

PEDIATRIC PROTOCOLS

Click the page title below to jump to that section. Each page has buttons to return back to this menu.

EMS and Children with Special Healthcare Needs.....	6-2
---	-----

PEDIATRIC AIRWAY / BREATHING

Pediatric Airway.....	6-3
Pediatric Foreign Body Airway Obstruction (FBAO)	6-5
Pediatric Respiratory Distress – Lower Airway	6-7

ARRYTHMIAS / PALS

Pediatric Sinus Bradycardia.....	6-9
Pediatric Narrow Complex Tachycardia	6-11

CARDIAC ARREST / PALS

Pediatric Asystole / Pulseless Electrical Activity (PEA)	6-13
Pediatric Ventricular Fibrillation and Pulseless Ventricular Tachycardia	6-15

PEDIATRIC MEDICAL

Pediatric Altered Level of Consciousness	6-17
Pediatric Diabetic Emergencies.....	6-19
Pediatric Esophageal Foreign Body	6-21
Pediatric Heat Illness.....	6-23
Pediatric Hypothermia	6-25
Pediatric Neonatal Resuscitation.....	6-27
Pediatric Seizure	6-29
Pediatric Shock – Non-Trauma.....	6-31
Pediatric Toxic Ingestion / Exposure / Overdose	6-33

PEDIATRIC TRAUMA

Pediatric Head Trauma.....	6-35
Pediatric Multiple Trauma.....	6-37

PEDIATRIC ASSESSMENT CHARTS

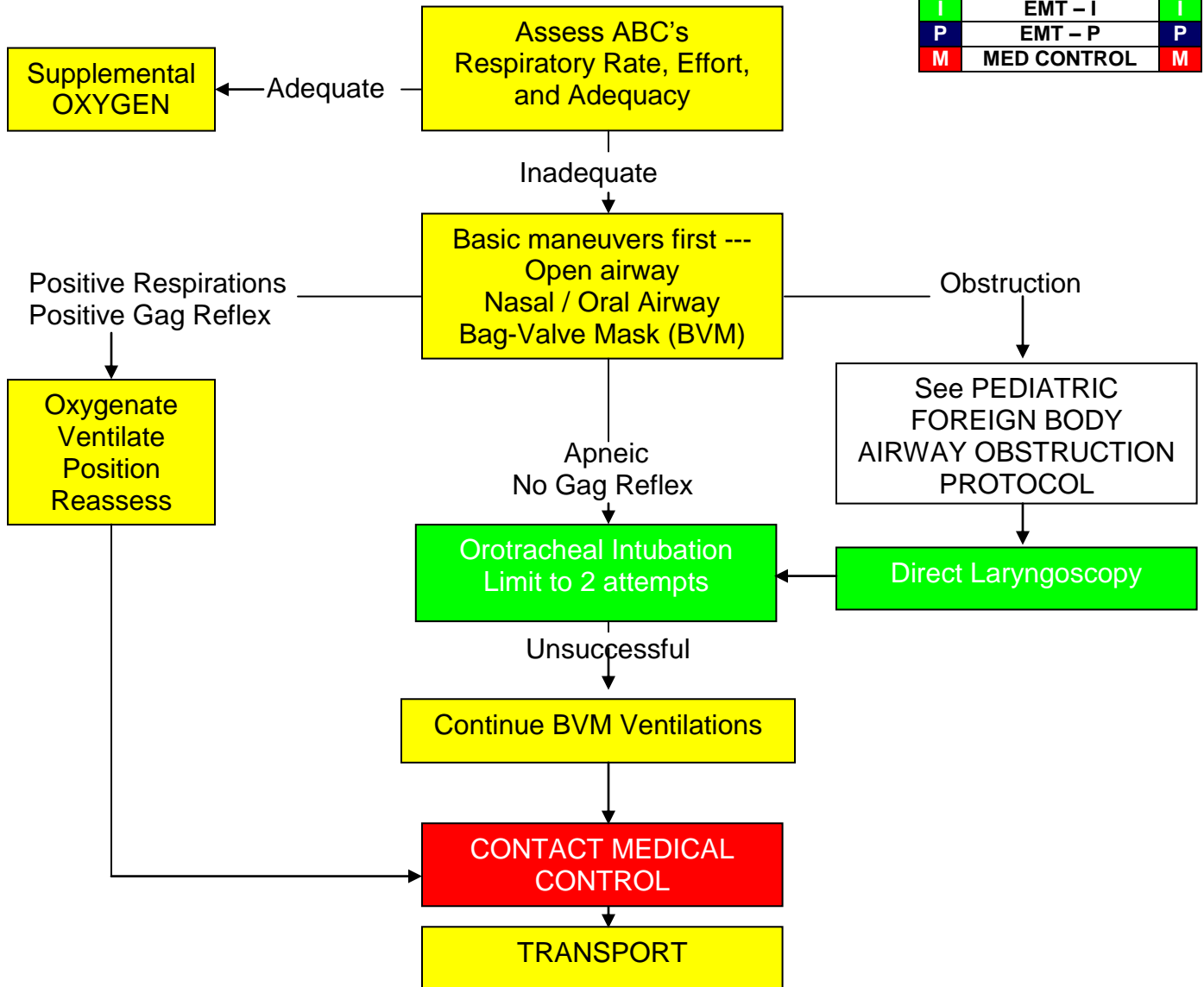
Glascow Coma Scale	6-39
Normal Vital Signs	6-39
APGAR Scoring Chart.....	6-40
Pain Assessment Tools	6-40
Pediatric Trauma Score	6-42
Pediatric Pharmacology Review	6-43

GENERAL CONSIDERATIONS

1. Treat the ABC's first. Treat the child, not the equipment. If the emergency is due to an equipment malfunction, manage the child appropriately using your own equipment.
2. Children formerly cared for in hospitals or chronic care facilities are often cared for in homes by parents or other caretakers. These children may have self-limiting or chronic diseases. There are multitudes of underlying medical conditions that may categorize children as having special needs. Many are often unstable and may frequently involve the EMS system for evaluation, stabilization, and transport. Special needs children include technology-assisted children such as those with tracheostomy tubes with or without assisted ventilation, children with gastrostomy tubes, and children with indwelling central lines. The most serious complications are related to tracheostomy problems.
3. Children with Special Healthcare Needs (CSHCN) have many allergies. Children with spina bifida are often allergic to latex. Before treating a patient, ask the caregivers if the children are allergic to latex or have any other allergies. Stock latex-free equipment. (Some regularly used equipment that contains latex includes gloves, oxygen masks, IV tubing, BVM, blood pressure cuff, IV catheters, etc.)
4. Knowing which children in a given area have special needs and keeping a logbook is encouraged.
5. Parents and caretakers are usually trained in emergency management and can be of assistance to EMS personnel. Listen carefully to the caregiver and follow his/her guidance regarding the child's treatment.
6. Children with chronic illnesses often have different physical development from well children. Therefore, their baseline vital signs may differ from normal standards. The size and developmental level may be different from age-based norms and length based tapes used to calculate drug dosages. Ask the caregiver if the child normally has abnormal vital signs (i.e. a fast heart rate or a low pulse oximeter reading).
7. Some CSHCN may have sensory deficits (i.e. they may be hearing impaired or blind) yet may have age-appropriate cognitive abilities. Follow the caregivers' lead in talking to and comforting a child during treatment and transport. Do not assume that a CSHCN is developmentally delayed.
8. When moving a special needs child, a slow careful transfer with two or more people is preferable. Do not try to straighten or unnecessarily manipulate contracted extremities as it may cause injury or pain to the child. Certain medical conditions will require special care. Again, consult the child's caregiver.
9. Caregivers of CSHCN often carry "go bags" or diaper bags that contain supplies to use with the child's medical technologies and additional equipment such as extra tracheostomy tubes, adapters for feeding tubes, suction catheters, etc. Before leaving the scene, ask the caregivers if they have a "go bag" and carry it with you.
10. Caregivers may also carry a brief medical information form or card. The child may be enrolled in a medical alert program whereby emergency personnel can get quick access to the child's medical history. Ask the caregivers if they have an emergency information form or some other form of medical information for their child.
11. Caregivers of CSHCN often prefer that their child be transported to the hospital where the child is regularly followed or the "home" hospital. When making the decision as to where to transport a CSHCN, take into account: local protocols, the child's condition, capabilities of the local hospital, caregivers' request, ability to transport to certain locations.

PEDIATRIC AIRWAY

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



KEY POINTS

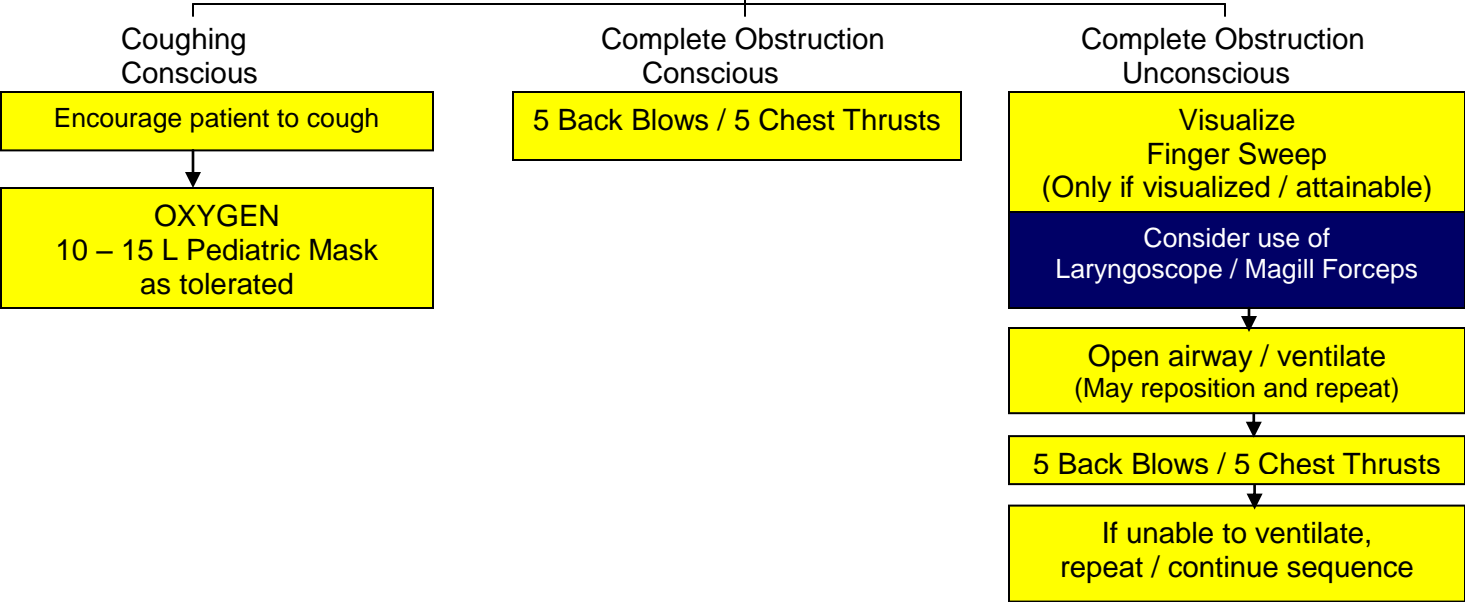
- Capnometry is mandatory with all methods of intubation. Document results of SpO₂.
- Limit intubation attempts to 2 per patient.
- If unable to intubate, continue BVM ventilations, transport rapidly, and notify receiving hospital early.
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic -- use oxygen, not a paper bag.
- Sellick's maneuver should be used to assist with difficult intubations.
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Consider c-collar to help maintain ETT placement for all intubated patients.

AIRWAY / BREATHING
PEDIATRIC
FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)

INFANT (0 – 12 MONTHS)

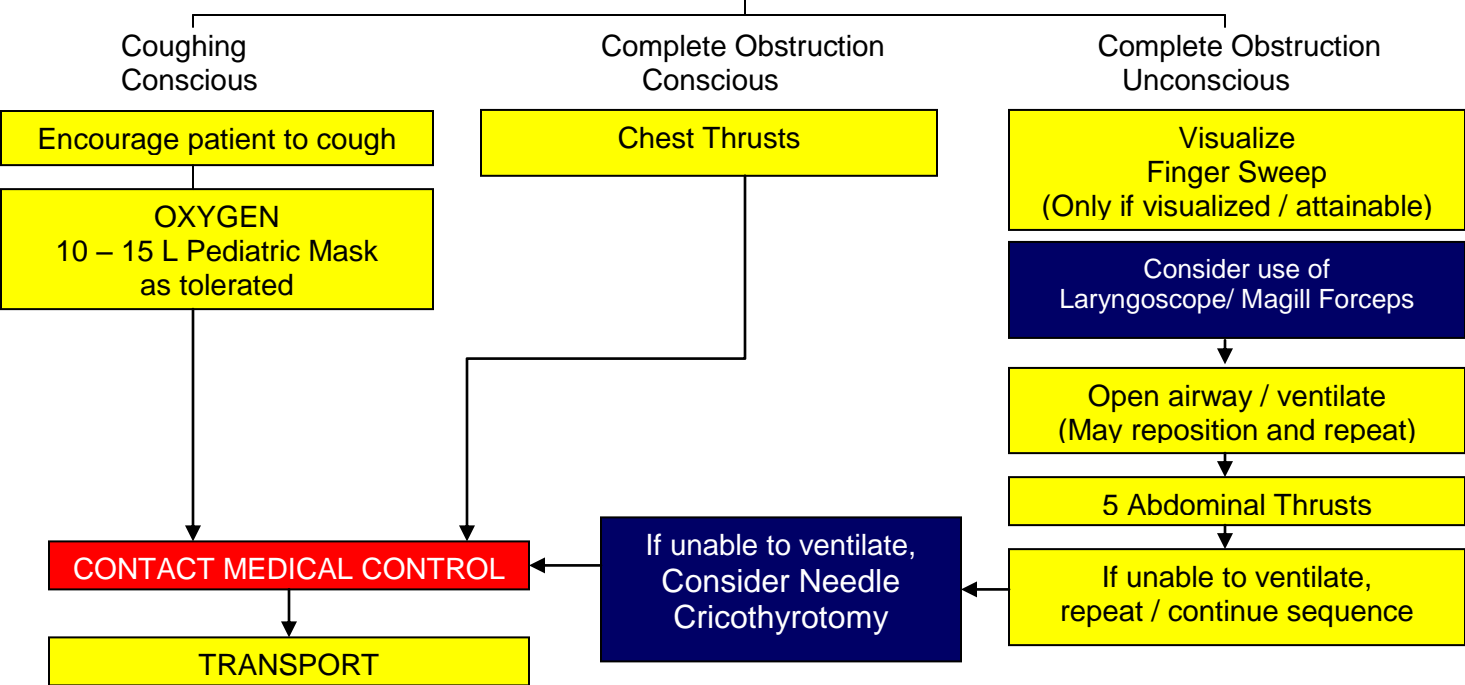
B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M

Head Tilt / Chin Lift/ Jaw Thrust / Airway Maneuvers



CHILD (1 – 8 YEARS)

Head Tilt / Chin Lift/ Jaw Thrust / Airway Maneuvers



PEDIATRIC

FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Coughing • Choking • Inability to speak • Unresponsive 	<ul style="list-style-type: none"> • Witnessed aspiration • Sudden episode of choking • Audible stridor • Change in skin color • Decreased LOC • Increased / Decreased respiratory rate • Labored breathing • Unproductive cough 	<ul style="list-style-type: none"> • Cardiac Arrest • Respiratory Arrest • Anaphylaxis

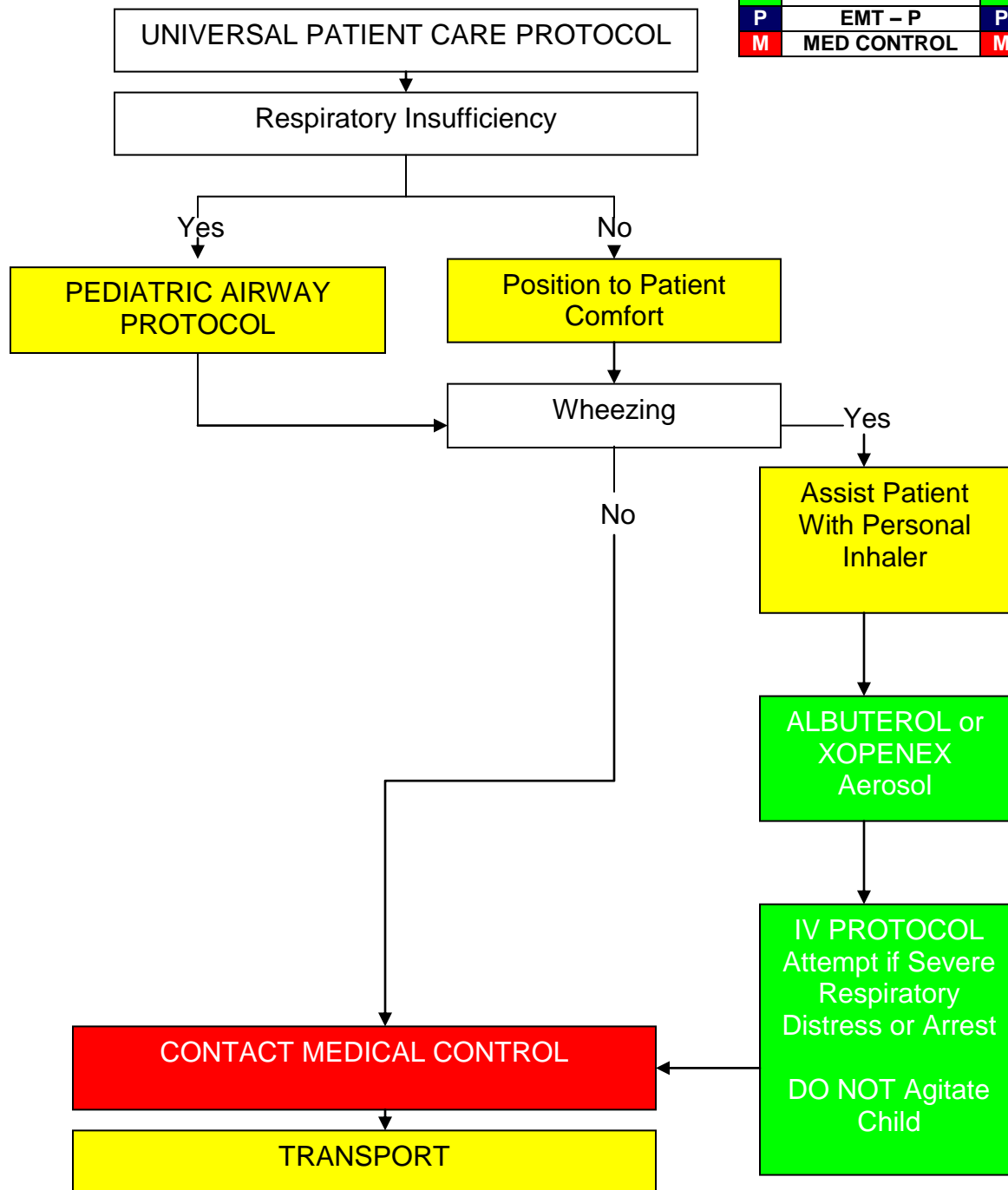
KEY POINTS

- Infants 0-12 months DO NOT receive abdominal thrusts. Use chest thrusts.
- NEVER perform blind finger sweeps in infants or children.
- Attempt to clear the airway should only be made if foreign body aspiration is witnessed or very strongly suspected and there is complete airway obstruction.
- Even with a complete airway obstruction, positive-pressure ventilation is often successful.
- Keep child and parent (or caregiver) CALM. Do not agitate child.

PEDIATRIC

RESPIRATORY DISTRESS LOWER AIRWAY

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC

RESPIRATORY DISTRESS - LOWER AIRWAY

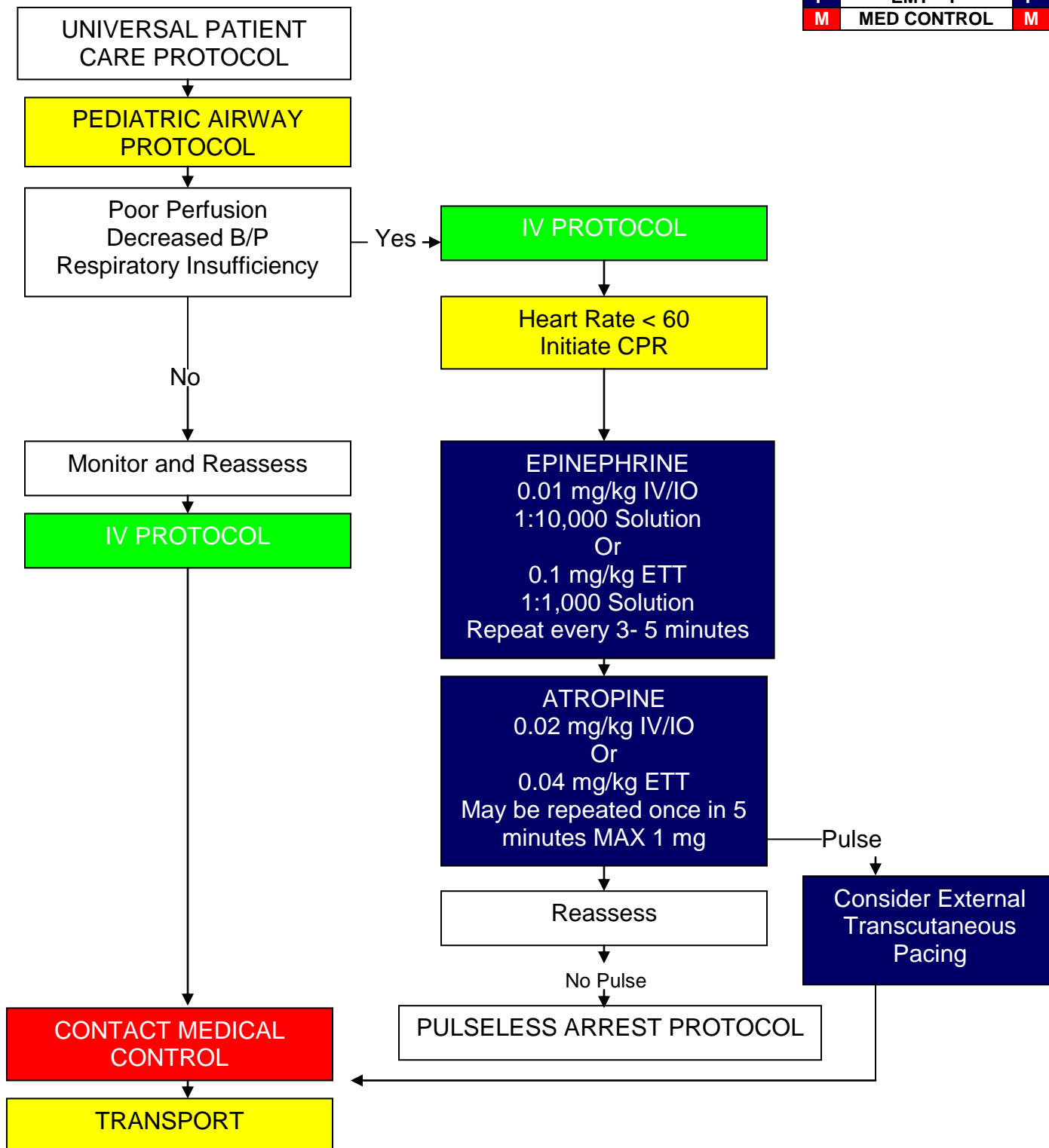
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Time of onset • Possibility of foreign body • Medical history • Medications • Fever or respiratory infection • Other sick siblings • History of trauma 	<ul style="list-style-type: none"> • Wheezing or stridor • Respiratory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

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro.
- 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.
- DO NOT attempt invasive airway procedures unless the patient is in respiratory arrest.
- For some patients in severe respiratory distress, wheezing may not be heard. Consider albuterol or xopenex for the known asthmatic in severe respiratory distress.
- Stridor, gagging or choking in the breathing patient with respiratory distress may indicate upper airway obstruction.
- Wheezing in the breathing patient with respiratory distress indicates lower airway disease, which may come from a variety of causes. The patient with severe lower airway disease may have altered LOC, be unable to talk, may have absent or markedly decreased breath sounds and severe retractions with accessory muscle use.
- If the patient has signs of respiratory failure, begin to assist ventilations with BVM, even when they are breathing.
- Contact Medical Control for patients with a cardiac history.

PEDIATRIC SINUS BRADYCARDIA

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC SINUS BRADYCARDIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Past medical history • Foreign body exposure • Respiratory distress or arrest • Apnea • Possible toxin or poison exposure • Congenital disease • Medication (maternal or infant) 	<ul style="list-style-type: none"> • Hypoxia • Decreased heart rate • Delayed capillary refill or cyanosis • Mottled, cool skin • Hypotension or arrest • Altered level of consciousness • Poor perfusion • Shock • Short of breath • Pulmonary fluid 	<ul style="list-style-type: none"> • Respiratory effort • Respiratory obstruction • Foreign body / secretions • Croup / epiglottitis • Hypovolemia • Hypothermia • Infection / sepsis • Medication or toxin • Hypoglycemia • Trauma

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- **Heart Rate < 100 (Neonates)**
- **Heart Rate < 80 (Infants)**
- **Heart Rate <60 (Children > 2 years)**
- Infant = < 1 year of age.
- Most maternal medications pass through breast milk to the infant.
- The majority of pediatric arrests are due to airway 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.
- Identify and treat possible causes for pediatric bradycardia:
 - Hypoxia
 - Hypothermia
 - Head injury
 - Heart block
 - Toxic ingestion/exposure
- Refer to Broselow Pediatric Tape when unsure about patient weight, age and/or drug dosage.
- The minimum dose of atropine that should be administered to a pediatric patient is 0.1 mg/kg.
- The maximum single dose of atropine is 0.5 mg in a child and 1 mg in an adolescent.
- If the rhythm changes, follow the appropriate protocol.

ARRYTHMIAS / PALS
PEDIATRIC
NARROW COMPLEX TACHYCARDIA

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M

UNIVERSAL PATIENT CARE PROTOCOL

Attempt to Identify Cause

Cardiac Monitor and IV PROTOCOL

Stable

Unstable

Heart Rate > 220 infant
Heart Rate > 180 child

May Go Directly to
Synchronized Cardioversion
Monophasic / Biphasic: 0.5 to 1 J/KG or
Manufacturer's recommendation

May Attempt Vagal Maneuvers

ADENOSINE
0.1 mg/kg IVP

No response
1 -2 minutes

ADENOSINE
0.2 mg/kg IVP

If Rhythm
Changes,
Go to
Appropriate
Protocol

CONTACT MEDICAL CONTROL

TRANSPORT

PEDIATRIC

NARROW COMPLEX TACHYCARDIA

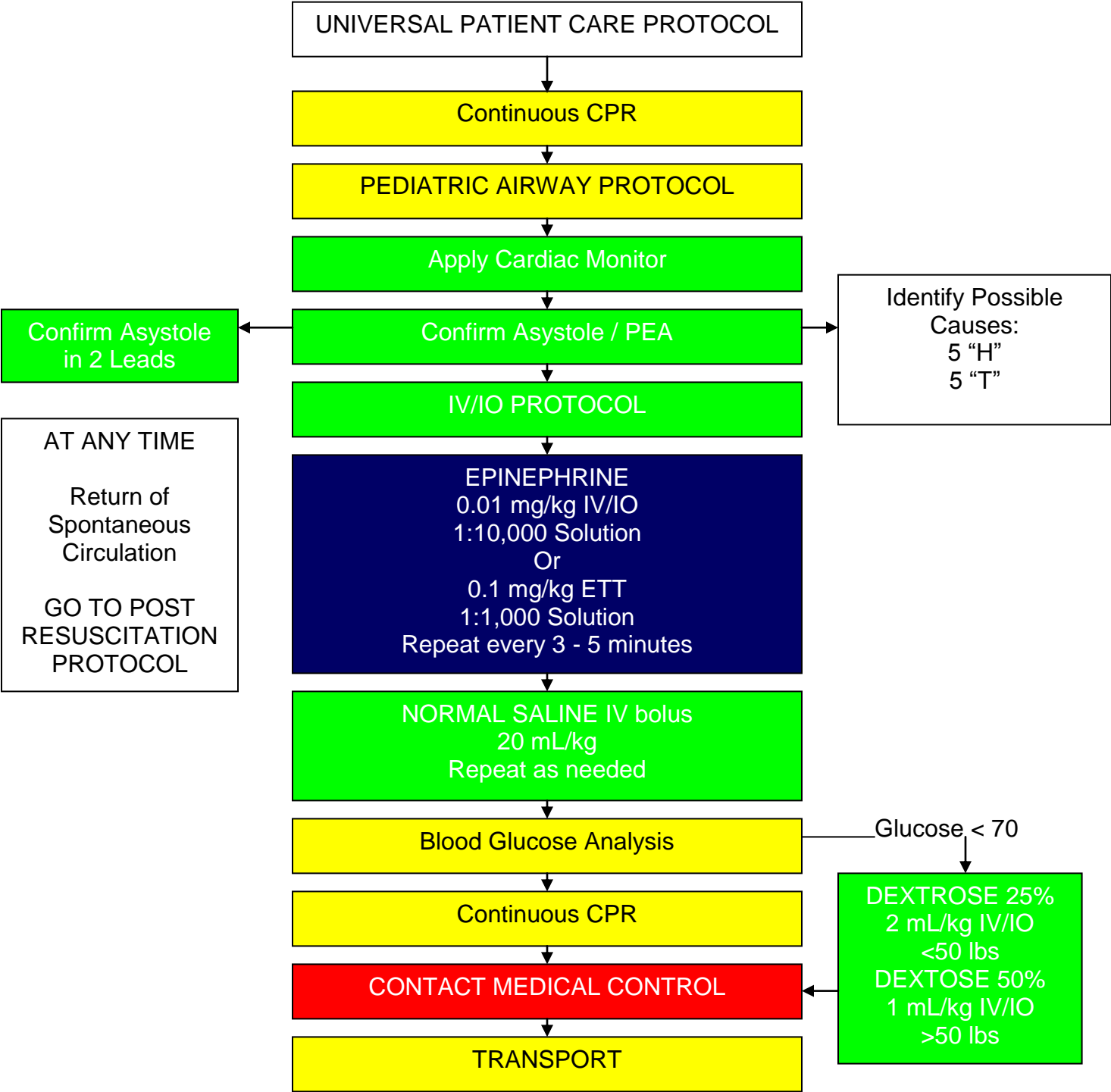
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Past medical history • Medications or toxic ingestion (Aminophylline, diet pills, thyroid supplements, decongestants, Digoxin) • Drugs (nicotine, cocaine) • Congenital Heart Disease • Respiratory Distress • Syncope or Near-Syncope 	<ul style="list-style-type: none"> • HR: Child > 180 bpm Infant > 220 bpm • Pale or Cyanosis • Diaphoresis • Tachypnea • Vomiting • Hypotension • Altered level of consciousness • Pulmonary congestion • Syncope 	<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 • Pulmonary embolus • Trauma • Tension pneumothorax

KEY POINTS

<ul style="list-style-type: none"> • 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 Tape color purple. • Monitor for respiratory depression and hypotension if diazepam is used for sedation. • Continuous pulse oximetry is required for all patients if available. • Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention. • Possible causes of tachycardia: hypoxia, hypovolemia, fear and pain. • A complete medical history must be obtained. • Do not delay cardioversion to gain vascular access for the unstable patient. • If you are unable to get the monitor to select low enough joules, then rapid transport to the nearest appropriate facility is indicated. • If the patient is stable, do not cardiovert. • Record EKG strips during adenosine administration. • Perform a 12-Lead EKG prior to and after adenosine conversion or cardioversion of NCT. • If the rhythm changes, follow the appropriate protocol.
--

CARDIAC ARREST / PALS
PEDIATRIC
ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



CARDIAC ARREST / PALS**PEDIATRIC****ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)**

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Time of arrest • Medical history • Medications • Possibility of foreign body • Hypothermia 	<ul style="list-style-type: none"> • Pulseless • Apneic or agonal respirations • Cyanosis 	<ul style="list-style-type: none"> • Ventricular Fibrillation • Pulseless Ventricular Tachycardia

CONSIDER TREATABLE CAUSES	
<ul style="list-style-type: none"> • Hypovolemia • Tension pneumothorax • Myocardial infarction • Drug overdose • Hypothermia • Acidosis 	<ul style="list-style-type: none"> • Cardiac tamponade • Pulmonary embolism • Tricyclic overdose • Hypoxia • Hypoglycemia • Hyperkalemia

KEY POINTS

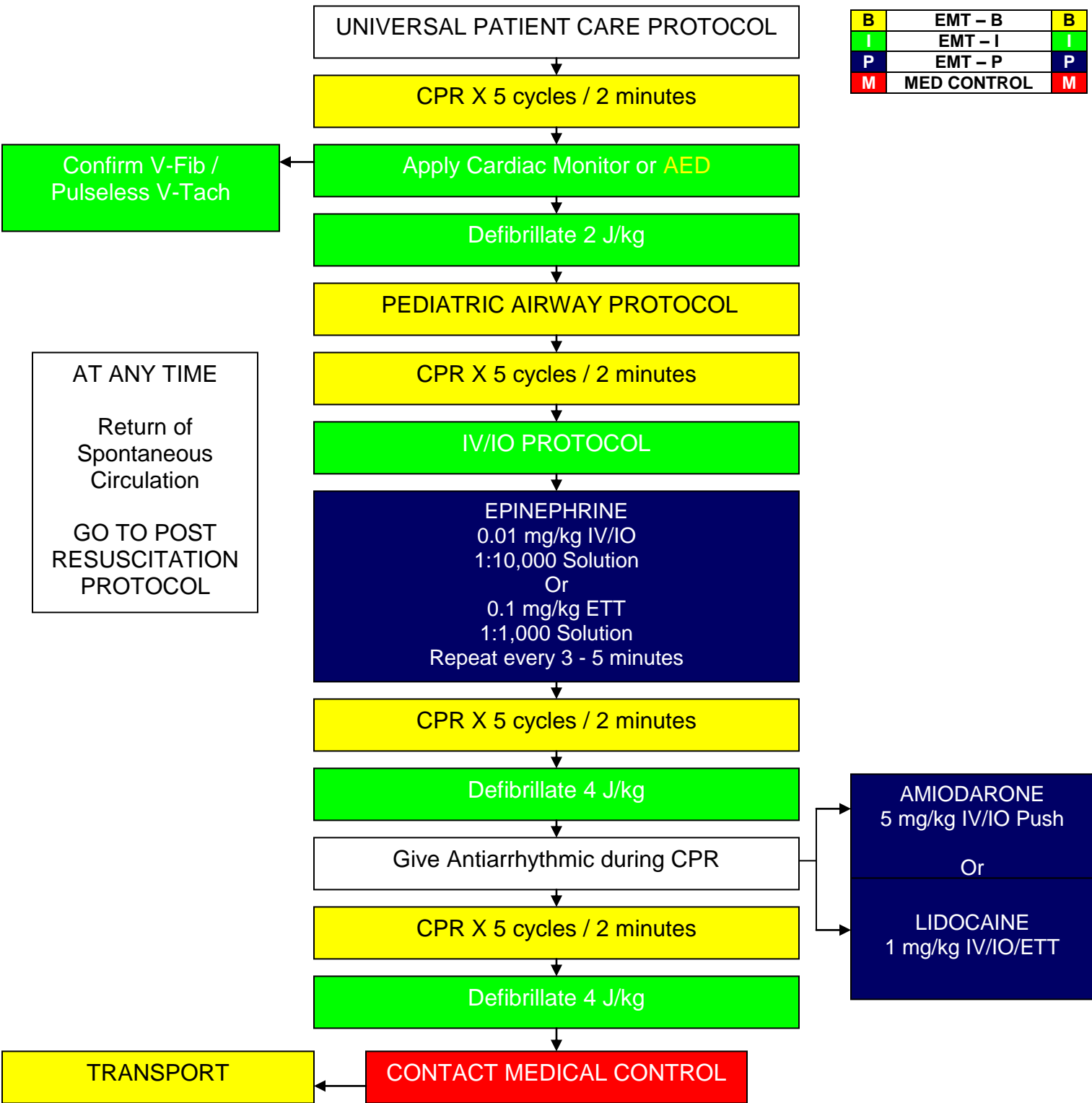
- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro.
- Always confirm asystole in more than one lead.
- Cardiac arrest in children is primarily due to lack of an adequate airway, resulting in hypoxia.
- If the patient converts to another rhythm or has a return of circulation, refer to the appropriate protocol and treat accordingly.
- When assessing for a pulse, palpate the brachial or femoral arteries for infants and the carotid or femoral artery for children.
- Continue BLS procedures throughout the resuscitation.
- If the patient is intubated, be sure to routinely reassess tube placement.
- If the patient has an IO, routinely reassess for patency.
- When there is an established ETT, DO NOT delay administration of medications for IV/IO attempts. Administer the appropriate medications down the tube.

CARDIAC ARREST / PALS

PEDIATRIC

VENTRICULAR FIBRILLATION

PULSELESS VENTRICULAR TACHYCARDIA



CARDIAC ARREST / PALS

PEDIATRIC

**VENTRICULAR FIBRILLATION
PULSELESS VENTRICULAR TACHYCARDIA**

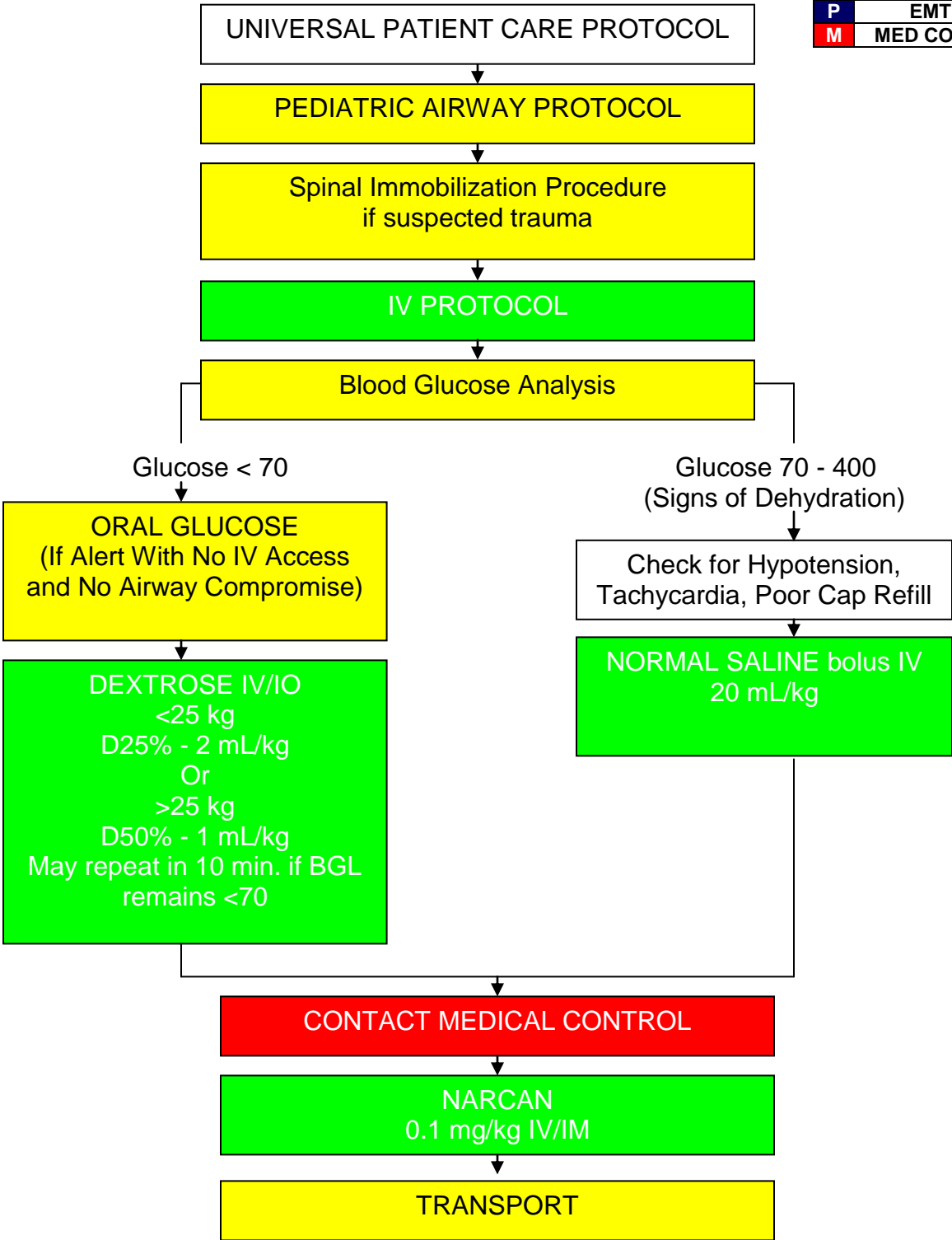
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none">• Time of arrest• Medical history• Medications• Possibility of foreign body• Hypothermia	<ul style="list-style-type: none">• Unresponsive• Cardiac arrest	<ul style="list-style-type: none">• Respiratory failure• Foreign body• Secretions• Infection (croup, epiglottitis)• Hypovolemia (dehydration)• Congenital heart disease• Trauma• Tension pneumothorax• Hypothermia• Toxin or medication• Hypoglycemia• Acidosis

KEY POINTS

- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro.
- Monophasic and Biphasic waveform defibrillators should use the same energy levels noted.
- 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. You should only attempt intubation twice.
- If the patient converts to another rhythm, follow the appropriate protocol and treat accordingly.
- If the patient converts back to ventricular fibrillation or pulseless ventricular tachycardia, defibrillate at the previously used setting.
- Defibrillation is the definitive therapy for ventricular fibrillation and pulseless ventricular tachycardia.
- Do not delay transport for IV/IO access.

MEDICAL
PEDIATRIC
ALTERED LEVEL OF CONSCIOUSNESS

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC

ALTERED LEVEL OF CONSCIOUSNESS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<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 	<ul style="list-style-type: none"> • Unresponsive • Decreased Responsiveness • Inadequate Respirations • Confusion • Agitation • Decreased mental status • Change in baseline mental status • Hypoglycemia (cool, diaphoretic skin) 	<ul style="list-style-type: none"> • Head trauma • CNS (stroke, tumor, seizure, infection) • Infection • Shock (septic, metabolic, traumatic) • Diabetes (hyper / hypoglycemia) • Toxicologic • Acidosis / Alkalosis • Environmental exposure • Pulmonary (Hypoxia) • Electrolyte abnormality • Psychiatric disorder

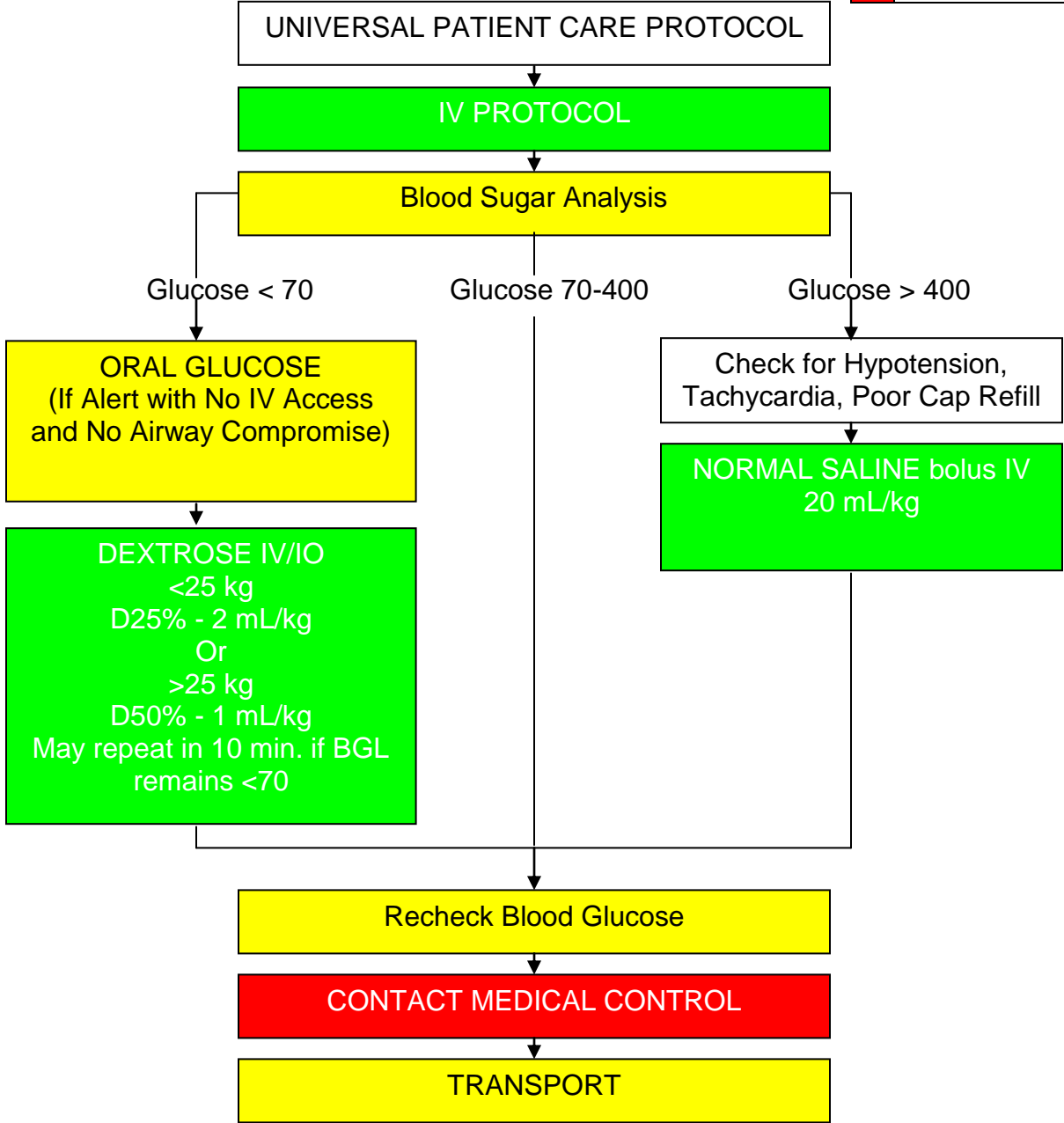
KEY POINTS

- Protect the patient's airway and support ABCs.
- Document the patient's initial Glasgow Coma Score.
- Naloxone (Narcan) administration may cause acute opiate withdrawal, which includes vomiting, agitation, or combative behavior. Be prepared for the possibility of combative behavior to ensure crew safety.
- Naloxone (Narcan) may wear off in as little as 20 minutes causing the patient to become more sedate and possibly hypoventilate. All patients receiving Naloxone (Narcan) MUST be transported.

ONLY A FEW CAUSES CAN BE TREATED IN THE FIELD. CARE SHOULD FOCUS ON MAINTAINING AIRWAY AND RAPID TRANSPORT.

MEDICAL
PEDIATRIC
DIABETIC EMERGENCIES

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



MEDICAL

PEDIATRIC

DIABETIC EMERGENCIES

HYPOGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Known diabetic, medic alert tag • Past medical history • Medications • Recent Blood Sugar Analysis 	<ul style="list-style-type: none"> • Altered level of consciousness • Dizziness • Irritability • Diaphoresis • Convulsions • Hunger • Confusion 	<ul style="list-style-type: none"> • ETOH • Toxic overdose • Trauma • Seizure • Syncope • CNS disorder • Stroke • Tumor • Pre-existing condition

HYPERGLYCEMIA

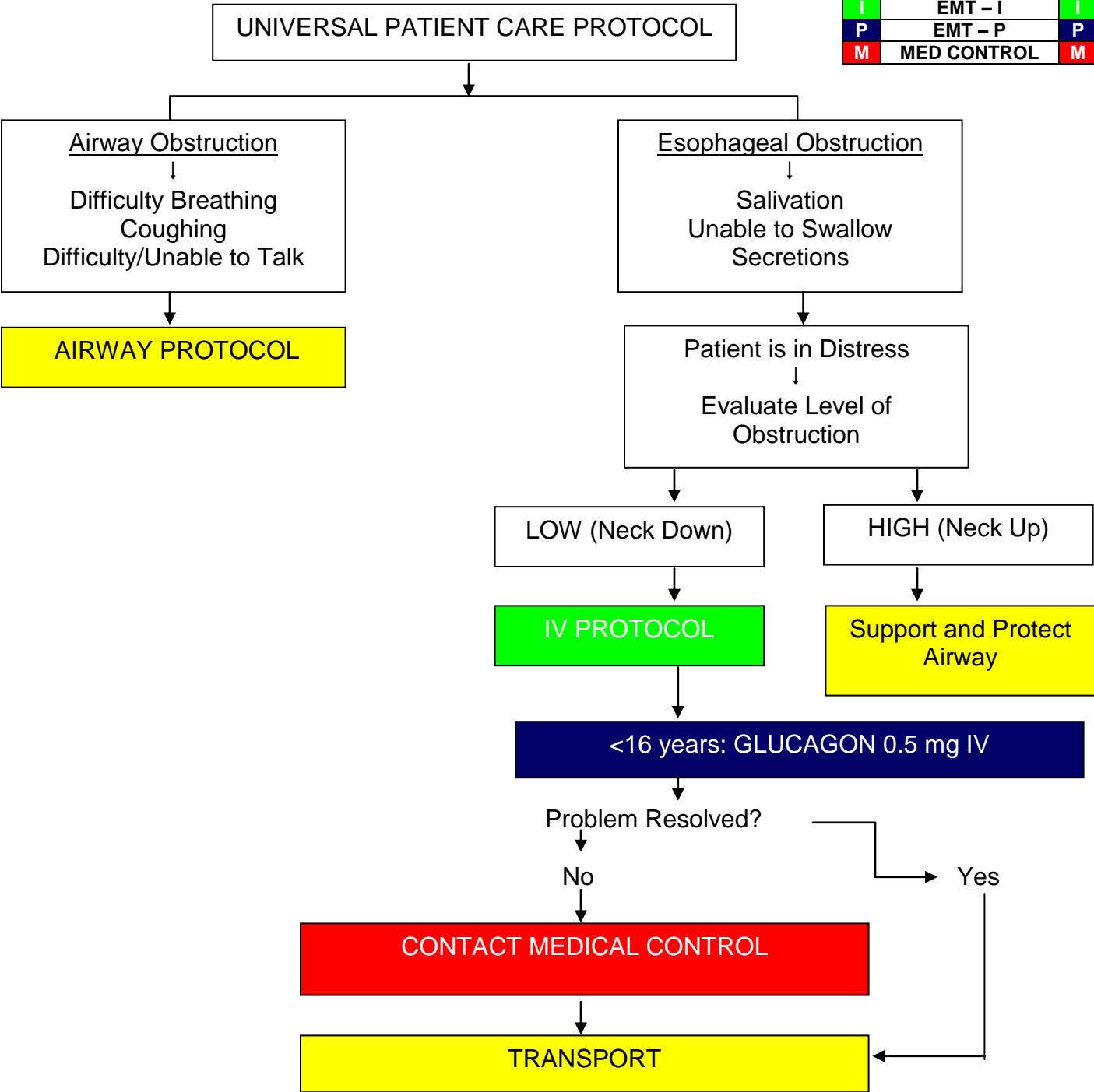
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Known diabetic, medic alert tag • Past medical history • Medications • Recent Blood Sugar Analysis 	<ul style="list-style-type: none"> • Altered level of consciousness / coma • Abdominal pain • Nausea / Vomiting • Dehydration • Frequent thirst • Frequent urination • General weakness • Malaise • Hypovolemic shock • Hyperventilation • Deep / Rapid respirations 	<ul style="list-style-type: none"> • ETOH • Toxic overdose • Trauma • Seizure • Syncope • CNS disorder • Stroke • Diabetic Ketoacidosis

KEY POINTS

<p>HYPERGLYCEMIA</p> <ul style="list-style-type: none"> • Diabetic Ketoacidosis (DKA) is a complication of Diabetes Mellitus. It can occur when insulin levels become inadequate to meet the metabolic demands of the body for a prolonged amount of time (onset can be within 12-24 hours). Without enough insulin, the blood glucose increases and cellular glucose depletes. The body removes excess blood glucose by dumping it into the urine. Pediatric patients in DKA should be treated as hyperglycemic under the Pediatric Diabetic Emergency Protocol. • Patients can have hyperglycemia without having DKA. <p>HYPOGLYCEMIA</p> <ul style="list-style-type: none"> • Always suspect hypoglycemia in patients with an altered mental status. • If a blood glucose analysis is not available, a patient with altered mental status and signs and symptoms consistent with hypoglycemia should receive dextrose or glucagon. <ul style="list-style-type: none"> ○ Dextrose is used to elevate BGL but it will not maintain it. The patient will need to follow up with a meal if not transported to a hospital. • If the patient is alert and has the ability to swallow, consider administering oral glucose, have patient drink orange juice with sugar or a sugar – containing beverage, or have the patient eat a candy bar or meal. • Check the patient’s BGL after the administration of dextrose or after any attempt to raise the patient’s BGL.

MEDICAL
PEDIATRIC
ESOPHAGEAL FOREIGN BODY OBSTRUCTION

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC

ESOPHAGEAL FOREIGN BODY OBSTRUCTION

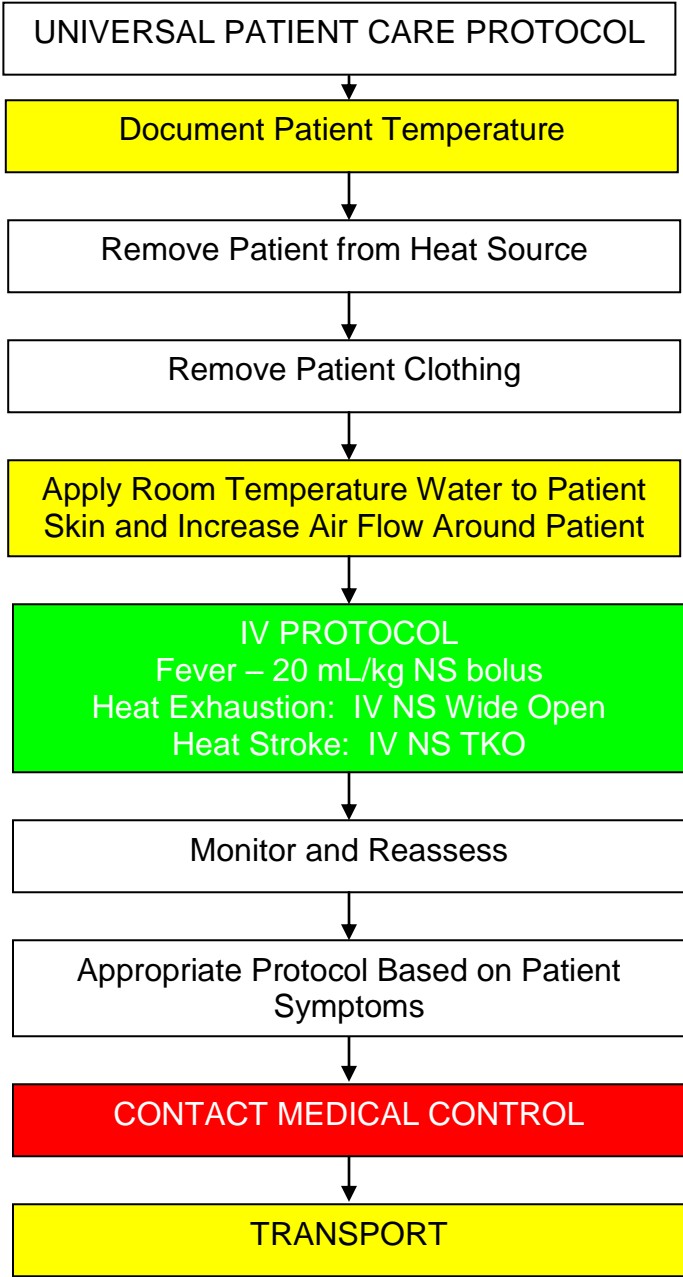
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> Onset during eating or swallowing pills, etc. 	<ul style="list-style-type: none"> Salivation Unable to swallow secretions Distressed patient Able to breathe but may feel impaired 	<ul style="list-style-type: none"> Airway obstruction

KEY POINTS

- Rule out airway obstruction first.
- Patient may be helpful in identifying location of bolus obstruction as they can feel it or point to it.
- If bolus is located in neck area, glucagon will not work; monitor and transport.
- If bolus located from neck down, proceed with glucagon treatment.
- Treat patients <16 years with 0.5 mg dose of glucagon.

MEDICAL
PEDIATRIC
HEAT ILLNESS

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



MEDICAL
PEDIATRIC
HEAT ILLNESS

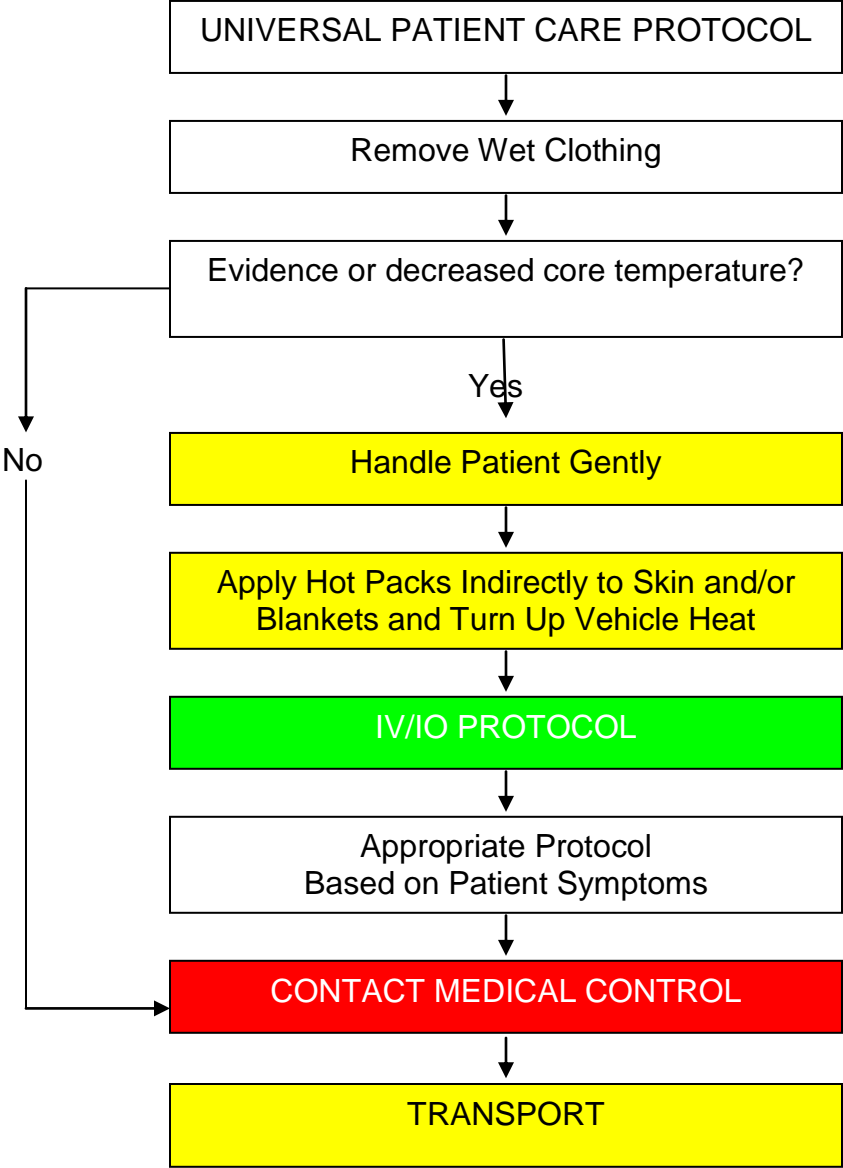
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Age • Exposure to increased temperatures and humidity • Past medical history/medications • Extreme exertion • Time and length of exposure • Poor PO intake • Fatigue and/or muscle cramping 	<ul style="list-style-type: none"> • Altered mental status or unconsciousness • Hot, dry or sweaty skin • Hypotension or shock • Seizures • Nausea 	<ul style="list-style-type: none"> • Fever (infection) • Dehydration • Medications • Hyperthyroidism • Delirium tremens • Heat cramps • Heat exhaustion • Heat stroke • CNS lesions or tumors

Heat Exhaustion: Dehydration	Heat Stroke: Cerebral Edema
<ul style="list-style-type: none"> • Muscular/abdominal cramping • General weakness • Diaphoresis • Febrile • Confusion • Dry mouth/thirsty • Tachycardia • BP normal or orthostatic 	<ul style="list-style-type: none"> • Confusion • Bizarre behavior • Skin hot, dry, febrile • Tachycardia • Hypotensive • Seizure • Coma

KEY POINTS
<ul style="list-style-type: none"> • Exam: Mental Status, Skin, HEENT, Heart, Lungs, Neuro. • Extremes of age are more prone to heat emergencies (i.e. young and old). • Patients at risk for heat emergencies include neonates, infants, geriatric patients, and patients with mental illness. Other contributory factors may include heart medications, diuretics, cold medications and/or psychiatric medications. • 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). • Intensive shivering may occur as patient is cooled. • Heat Cramps consist 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, normotension and an elevated temperature. • Heat Stroke consists of dehydration, tachycardia, hypotension, temperature >104°F (40°C), and altered mental status. • Heat exposure can occur either due to increased environmental temperatures or prolonged exercise or a combination of both. Environments with temperature >90°F and humidity >60% present the most risk. • Heat Stroke occurs when the cooling mechanism of the body (sweating) ceases due to temperature overload and/or electrolyte imbalances. Be alert for cardiac arrhythmias for the patient with heat stroke.

MEDICAL
PEDIATRIC
HYPOTHERMIA / FROSTBITE

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC

HYPOTHERMIA / FROSTBITE

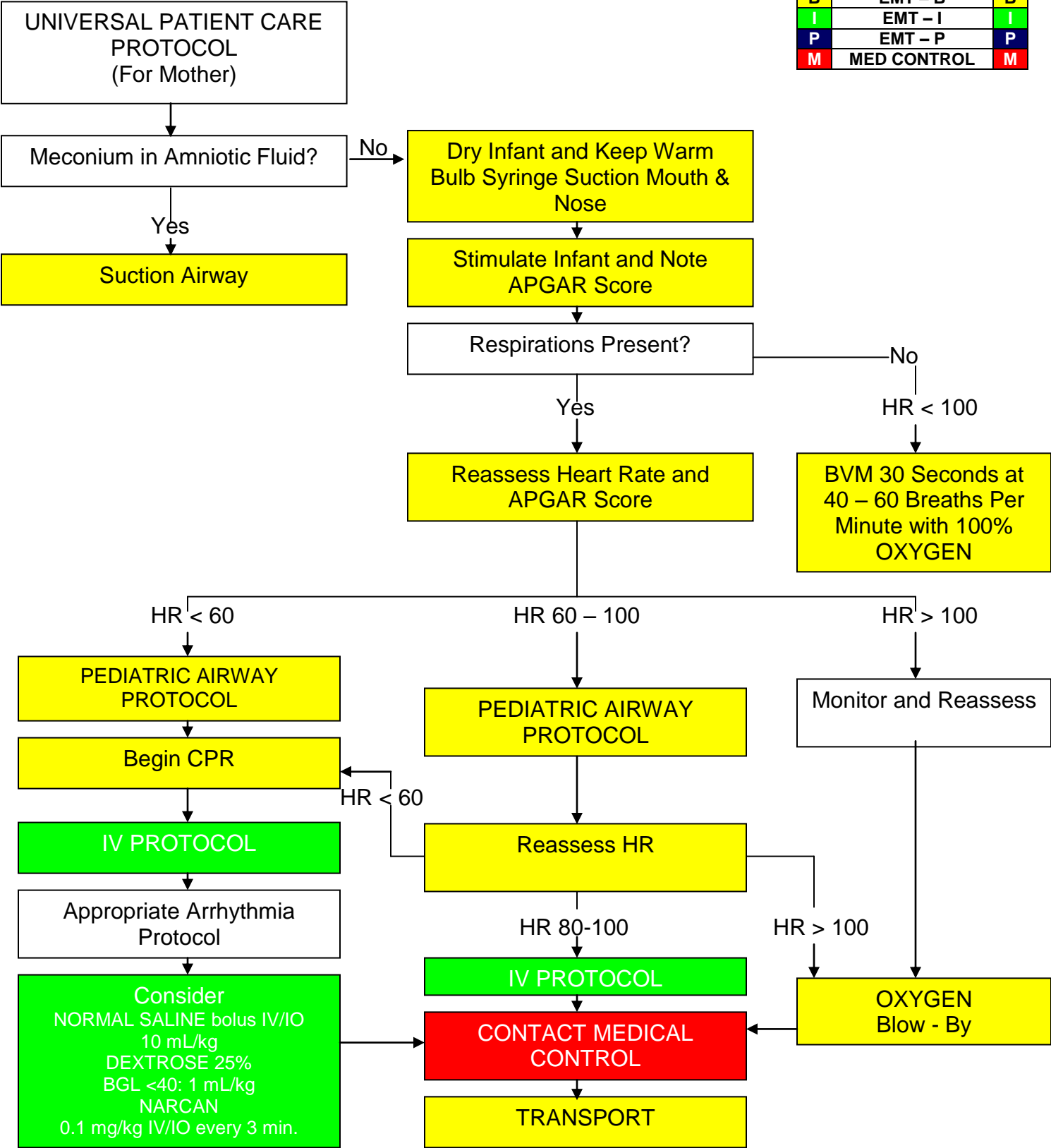
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Past medical history • Medications • Exposure to environment even in normal temperatures • Exposure to extreme cold • Extremes of age • Drug use: alcohol, barbiturates • Infection / Sepsis • Length of exposure / Wetness 	<ul style="list-style-type: none"> • Cold, clammy • Shivering • Mental status changes • Extremity pain or sensory abnormality • Bradycardia • Hypotension or shock 	<ul style="list-style-type: none"> • Sepsis • Environmental exposure • Hypoglycemia • CNS dysfunction • Stroke • Head injury • Spinal cord injury

KEY POINTS

- Exam: Mental Status, Heart, Lungs, Skin, Abdomen, Extremities, Neuro.
- Hypothermic/drowning/near-drowning patients that appear cold and dead are NOT dead until they are warm and dead, or have other signs of obvious death (putrification, traumatic injury unsustainable to life). All hypothermic patients should have resuscitation performed until care is transferred.
- Defined as core temperature < 35° C (95° F).
- Extremes of age are more susceptible (i.e. young and old).
- Patients with low core temperatures will not respond to ALS drug interventions. Maintain warming procedure and supportive care. Warming procedures includes removing wet clothing, limiting exposure, and covering the patient with warm blankets if available.
- Do not allow patients with frozen extremities to ambulate.
- Superficial frostbite can be treated by using the patient's own body heat.
- Do not attempt to rewarm deep frostbite unless there is an extreme delay in transport, and there is no risk that the affected body part will be refrozen. Contact Medical Control prior to rewarming a deep frostbite injury.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe bradycardia.
- Shivering stops below 32° C (90° F).
- 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. Discuss with Medical Control.
- The most common mechanism of death in hypothermia is ventricular fibrillation. If the hypothermia victim is in ventricular fibrillation, CPR should be initiated. If V-fib is not present, then all treatment and transport decisions should be tempered by the fact that V-fib can be caused by rough handling, noxious stimuli or even minor mechanical disturbances; this means that respiratory support with 100% oxygen should be done gently.

MEDICAL
PEDIATRIC
NEONATAL RESUSCITATION

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC

NEONATAL RESUSCITATION

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<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: substance abuse, smoking 	<ul style="list-style-type: none"> • Respiratory distress • Peripheral cyanosis or mottling (normal) • Central cyanosis (abnormal) • Altered level of responsiveness • Bradycardia 	<ul style="list-style-type: none"> • Airway failure • Secretions • Respiratory drive • Infection • Maternal medication effect • Hypovolemia • Hypoglycemia • Congenital heart disease • Hypothermia

KEY POINTS

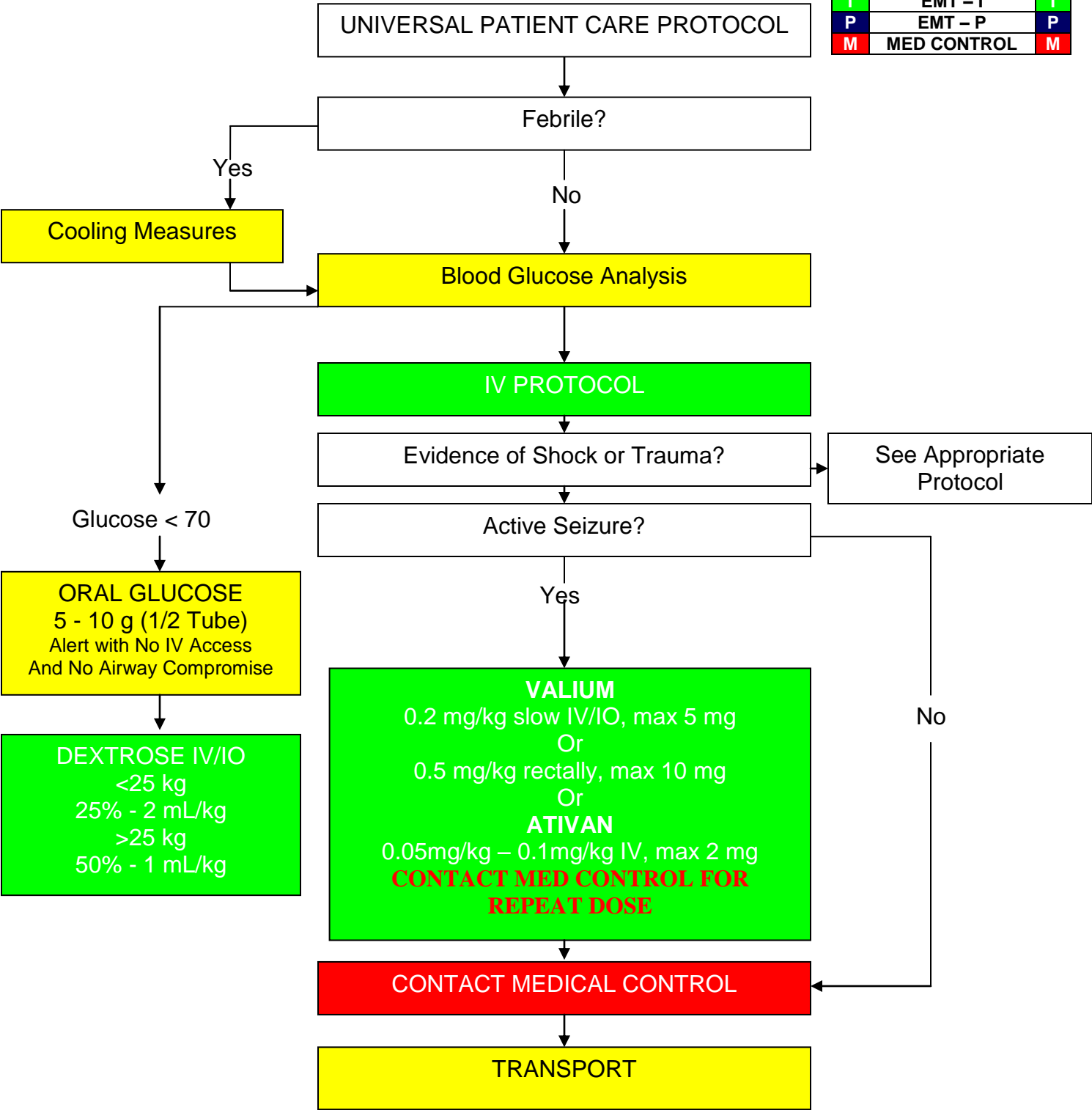
<ul style="list-style-type: none"> • Exam: Mental Status, Skin, HEENT, Neck, Chest, Heart, Abdomen, Extremities, Neuro. • Maternal sedation or narcotics will sedate infant (Naloxone effective). • Consider hypoglycemia in infant. • Document 1 and 5 minute APGAR scores. • If the patient is in distress, consider hypovolemia. Administer a 10 mL/kg fluid bolus of normal saline. • If the BGL is less than 40 mg/dl go to the Pediatric Diabetic Protocol. • Hypothermia is a common complication of home and field deliveries. Keep the baby warm and dry. • If there is a history of recent maternal narcotic use, consider Naloxone (Narcan) 0.1 mg/kg every 3 minutes until patient responds. • Meconium may need to be suctioned several times to clear the airway. It may also be necessary to visualize the trachea and suction the lower airway. Lower airway suction is achieved by intubating the infant and suctioning directly through the ET tube. Each time this suctioning is done, the infant will have to be reintubated with a new tube. This lower airway suction is only done when the infant is NOT vigorous. • If drying and suction has not provided enough stimulation, try rubbing the infant's back or flicking their feet. If the infant still has poor respiratory effort, poor tone, or central cyanosis, consider them to be distressed. Most distressed infants will respond quickly to BVM. • Use caution not to allow newborns to slip from grasp.

APGAR SCORING

SIGN	0	1	2
COLOR	Blue / Pale	Pink Body, Blue Extremities	Completely Pink
HEART RATE	Absent	Below 100	Above 100
IRRITABILITY (Response to Stimulation)	No Response	Grimace	Cries
MUSCLE TONE	Limp	Flexion of Extremities	Active Motion
RESPIRATORY EFFORT	Absent	Slow and Regular	Strong Cry

MEDICAL
PEDIATRIC
SEIZURE

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



MEDICAL
PEDIATRIC
SEIZURE

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

Categories of Seizures

Complex – Unconscious
Simple – Conscious

Focal – Partial, Localized
Generalized – All Body

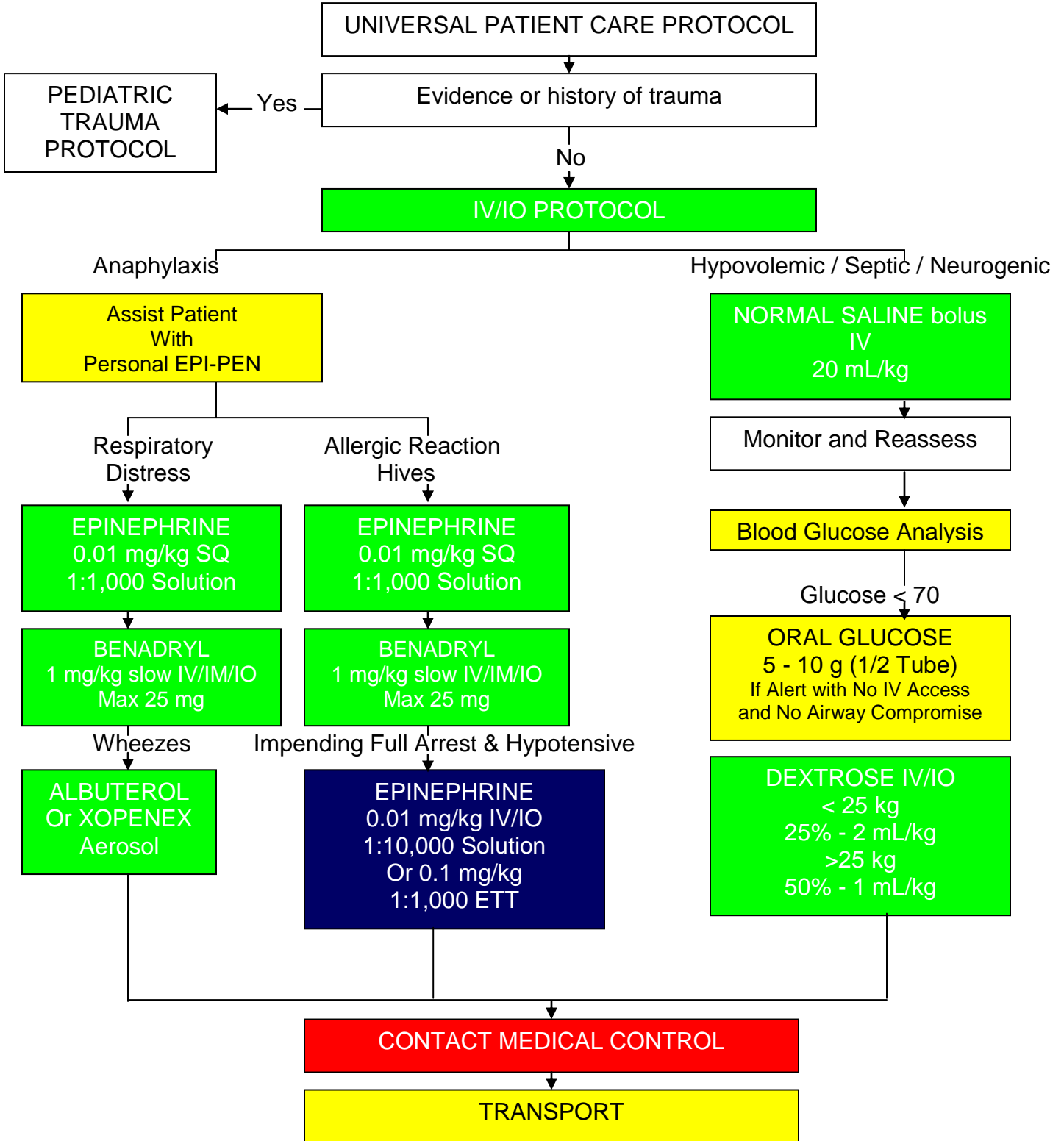
Complex Focal
Complex Generalized

Simple Focal
Simple Generalized

KEY POINTS
<ul style="list-style-type: none"> • Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro. • 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. • Be prepared to assist ventilations especially if a benzodiazepine 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.

MEDICAL
PEDIATRIC
SHOCK NON-TRAUMA

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



MEDICAL
PEDIATRIC
SHOCK NON-TRAUMA

HYPOVOLEMIC / SEPTIC / NEUROGENIC

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Blood loss • Fluid loss • Vomiting • Diarrhea • Fever • Infection 	<ul style="list-style-type: none"> • Restlessness, confusion, weakness • Dizziness • Increased HR • Decreased BP • Pale, cool, clammy skin • Delayed capillary refill 	<ul style="list-style-type: none"> • Trauma • Infection • Dehydration • Vomiting • Diarrhea • Fever • Congenital heart disease • Medication or toxin

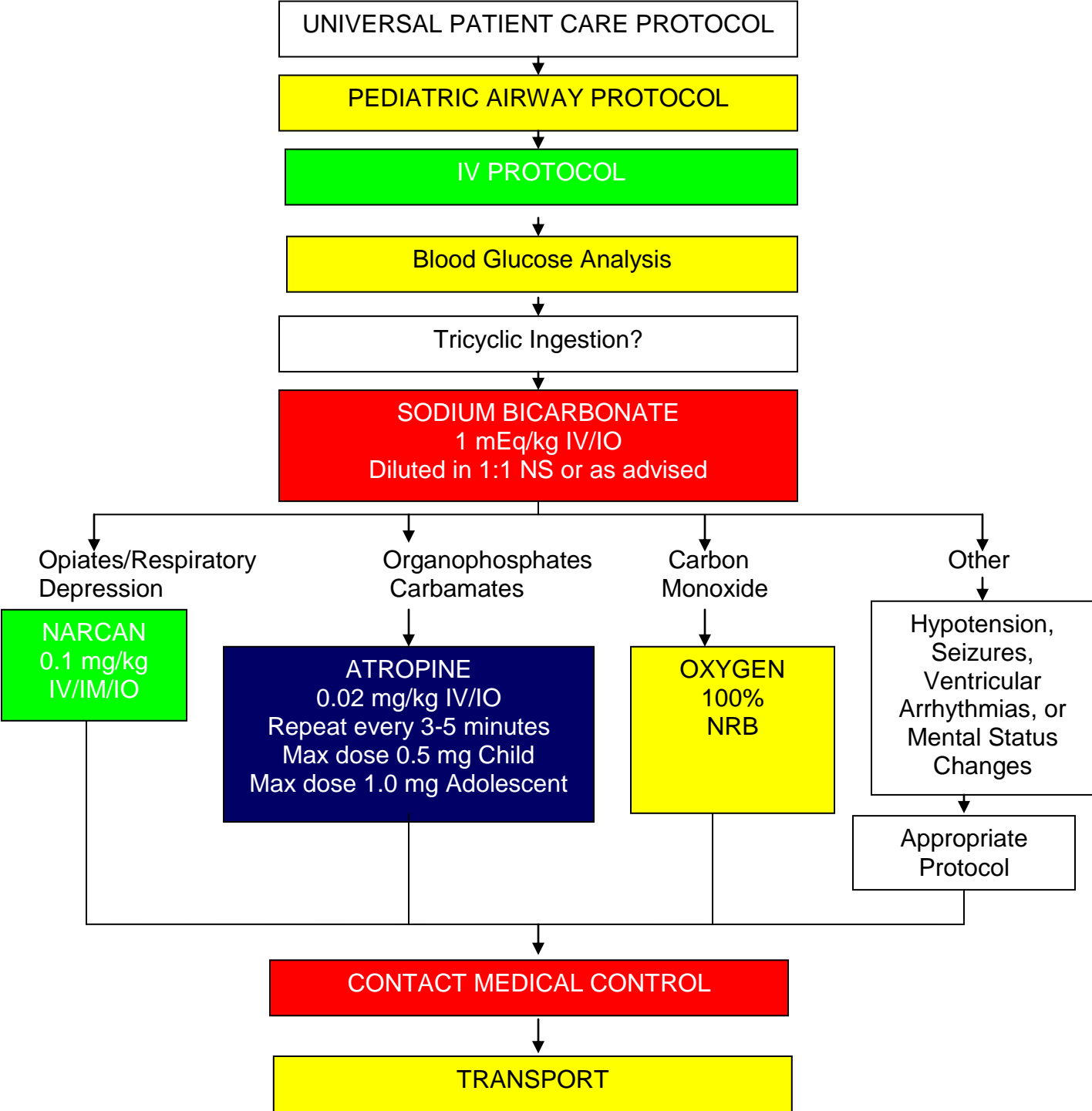
ALLERGIC REACTION / ANAPHYLAXIS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<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 	<ul style="list-style-type: none"> • Warm burning feeling • Itching • Rhinorrhea • Hoarseness • Stridor • Wheezing • Respiratory distress • Altered LOC / Coma • Cyanosis • Pulmonary edema • Facial / Airway edema • Urticaria / Hives • Dyspnea 	<ul style="list-style-type: none"> • Urticaria (rash only) • Anaphylaxis (systemic effect) • Shock (vascular effect) • Angioedema (drug-induced) • Aspiration / Airway obstruction • Vasovagal event • Asthma

KEY POINTS
<ul style="list-style-type: none"> • 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 is a sign of impending collapse. • Be sure to use the appropriate sized BP cuff. • Findings in the primary assessment should alert you that the patient is in shock. Pay particular attention to the patient's mental status, tachycardia, skin color, and capillary refill. • Shock is not only caused by blood loss. The EMT must evaluate for fluid loss from other causes such as excessive vomiting and/or diarrhea, heat exposure and malnutrition. • Do not use only the patient's blood pressure in evaluating shock; also look for decreased body temperature, poor capillary refill, decreased LOC, increased heart rate and/or poor skin color or turgor. • Routinely reassess the patient and provide supportive care. • Use caution when using epinephrine for patients with a cardiac history. • Blood pressure is a late and unreliable indication of pediatric shock.

MEDICAL
PEDIATRIC
TOXIC INGESTION / EXPOSURE / OVERDOSE

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



MEDICAL

PEDIATRIC

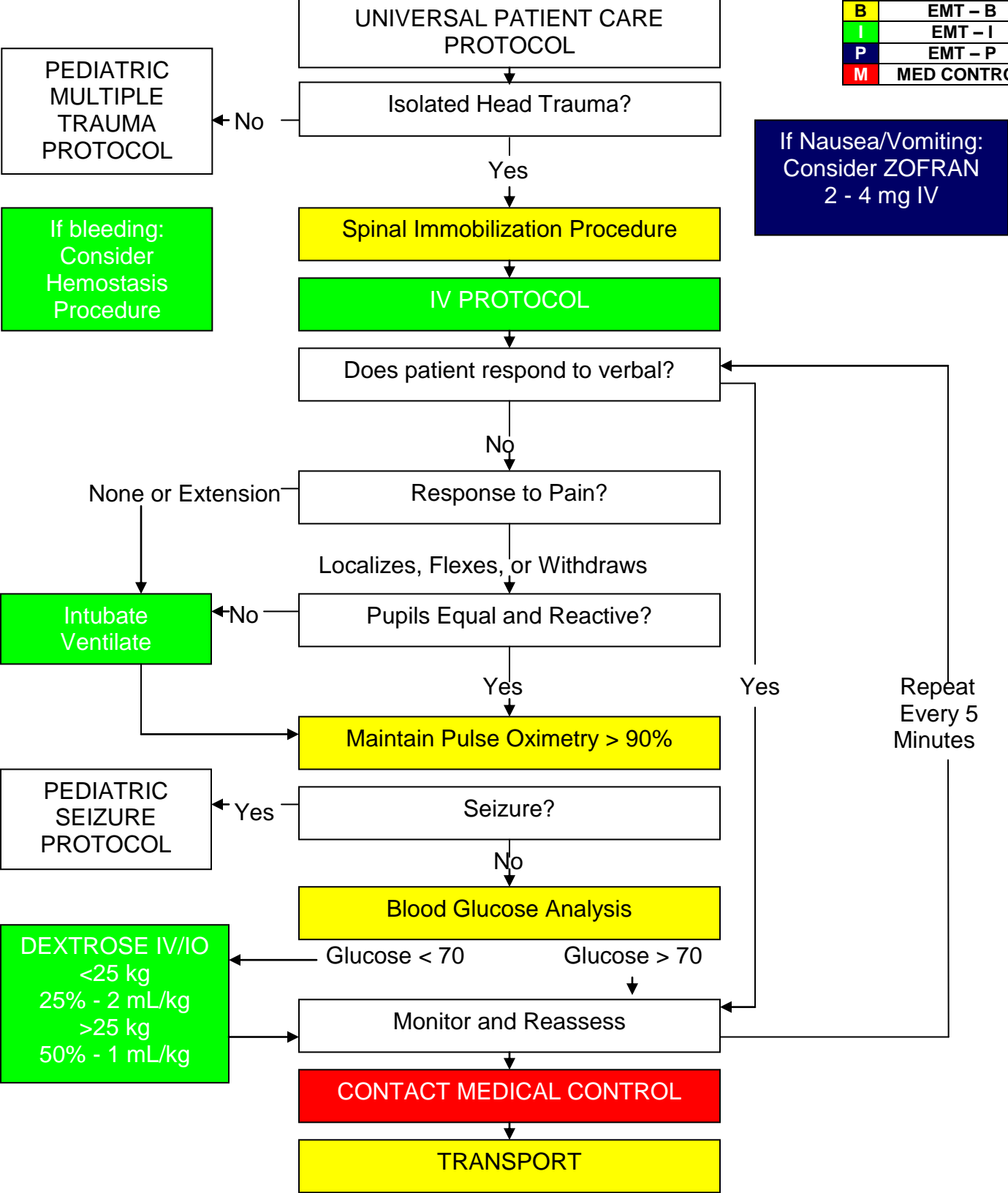
TOXIC INGESTION / EXPOSURE / OVERDOSE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<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 	<ul style="list-style-type: none"> • Mental status changes • Hypo / Hypertension • Decreased respiratory rate • Tachycardia, arrhythmias • Seizures 	<ul style="list-style-type: none"> • Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Depressants • Stimulants • Anticholinergic • Cardiac medications • Solvents, alcohols, cleaning agents • Insecticides (organophosphates) • Carbamates

KEY POINTS
<ul style="list-style-type: none"> • Routinely assess and document the patient's cardiopulmonary status. • Determine what the patient was exposed to, how much, and when. If it is safe to do so, bring a sample with you to the hospital. • Be sure to find out what interventions were administered prior to EMS arrival and document. • If the patient ingested bleach, monitor the airway and remove contaminated clothing. • Medical Control may order antidotes for specific ingestions. • DO NOT use syrup of ipecac. • Reference: Poison Control Center 1-800-222-1222.

TRAUMA
PEDIATRIC
HEAD TRAUMA

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



TRAUMA

PEDIATRIC

HEAD TRAUMA

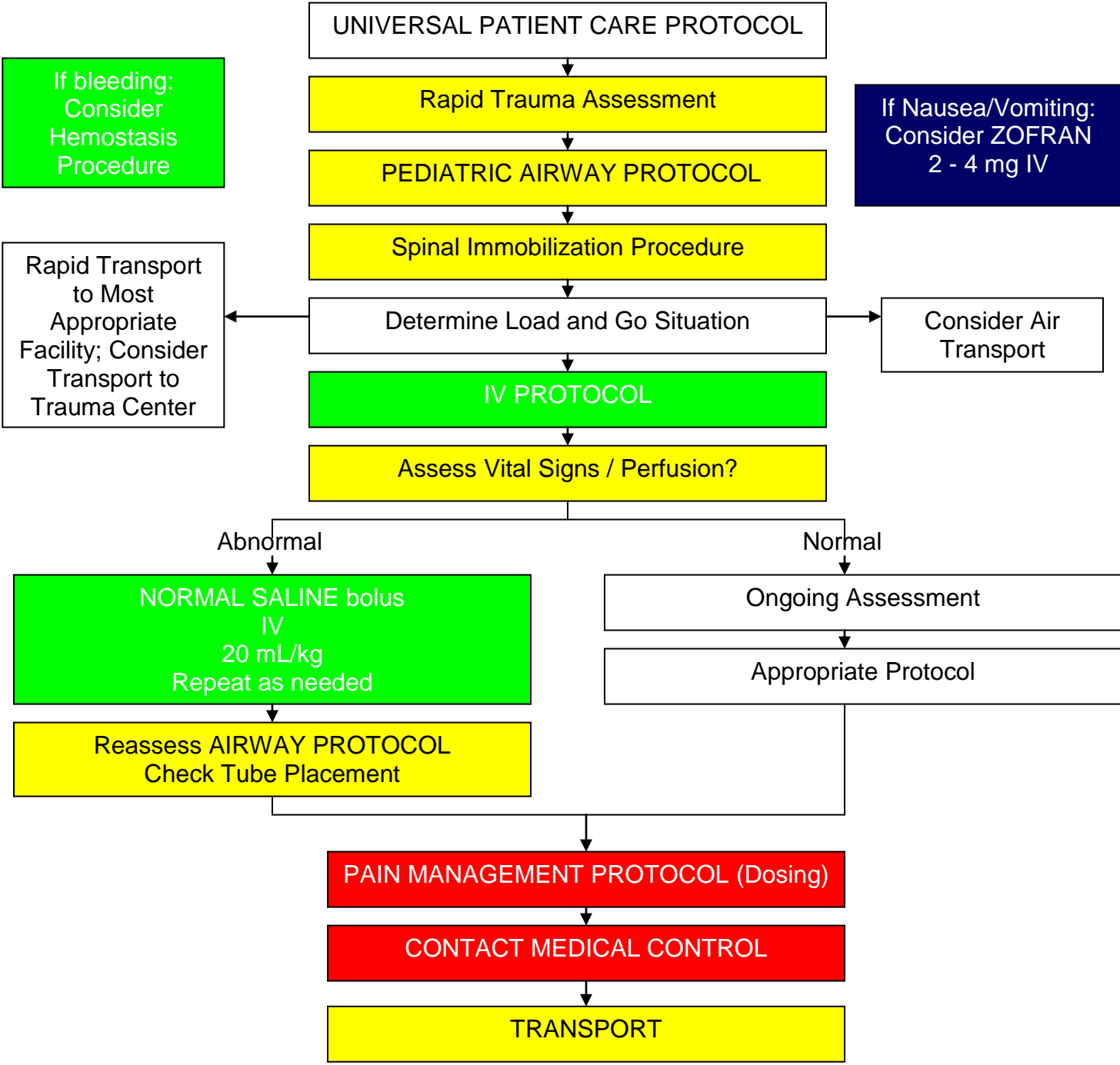
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none">• Time of injury• Mechanism: blunt or penetrating• Loss of consciousness• Bleeding• Past medical history• Medications• Evidence for multi-trauma	<ul style="list-style-type: none">• Pain, swelling, bleeding• Altered mental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

KEY POINTS

- 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.
- 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. A physician should evaluate any prolonged confusion or mental status abnormality, which does not return to normal within 15 minutes or any documented loss of consciousness, ASAP.
- Evidence of herniation: blown pupil, decorticate/decerebrate posturing, and bradycardia.
- DO NOT hyperventilate.
- Consider zofran for nausea/vomiting. Consult with Medical Control.

TRAUMA
PEDIATRIC
MULTIPLE TRAUMA

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



TRAUMA
PEDIATRIC
MULTIPLE TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<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 trauma • Restraints / Protective equipment • Car seat • Helmet • Pads • Ejection • Past medical history • Medications 	<ul style="list-style-type: none"> • Pain, swelling • Deformity, lesions, bleeding • Altered mental status • Unconscious • Hypotension or shock • Arrest 	<ul style="list-style-type: none"> • Chest tension pneumothorax • Flail chest • Pericardial tamponade • Open chest wound • Hemothorax • Intra-abdominal bleeding • Pelvis / Femur fracture • Spine fracture / Cord injury • Head injury • Extremity fracture / dislocation • Airway obstruction • Hypothermia

A Pediatric Trauma Victim is a person < 16 years of age exhibiting one or more of the following physiologic or anatomic conditions:

PHYSIOLOGIC CONDITIONS	ANATOMIC CONDITIONS
<ul style="list-style-type: none"> • Glasgow Coma Scale < 13 • Loss of consciousness > 5 minutes • Deterioration in level of consciousness at the scene or during transport • Failure to localize to pain • Evidence of poor perfusion, or evidence of respiratory distress or failure 	<ul style="list-style-type: none"> • Penetrating trauma to the head, neck, or torso • Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise • Injuries to the head, neck, or torso where the following physical findings are present: <ul style="list-style-type: none"> ○ Visible crush injury ○ Abdominal tenderness, distention, or seatbelt sign ○ Pelvic fracture ○ Flail chest • Injuries to the extremities where the following physical findings are present: <ul style="list-style-type: none"> ○ Amputations proximal to the wrist or ankle ○ Visible crush injury ○ Fractures of two or more proximal long bones ○ Evidence of neurovascular compromise • Signs or symptoms of spinal cord injury • 2nd or 3rd Degree burns > 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway

KEY POINTS
<ul style="list-style-type: none"> • Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro. • 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. • A trauma victim is considered to be a pediatric patient if they are 16 years old or younger. • Major trauma patients are to be transported to the closest Pediatric Trauma Center when possible. • Contact the receiving hospital for all major trauma or critical patients. • The proper size equipment is very important to resuscitation care. Refer to length based drug treatment guide (e.g. Broselow Pediatric Tape or similar guide) when unsure about patient weight, age and/or drug dosage and when choosing equipment size. • Cover open wounds, burns and eviscerations. • With the exception of airway control, initiate ALS en route when transporting major trauma patients. • If unable to access patient airway and ventilate, then transport to the closest facility for airway stabilization. • The on-scene time for major trauma patients should not exceed 10 minutes without a documented, acceptable reason for the delay. • All major trauma patients should receive oxygen administration, an IV(s), and cardiac monitoring. • Provide a documented reason if an intervention could not be performed.

PEDIATRIC ASSESSMENT CHARTS

PEDIATRIC

GLASCOW COMA SCALE

EYE OPENING	Spontaneous	Spontaneous	4
	To voice	To voice	3
	To pain	To pain	2
	None	None	1
VERBAL RESPONSE	Oriented	Coos, babbles	5
	Confused	Irritable cry, inconsolable	4
	Inappropriate	Cries to pain	3
	Garbled speech	Moans to pain	2
	None	None	1
MOTOR RESPONSE	Obeys commands	Normal movements	6
	Localizes pain	Withdraws to touch	5
	Withdraws to pain	Withdraws to pain	4
	Flexion	Flexion	3
	Extension	Extension	2
	Flaccid	Flaccid	1

PEDIATRIC ASSESSMENT CHARTS

PEDIATRIC

NORMAL VITAL SIGNS

AGE	HEART RATE	RESPIRATIONS	SYSTOLIC BLOOD PRESSURE
Preterm, 1 kg	120-160	30-60	36-58
Preterm 1 kg	120-160	30-60	42-66
Preterm 2 kg	120-160	30-60	50-72
Newborn	126-160	30-60	60-70
Up to 1 yo	100-140	30-60	70-80
1-3 yo	100-140	20-40	76-90
4-6 yo	80-120	20-30	80-100
7-9 yo	80-120	16-24	84-110
10-12 yo	60-100	16-20	90-120
13-14 yo	60-90	16-20	90-120
15 + yo	60-90	14-20	90-130

PEDIATRIC ASSESSMENT CHARTS

PEDIATRIC

APGAR SCORING

SIGN	0	1	2
COLOR	Blue / Pale	Pink Body, Blue Extremities	Completely Pink
HEART RATE	Absent	Below 100	Above 100
IRRITABILITY (Response to Stimulation)	No Response	Grimace	Cries
MUSCLE TONE	Limp	Flexion of Extremities	Active Motion
RESPIRATORY EFFORT	Absent	Slow and Regular	Strong Cry

Pain Assessment Tools

Neonatal/Infant Pain Scale (NIPS)

(Recommended for children less than 1 year old) - A score greater than 3 indicates pain

Pain Assessment	
Facial Expression	
0 – Relaxed muscles	Restful face, neutral expression
1 – Grimace	Tight facial muscles; furrowed brow, chin, jaw, (negative facial expression – nose, mouth and brow)
Cry	
0 – No Cry	Quiet, not crying
1 – Whimper	Mild moaning, intermittent
2 – Vigorous Cry	Loud scream; rising, shrill, continuous (Note: Silent cry may be scored if baby is intubated as evidenced by obvious mouth and facial movement.)
Breathing Patterns	
0 – Relaxed	Usual pattern for this infant
1 – Change in Breathing	Indrawing, irregular, faster than usual; gagging; breath holding
Arms	
0– Relaxed/Restrained	No muscular rigidity; occasional random movements of arms
1 – Flexed/Extended	Tense, straight legs; rigid and/or rapid extension, flexion
Legs	
0 – Relaxed/Restrained	No muscular rigidity; occasional random leg movement
1 – Flexed/Extended	Tense, straight legs; rigid and/or rapid extension, flexion
State of Arousal	
0 – Sleeping/Awake	Quiet, peaceful sleeping or alert random leg movement
1 – Fussy	Alert, restless, and thrashing

PEDIATRIC

Children's Hospital Eastern Ontario Pain Scale (CHEOPS)

(Recommended for children 1-7 years old) - A score greater than 4 indicates pain

Item	Behavioral		Definition
Cry	No cry	1	Child is not crying.
	Moaning	2	Child is moaning or quietly vocalizing silent cry.
	Crying	2	Child is crying, but the cry is gentle or whimpering.
	Scream	3	Child is in a full-lunged cry; sobbing; may be scored with complaint or without complaint.
Facial	Composed	1	Neutral facial expression.
	Grimace	2	Score only if definite negative facial expression.
	Smiling	0	Score only if definite positive facial expression.
Child Verbal	None	1	Child not talking.
	Other complaints	1	Child complains, but not about pain, e.g., "I want to see mommy" or "I am thirsty".
	Pain complaints	2	Child complains about pain.
	Both complaints	2	Child complains about pain and about other things, e.g., "It hurts; I want my mommy".
	Positive	0	Child makes any positive statement or talks about others things without complaint.
Torso	Neutral	1	Body (not limbs) is at rest; torso is inactive.
	Shifting	2	Body is in motion in a shifting or serpentine fashion.
	Tense	2	Body is arched or rigid.
	Shivering	2	Body is shuddering or shaking involuntarily.
	Upright	2	Child is in a vertical or upright position.
	Restrained	2	Body is restrained.
Touch	Not touching	1	Child is not touching or grabbing at wound.
	Reach	2	Child is reaching for but not touching wound.
	Touch	2	Child is gently touching wound or wound area.
	Grab	2	Child is grabbing vigorously at wound.
	Restrained	2	Child's arms are restrained.
Legs	Neutral	1	Legs may be in any position but are relaxed; includes gentle swimming or separate-like movements.
	Squirm/kicking	2	Definitive uneasy or restless movements in the legs and/or striking out with foot or feet.
	Drawn up/tensed	2	Legs tensed and/or pulled up tightly to body and kept there.
	Standing	2	Standing, crouching or kneeling.
	Restrained	2	Child's legs are being held down.

PEDIATRIC

Pediatric Trauma Score

Components	+2	+1	-1	SCORE
Weight	>20 kg (44 lbs)	10-20 kg (22-44 lbs)	<10 kg (22 lbs)	
Airway	Patent	Maintainable	Unmaintainable	
Systolic BP Pulses	> 90 Radial	50 – 90 Carotid	< 50 Nonpalpable	
CNS	Awake	+LOC (responsive)	Unresponsive	
Fractures	None	Closed or suspected	Multiple closed or open	
Wounds	None	Minor	Major, penetrating or Burns > 10%	
TOTAL SCORE				
9 –12 Minor Trauma Use local guidelines/protocols 6 –8 Potentially Life Threatening Suggests need for Trauma Center 0 –5 Life Threatening Need for Trauma Center <0 Usually Fatal Transport to Nearest Facility				

PEDIATRIC PHARMACOLOGY REVIEW

MEDICATION	DOSE	ROUTE	REMARKS
• Acetaminophen (Tylenol)	10 mg/kg	PO	Useful for musculoskeletal pain and fever control.
• Adenosine	0.1 mg/kg	IV, IO	Indicated for SVT. Repeat dose 0.2mg/kg Max dose 0.5 mg/kg.
• Albuterol	2.5 mg	Aerosol	Indicated for wheezing as per protocol.
• Amiodarone	5mg/kg	IV, IO	Over 20-60 minutes, maximum 15 mg/kg per day. For shock-refractory pulseless VT/VF: 5 mg/kg rapid IV/IO.
• Atropine	0.02 mg/kg	IV, IO, ET	Minimum dose 0.1 mg; max dose for child 0.5 mg; max dose for adolescent 1.0 mg; may repeat x1; Also useful before intubating children < 5 years old, blocks bradycardia due to vagal nerve stimulation.
• Dextrose 25%	2 mL/kg	IV, IO	Try to obtain bedside glucose level before administering ----administer if blood glucose < 70; dilute 50% 1:1 with sterile water/ NS; consult Medical Control if infant < 1 month as solution may need to be further diluted.
• Diazepam (Valium)	0.2 mg/kg	IV	Indicated for uncontrolled seizure activity; anticipate respiratory depression. Max dose 5 mg.
• Diazepam (Valium)	0.5 mg/kg	Rectal	Indicated for uncontrolled seizure activity; anticipate respiratory depression. Max dose 10 mg.
• Diphenhydramine (Benadryl)	1 mg/kg	IV	Useful in allergic reactions and anaphylaxis. Max dose 25 mg.
• Epinephrine (1:10,000)	0.01 mg/kg	IV, IO	Commonly used in cardiac arrest rhythms as first dose.
• Epinephrine (1:1,000)	0.1 mg/kg	IV, IO, ET	Use for all ET doses. Dilute with 2 mL NS for ET. *The ET route has limited absorption, use IV/IO route whenever possible
	0.01mg/kg	SQ	Used for anaphylaxis. Max dose is 0.3 mg
• Lidocaine	1 mg/kg	IV, IO, ET	Can repeat once. Also useful before intubating for cerebral protection and decreases airway reactivity.
• Morphine	0.1 mg/kg	IV, IO, IM	Useful for moderate pain, may cause respiratory depression. Hypotension and reflex bradycardia may develop from histamine release.
• Naloxone (Narcan)	0.1 mg/kg	IV, IO, ET	Useful for unknown unconscious, known narcotic overdoses.
• Xopenex	<6 6-11 0.31 mg >11 0.63 mg	Aerosol	Indicated for wheezing as per protocol. <6 years old: contact Medical Control. Causes less increase in heart rate.
• Zofran	8-15 kg 2 mg 15-40 kg 4 mg >30 kg 4-8 mg	IV, IM	Indicated for nausea/vomiting. OK for head injury.

