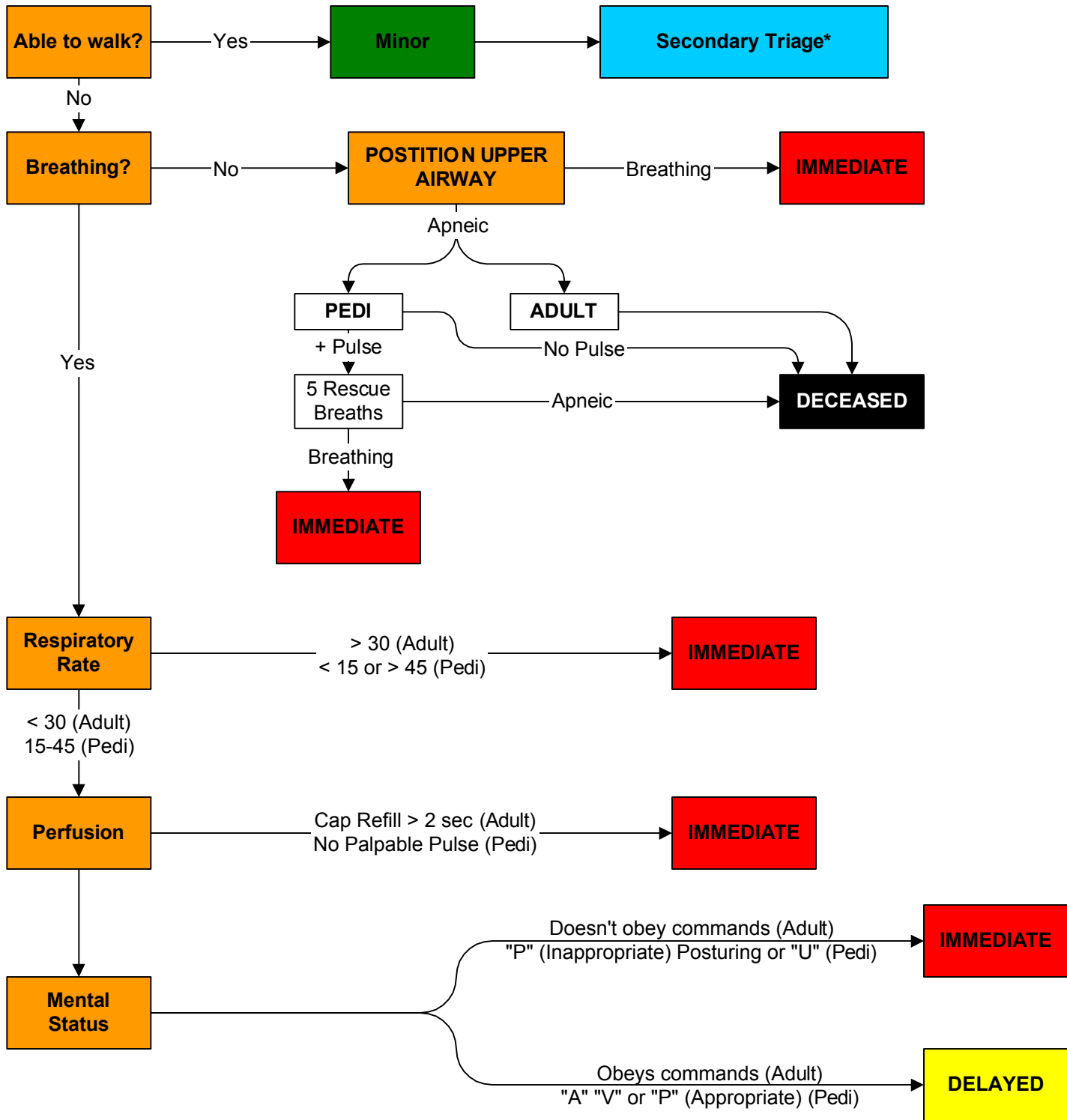
Legend		
	EMT	
I	EMT- I	I
P	EMT- P	P
M	MC Order	M

Pearls:

- The most common site for subcutaneous injection is the arm. Injection volume should not exceed 1 cc.
- The possible injection sites for intramuscular injection include the arm, buttock and thigh.
- Injection volume should not exceed 1 cc for the arm and not more than 2 cc in the thigh or buttock.
- The thigh should be used for injections in pediatric patients and injection volume should not exceed 1 cc.

START/Jump START Triage Algorithm

© Lou Romig, MD 2002

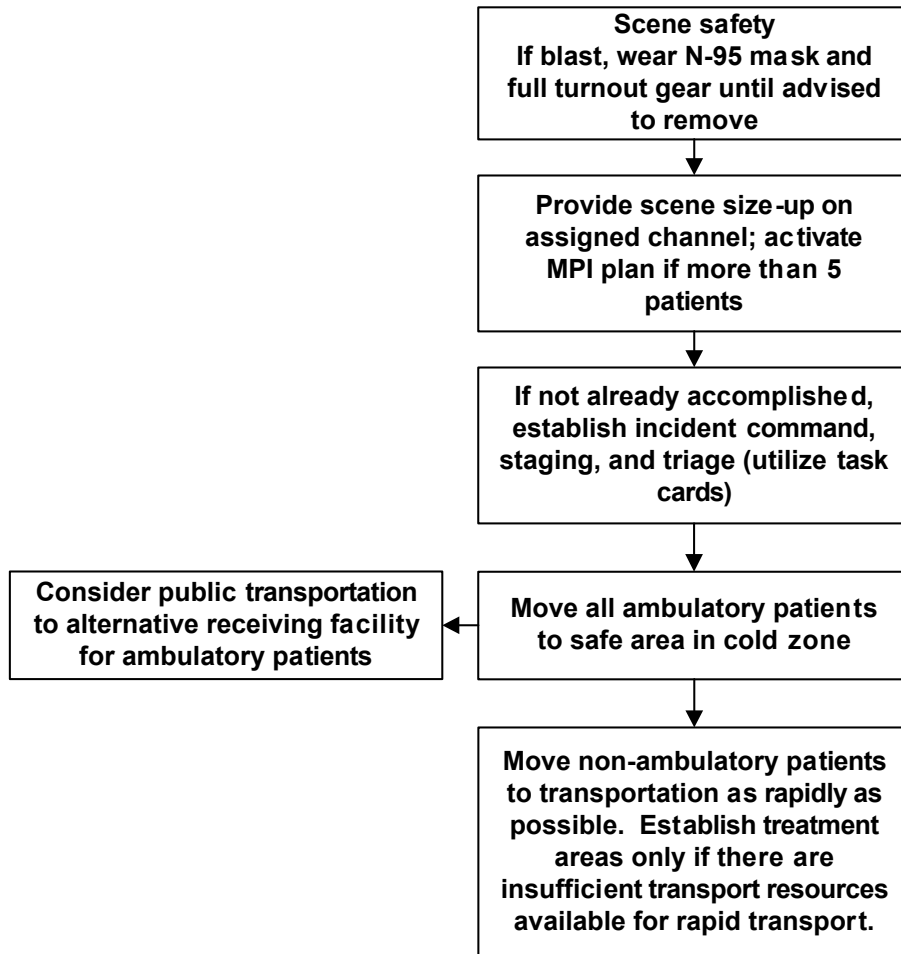


Pearls:

- * Using the Jump Start Algorithm, first evaluate all children who did not walk under their own power.
- All EMS providers are encouraged to use the Triage Algorithm any time there are more than 2-3 patients requiring evaluation, treatment or transport.

Multiple Person Incident Rapid Evacuation

History: Number of patients Cause of Incident Chemical, Biological, or Radiological contamination Secondary devices	Signs and Symptoms: SLUDGE for chemical exposure Respiratory distress for narcotic exposure Nausea/vomiting for radiation	Differential: Blast response MPI penetrating trauma MPI blunt trauma/MVC
--	---	--



Legend		
	EMT	
D	EMT - D	D
I	EMT - I	I
P	EMT - P	P
M	MC Order	M

Pearls:
 In the absence of guidance from RESCOM, utilize the following communications assignments:
 1) Contact Medical Branch on MC-Alpha
 2) Transport/Hospital destination on MC-Hotel
 Task cards and job vests should be utilized by all personnel involved in an MPI
 If blast injury with more than 5 patients, patients with SBP <90 and/or obvious external trauma to 4 or more body surface areas should go to the Level I trauma center. Others may be considered for community hospital transport
 If 800 MHz system failure, then all responding units should utilize VHF channel 155.280 (State Rescue) to regroup.
 Multiple patients may be transported in the same EMS unit if needed. When possible, patients of similar acuity should be transported in the same unit to assist with appropriate transport destination