Tab 1100
Pediatric Protocols

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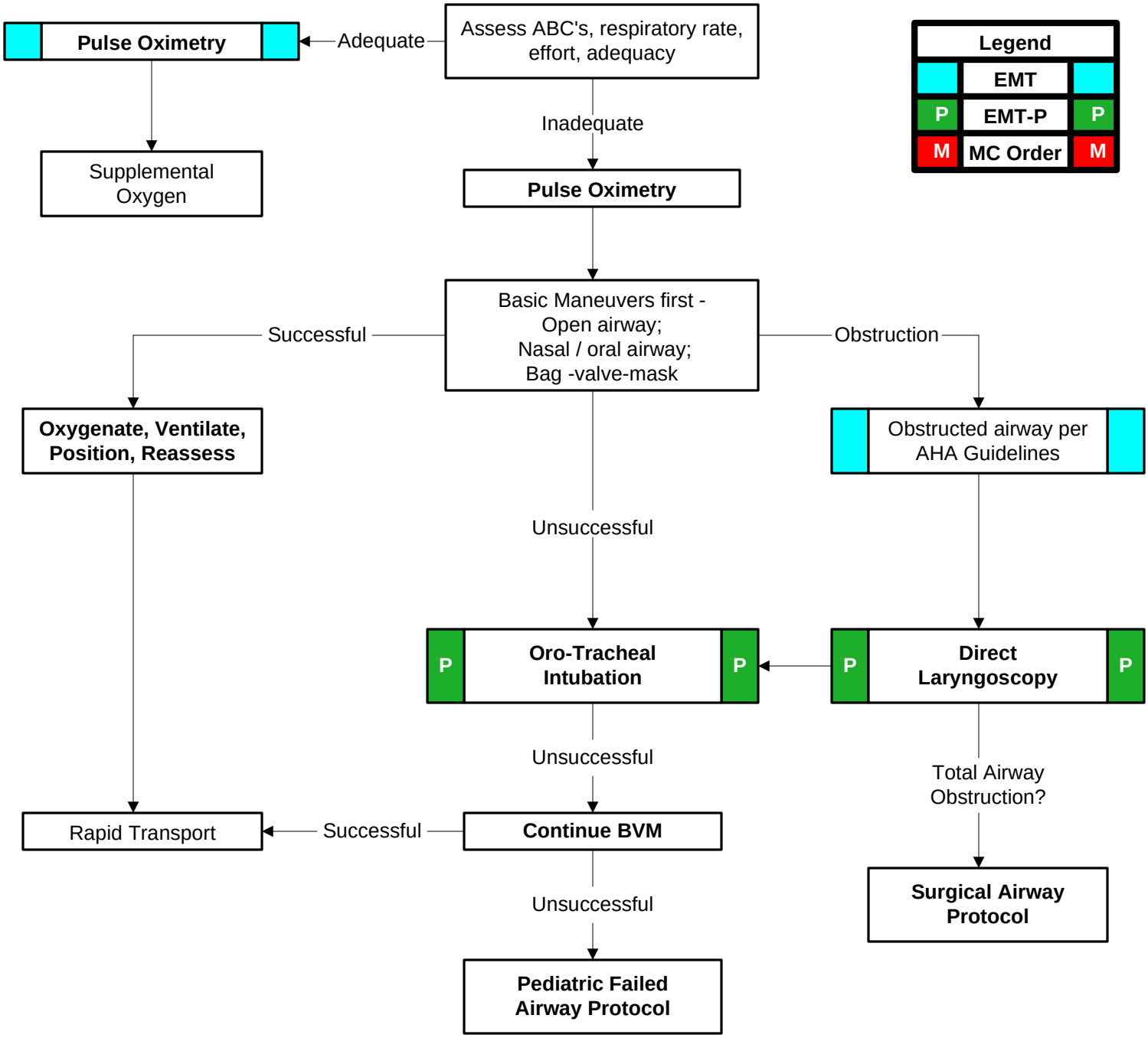
TAB 1100
PEDIATRIC PROTOCOLS
TABLE OF CONTENTS

SECTION

A Pediatric Airway

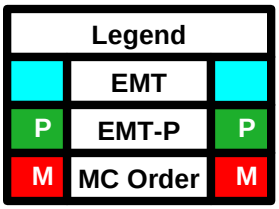


A Pediatric Airway

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.
2. If adequate oxygenation and ventilation is obtained with BVM, it is acceptable to defer intubation until transfer of patient at the hospital.
3. Limit intubation attempts to 3 per patient.
4. Consider SMR (Spinal Motion Restriction) for patients with suspected head/spinal injury.
5. Sellick's maneuver should be used to assist with difficult intubations.
6. Continuous pulse oximetry should be utilized in all patients with inadequate respiratory function.
7. Consider Head Blocks / CID to maintain ETT placement for all intubated patients.
8. Needle / surgical cricothyrotomy ***is only to be considered*** for a complete airway obstruction with no other means for patient ventilation.
9. Any post-intubation (advanced airway) sedation for pediatric patients must be authorized by ***On-Line Medical Control***.

B
Pediatric
Airway - Failed



Three (3) failed intubation attempts by most proficient technician on scene
-or-
Anatomy inconsistent with intubation attempts

Adequate Air Movement with BVM ?

Yes

Continue BVM

No

if Sp02 drops < 90%
-or-
It becomes difficult to ventilate with BVM

Attempt Oropharyngeal or Nasopharyngeal Airway Placement.
Improved ?

No

Yes

P Consider SGA *(if size appropriate)* P

Continue ventilation with alternate airway or BVM

Continue BVM

Ventilate at age-approprate rate

B
Pediatric
Airway - Failed

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.

2. If first intubation attempt fails, make adjustments and try again:
    a. Different laryngoscope blade
    b. Different ETT size
    c. Change cricoid pressure
    d. Change head positioning
    e. Apply **BURP** maneuver (**B**ackward, **U**pward, **R**ight, **P**ressure): push trachea back [posterior], Up, and to the patient's right).

3. Continuous pulse oximetry should be utilized in all patients with inadequate respiratory function.

4. Notify ***On-Line Medical Control*** as early as possible concerning difficult / failed airway maneuvers.

5. Any post-intubation (advanced airway) sedation for pediatric patients must be authorized by ***On-Line Medical Control***.

C
Pediatric
Allergic Reaction

History:	Signs / Symptoms:	Differential:
· < 16 years of age · 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	· Itching or hives · Coughing / wheezing or respiratory distress · Chest or throat constriction · Difficulty swallowing · Hypotension or shock · Edema	· Urticaria (rash only) · Anaphylaxis (systemic effect) · Shock (vascular effect) · Angioedema (drug induced) · Aspiration / Airway obstruction · Vasovagal event · Asthma · CHF

Universal Patient Care Protocol

Assess Symptom Severity

MILD
Hives / Rash Only
No Respiratory Component

- P **Benadryl** 1mg/Kg IV or IM P

Monitor for worsening Signs and Symptoms

MODERATE
Airway swelling / Respiratory Distress / Bronchospasm / Tongue-Facial Swelling

IV / Cardiac Monitor

- P *Consider* **Epinephrine 1mg/mL 0.01mg/Kg IM (Dose Max – 0.5mg)** P
- P **Benadryl** 1mg/Kg IV or IM P
- P **Albuterol** 2.5mg nebulized P
- P **Solu Medrol** 1mg/Kg slow IV P

SEVERE
Hypotension / Poor Pefusion

IV / Cardiac Monitor

- P *If evidence of Anaphylaxis* **Push-Dose Epinephrine 1:100,000** 1mL/min IV/IO (titrate to age appropriate BP) P
- P Consider Fluid Bolus 20mL/Kg P
- P **Benadryl** 1mg/Kg IV or IM P
- P **Albuterol** 2.5mg nebulized P
- P **Solu Medrol** 1mg/Kg slow IV P

Legend

	EMT	
P	EMT-P	P
M	MC Order	M

Hypotension → **Hypotension Protocol**

Dysrhythmia → **Appropriate Protocol**

Respiratory Distress → **Respiratory Distress Protocol**

C
Pediatric
Allergic Reaction

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.

2. Patients with allergic reactions can deteriorate quickly. Repeated airway and ventilatory assessment are of prime concern.

3. Time of onset, severity, and body surface area affected should be considered before Benadryl administration in the patient presenting with rash/hives only. Any OTC Benadryl that may have been administered to the pediatric patient prior to EMS evaluation should be factored in to the overall treatment of the patient.

4. Allergic reactions may occur with only respiratory and gastrointestinal symptoms and have no rash/skin involvement.

5. Angioedema seen in moderate to severe reactions is characterized by swelling involving the face, lips or airway structures. This can also be seen in patients taking blood pressure medications like Prinivil / Zestril (Lisinopril).

6. The shorter the onset from contact to symptoms, the more severe the reaction.

Symptom Severity Classification:

Mild	Moderate	Severe
Flushing, hives, itching, erythema with normal blood pressure and perfusion	Flushing, hives, itching, erythema plus respiratory (wheezing, dyspnea, hypoxia) or gastrointestinal symptoms (nausea, vomiting, abdominal pain) with normal blood pressure and perfusion	Flushing, hives, itching, erythema plus respiratory (wheezing, dyspnea, hypoxia) or gastrointestinal symptoms (nausea, vomiting, abdominal pain) with hypotension and poor perfusion. Skin symptoms may not be present due to poor perfusion.

C
Pediatric
Allergic Reaction

Special Considerations, cont.

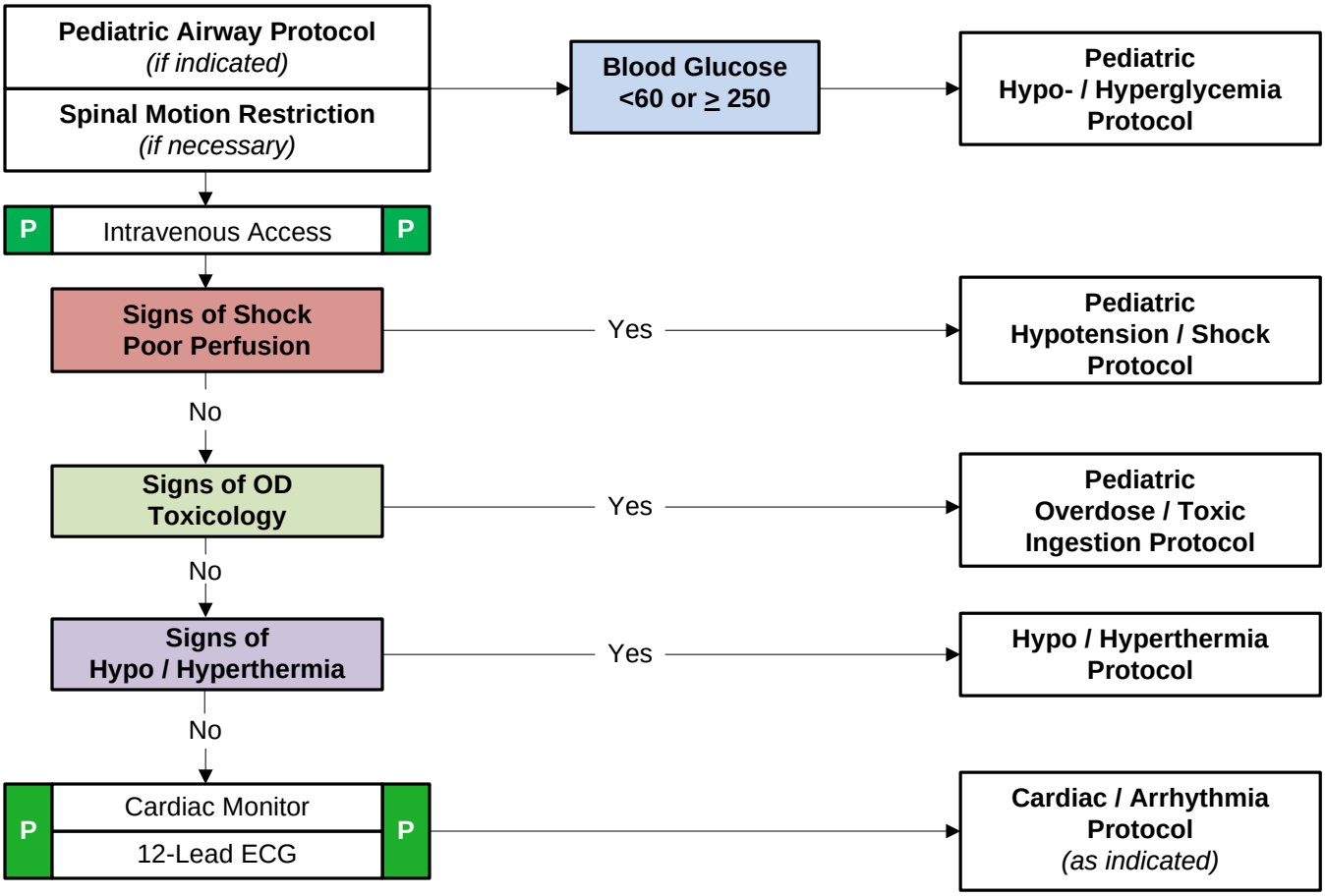
For Severe Allergic Reactions (Loss of Brachial/Radial pulse OR age-appropriate hypotension:

- **Push-Dose Pressor Epinephrine (1:100,000)**
  - Dilute: Discard 9mL of Epi 1:10,000 (0.1mg/mL) and draw up 9mL of normal saline to create Push-Dose Pressor Epi 1:100,000. This will yield 10mcg/mL.
    - Administer 1mL/minute IV/IO, titrate to maintain age-appropriate SBP.
    - May repeat X 2 prn by standing order (protocol)
    - Max total dose 300mcg (30mL)

  - Push-Dose Pressor Epinephrine Precautions:
    - DO NOT administer faster than 1mL/minute
    - Rapid (1 minute) onset, short (5-10) minute duration
    - Monitor heart rate and blood pressure throughout administration

D
Pediatric
Altered Mental Status

History:	Signs / Symptoms:	Differential :
· Past medical history · Medications · Recent illness · Irritability · Lethargy · Changes in feeding / sleeping · Diabetes · Potential Ingestion · Trauma	· Decreased mental status · Change in baseline mental status · Bizarre behavior · Hypoglycemia (cool, diaphoretic skin) · Hyperglycemia (warm, dry skin; fruity breath; Kussmaul respirations; signs of dehydration)	· 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



D
Pediatric
Altered Mental Status

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.
2. Be aware of altered mental status as a presenting sign of an environmental toxin or Haz-Mat exposure and protect personal safety.
3. Pay careful attention to the head examination for signs of bruising or other injury.
4. It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood glucose after therapy with IV Dextrose or IN / IM Glucagon.
5. Consider alcohol, prescription drugs, illicit drugs and Over-the Counter preparations as a potential etiology.
6. Consider restraints if necessary for patient's and/or personnel's protection.

E
Pediatric Bradycardia

History:	Signs / Symptoms:	Differential:
· < 16 years of age · Past medical history · Foreign body exposure · Respiratory distress or arrest · Apnea · Possible toxic or poison exposure · Congenital disease · Medication (maternal or infant)	· Decreased heart rate · Delayed capillary refill or cyanosis · Mottled, cool skin · Hypotension or arrest · Altered level of consciousness	· Respiratory effort · Respiratory obstruction · Heart Block · Hypovolemia · Hypothermia · Infection / Sepsis · Medication or Toxin · Hypoglycemia · Trauma

Universal Patient Care Protocol

↓

Oxygenation
Pediatric Airway Protocol
(as necessary)

↓

Poor perfusion
Decreased blood pressure
Respiratory insufficiency

→ **If patient remains unstable after oxygenation/ventilation**
Heart rate < 60
Consider chest compressions
(age-dependent)

↓ No Improvement

P **Push-Dose Epinephrine 1:100,000** P
1mL/min IV/IO
(titrate maintain age-appropriate BP)

↓ If Bradycardia and hypotension persists

Considerations → **Consider:**
- Low Blood Sugar **(Dextrose)**
- Narcotic OD **(Narcan)**
- Volume **(Normal Saline)**

↓

P **External Transcutaneous Pacing** P
Initial rate of 80bpm / Increase mA until capture
Increase rate as needed until patient hemodynamically stable

↓ No pulse

Pulseless Arrest Protocol

No → Monitor and Reassess

Legend	
	EMT
P	EMT-P
M	MC Order

E
Pediatric Bradycardia

Special Considerations:

1. This protocol applies to pediatric patients (< 16 years of age) who are in a symptomatic bradyarrhythmia (i.e., Sinus Bradycardia, First Degree Heat Block, Relative Bradycardia**,** Absolute Bradycardia, Second Degree Heart Block Mobitz I, Second Degree Heart Block Mobitz II, and Third Degree Heart Block).

2. Treatment of bradyarrhythmias may not be required if the patient is asymptomatic.

3. Hypoxemia, acidosis, and hypotension interfere with sinus node function and slow cardiac conduction. In addition, excessive vagal stimulation (i.e. suctioning) may produce bradycardia.

4. Sinus bradycardia, sinus node arrest with slow junctional or Idioventricular rhythm, and atrioventricular block are the most common pre-terminal rhythms observed in infants and children. All slow rhythms that result in cardiac instability require immediate treatment.

5. Bradycardia can be caused by many underlying factors. The following possible causes should be considered and if verified, the appropriate treatment administered:
    a. Hypovolemia
    b. Hypoxia
    c. Hydrogen Ion – Acidosis
    d. Hyper- / Hypokalemia
    e. Hypothermia
    f. Hypoglycemia
    g. Toxins
    h. Tamponade, Cardiac
    i. Tension Pneumothorax
    j. Thrombosis, Coronary / Pulmonary
    k. Trauma

6. The majority of pediatric arrests are due to airway problems.

Special Considerations (cont.),

7. Pediatric patients with a known history of cardiovascular dysfunction (or disease) as underlying etiology, and refractory to Epinephrine, may benefit from Atropine administration. Atropine is administered at 0.02mg/Kg IV/IO (Dose range: 0.1 – 0.5mg). Atropine may be repeated once in 3 – 5 minutes PRN. Consider early contact with ***On-Line Medical Control*** for additional guidance.

8. Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia.

9. If bradycardia and age-appropriate hypotension persists:
   - **Push-Dose Pressor Epinephrine (1:100,000)**
     - Ø Dilute: Discard 9mL of Epi 1:10,000 (0.1mg/mL) and draw up 9mL of normal saline to create Push-Dose Pressor Epi 1:100,000. This will yield 10mcg/mL.
       - § Administer 1mL/minute IV/IO; titrate to maintain age-appropriate SBP.
       - § May repeat X 2 prn by standing order (protocol)
       - § Max total dose 300mcg (30mL)

     - Ø Push-Dose Pressor Epinephrine Precautions:
       - § Rapid (1 minute) onset, short (5-10) minute duration
       - § Monitor heart rate and blood pressure throughout administration

10. Pediatric patients requiring external transcutaneous pacing require the use of pads appropriate for pediatric patients per manufacturer's guidelines.

11. Transcutaneous pacing for the pediatric patient should be initiated at 80bpm and 20mA. Increase milliamperage by increments of 5 until electrical capture is realized. Increase rate as needed until patient hemodynamically stable.

12. Patients requiring sedation prior to TCP should receive Versed 0.1mg/Kg slow IV/IO (maximum single dose 2mg). Absent IV access, consider administration of Versed 0.2mg/Kg IN.
    - If Versed allergy exists, consider analgesic administration as outlined in **Tab 1100 Section O: Pain Management.**

F
Pediatric Burns

History:	Signs / Symptoms:	Differential:
• Type of exposure (heat, gas, chemical) • Inhalation injury • Time of injury • Past medical history • Medications • Other trauma • Loss of consciousness • Tetanus/Immunization status	• Burns, pain, swelling • Dizziness • Loss of consciousness • Hypotension / shock • Airway compromise / distress • Singed facial or nasal hair • Hoarseness / wheezing	• **Superficial** (1st degree) • **Partial thickness** (2nd degree) • **Full thickness** (3rd degree) • **Chemical** • **Thermal** • **Electrical** • **Radiation**

Universal Patient Care Protocol

Remove rings, bracelets, and other constricting items

Legend		
	EMT	
P	EMT-P	P
M	MC Order	M

Thermal

If burn < 10% body surface area (using rule of nines)
Cool down the wound with Normal Saline

Cover burn with a **Dry** sterile sheet or dressing

P **IV Protocol - Bolus 20mL/Kg** P
Consider 2nd IV for burns > 30%

P **Pediatric Pain Management Protocol** P
(as necessary)

Consider transport directly to Burn Center if No airway involvement

Chemical

Consider transport directly to Burn Center if No airway involvement

Eye Involvement ?
Continuous saline flush in affected eye

Flush area with water or Normal Saline for 10-15 minutes

F
Pediatric Burns

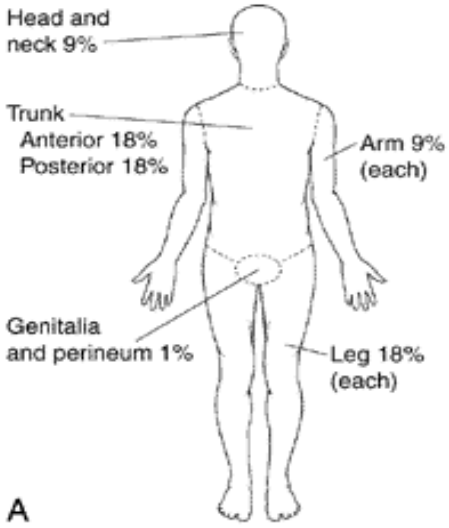
Special Considerations:

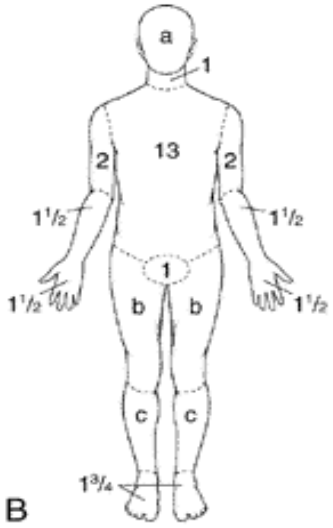
1. For this protocol, the pediatric patient is defined as < 16 years of age.
2. Do not overlook the possibility of multiple system trauma.
3. Do not overlook the possibility for child abuse with children sustaining burns.
4. Burn patients are prone to hypothermia. Never apply ice or cool burns that involve > 10% body surface area.
5. Circumferential burns to extremities are dangerous due to potential vascular compromise secondary to soft tissue swelling.
6. Consider potential CO poisoning. Treat with 100% oxygen by mask.
7. Early intubation may be required with significant inhalation injuries.
8. If airway involvement, consider transport to the closest hospital for optimal airway management.
9. **Critical Burns** (Transfer to Burn Center):
    a. > 20% body surface area (BSA) age > 10.
    b. > 10% BSA are < 10.
    c. 3rd degree burns > 5% BSA
    d. 2nd and 3rd degree burns to face, eyes, hands or feet.
    e. Electrical burns
    f. Respiratory burns
    g. Deep chemical burns
    h. Burns with extremes of age or chronic disease
    i. Burns associated with major traumatic injury.
10. For moderate to severe discomfort/pain, consider administration of parenteral analgesics as outlined in **Tab 1100 Section O: Pediatric Pain Management.**

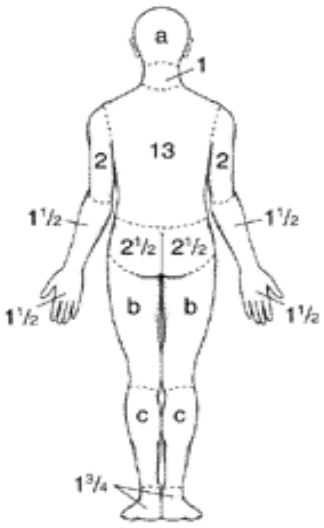
F
Pediatric Burns

Special Considerations (cont.),

“Rule of Nines” (Pediatric Scale)







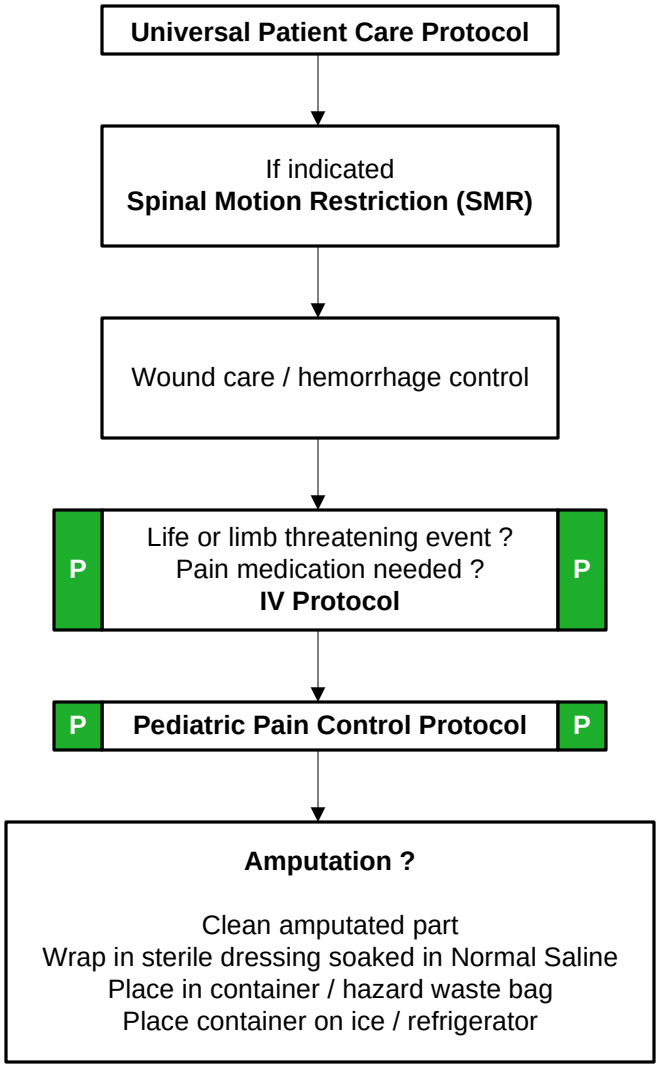
ANTERIOR POSTERIOR

Relative percentage of body surface areas (% BSA) affected by growth

	0 yr	*1 yr*	*5 yr*	*10 yr*	*15 yr*
a— ½ of head	9½	8½	6½	5½	4½
b— ½ of 1 thigh	2¾	3¼	4	4¼	4½
c— ½ of 1 lower leg	2½	2½	2¾	3	3¼

G
Pediatric
Extremity Trauma

History:	Signs / Symptoms:	Differential:
• Type of Injury • Mechanism: crush / penetrating / amputation • Time of injury • Open vs. closed wound / fracture • Wound contamination • Medical History • Medications	• Pain, swelling • Deformity • Altered sensation / motor function • Diminished pulse / capillary refill • Decreased extremity temperature	• Abrasion • Contusion • Laceration • Sprain • Dislocation • Fracture • Amputation



Legend	
	EMT
P	EMT-P
M	MC Order

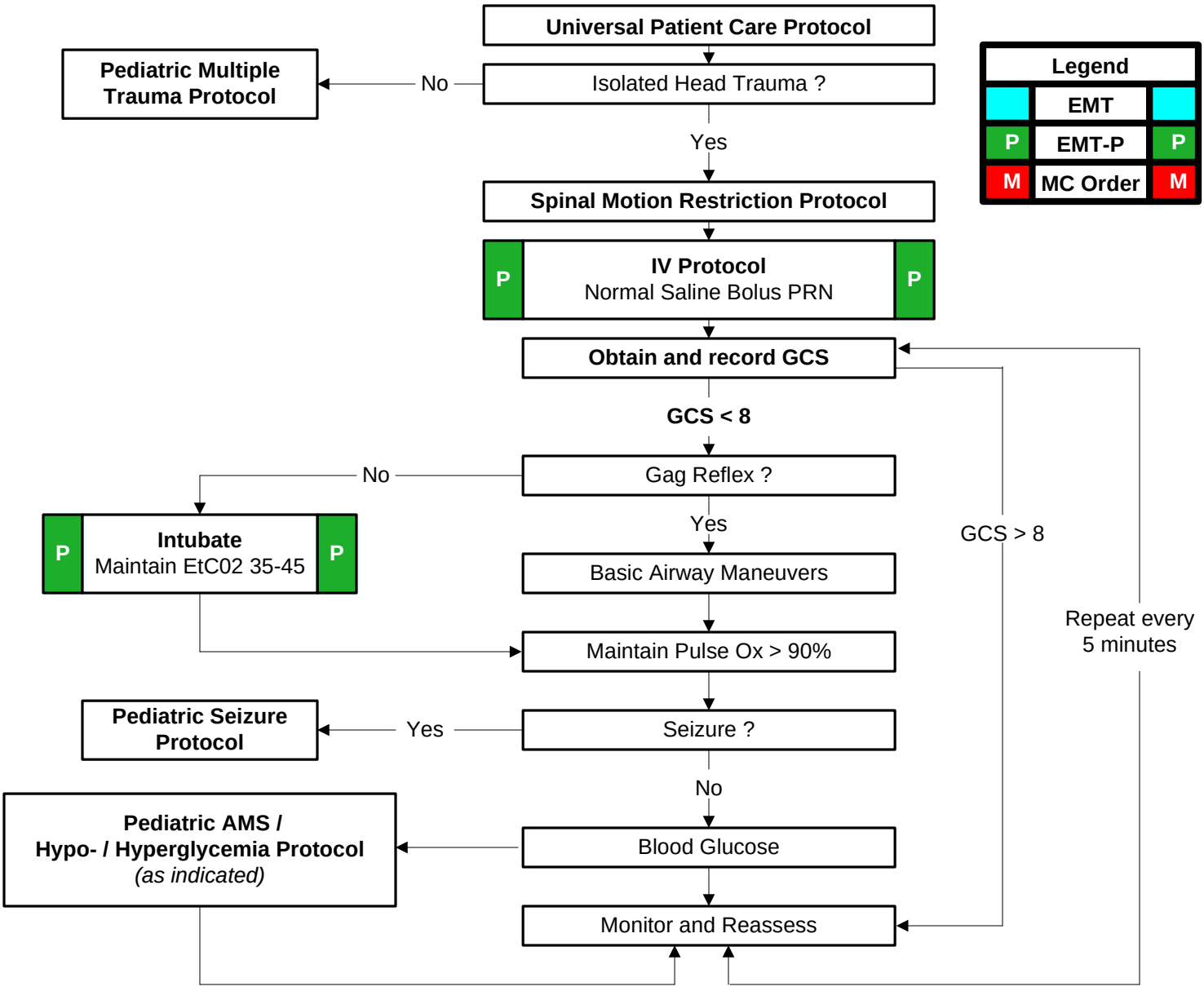
G
Pediatric
Extremity Trauma

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.
2. Urgently transport any injury with vascular compromise.
3. Severe bleeding from an extremity not rapidly controlled may necessitate the application of a tourniquet.
4. Hip dislocations and knee and elbow fracture / dislocations have a high incidence of vascular compromise.
5. In amputations, transport and notify medical control immediately so that the appropriate destination can be determined.

H
Pediatric
Head Trauma

History:	Signs / Symptoms:	Differential:
• < 16 year of age • Time of injury • Mechanism (blunt vs. penetrating) • Loss of consciousness • Bleeding • Past medical history • Medications • Evidence of multi-trauma	• Pain, swelling, bleeding • Altered mental status • Unconscious • Respiratory distress / failure • Vomiting • Major traumatic mechanism of injury • Seizure	• Skull fracture • Brain injury (concussion, contusion, hemorrhage or laceration • Epidural hematoma • Subdural hematoma • Subarachnoid hemorrhage • Spinal injury • Abuse



H
Pediatric
Head Trauma

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.

2. If GCS < 12 consider rapid transport. With GCS < 8 anticipate intubation.

3. Mild hyperventilation should be considered only if evidence of herniation (blown pupil, decorticate / decerebrate posturing, bradycardia). Target EtC02 value to 30mmHg.

4. Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).

5. Hypotension usually indicates injury or shock unrelated to the head injury.

6. The most important item to monitor and document is a change in the level of consciousness.

7. 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 immediately.

I
Pediatric
Hypothermic Cardiac Arrest

History:	Signs / Symptoms:	Differential:
• < 16 years of age • Hypothermia • Time of arrest • Medical history • Medications	• Unresponsive • Cardiac arrest	• Hypothermia • Exposure • H's and T's

Universal Patient Care Protocol

Cardiac Arrest Protocol

Legend	
	EMT
P	EMT-P
M	MC Order

Ventricular Fibrillation / Tachycardia

P **Defibrillate: 2J/Kg**
Immediately start CPR
Airway Protocol
Establish IO/IV Access P

Give 5 cycles of CPR after shock

P **Defibrillate: 4J/Kg**
Resume CPR P

Treat for Hypothermia

P **Pediatric Pulseless Arrest Protocol** P

Asystole / PEA

Pediatric Airway Protocol

P Establish IO/IV Access P

Treat for Hypothermia

P **Pediatric Pulseless Arrest Protocol** P

Treat for Hypothermia:

- Remove patient from environment / exposure
- Avoid rough movement
- Remove wet clothing
- Protect against heat loss
- Cover with blankets
- Move patient to warm environment

I
Pediatric
Hypothermic Cardiac Arrest

Special Considerations:

1. This protocol applies to the pediatric patient (< 16 years of age) who has sustained cardiac arrest due to hypothermia.

2. Passive re-warming can be initiated in the field with application of blankets and movement of the victim to a warm environment. Severely hypothermic patients will require active internal warming upon arrival to the emergency department.

3. Pediatric patients in hypothermic cardiac arrest will require CPR with some modifications of conventional BLS and ACLS care.

4. Acquire tympanic temperatures in the hypothermic arrest patient and factor into the overall approach to treatment (see guidelines below).

5. When the victim is hypothermic, pulse and respiratory rates may be slow or difficult to detect. For these reasons breathing and pulse should be assessed for 30-45 seconds to confirm respiratory arrest, pulseless cardiac arrest, or bradycardia that is profound enough to require CPR.

6. The temperature at which defibrillation should first be attempted in the severely hypothermic patient and the number of defibrillation attempts that should be made have not been established. The following guidelines should be considered:

    A. **Moderate Hypothermia (30ºC to 34ºC):** Start CPR, attempt defibrillation, establish IO/IV access, give IO/IV medications spaced at longer intervals, initiate active re-warming.
    B. **Severe Hypothermia (<30ºC):** Start CPR, attempt defibrillation (x 1), withhold medications until temperature > 30ºC, initiate active re-warming.

7. To prevent further core heat loss, remove wet garments and protect the victim from further environmental exposure.

8. ACLS management of cardiac arrest due to hypothermia focuses on more aggressive active core re-warming techniques as the primary therapeutic modality.

Pediatric Hypothermic Cardiac Arrest

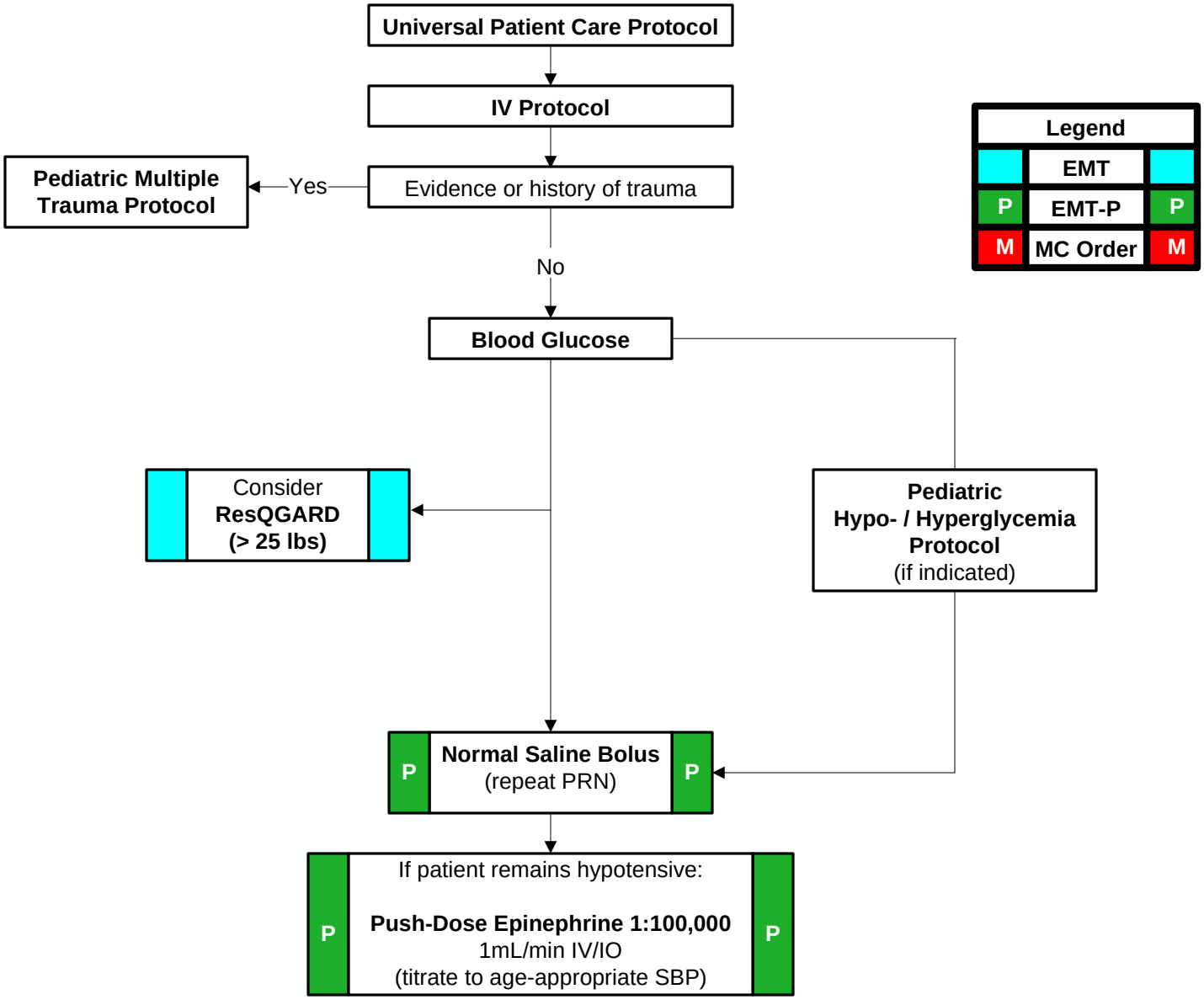
Special Considerations (cont.),

9. The hypothermic heart may be unresponsive to cardiovascular drugs, pacemaker stimulation, and defibrillation. In addition, drug metabolism is reduced. There is concern that in the severely hypothermic victim, cardioactive medications can accumulate to toxic levels in the peripheral circulation if given repeatedly. For these reasons IV drugs are often withheld if the victim's core body temperature is < 30°F (86°F)

10. As noted previously, a defibrillation attempt is appropriate if VF/VT is present. If the patient fails to respond to the initial defibrillation attempt or initial drug therapy, defer subsequent defibrillation attempts or additional boluses of medication until the core temperature rises above 30°C (86°F).

J
Pediatric Hypotension Shock (Non-Trauma)

History:	Signs / Symptoms:	Differential:
· < 16 years of age · Blood loss · Fluid loss Vomiting Diarrhea · Infection	· Restlessness, confusion, weakness · Dizziness · Increased HR, rapid pulse · Decreased BP · Pale, cool, clammy skin · Delayed capillary refill	· Trauma · Infection · Dehydration Vomiting Diarrhea Fever · Congenital heart disease · Medication or Toxin



J
Pediatric Hypotension Shock (Non-Trauma)

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.
2. Consider all possible causes of shock and treat per appropriate protocol.
3. Decreasing heart rate in the pediatric patient is a sign of impending collapse.
4. Shock may be present with a normal blood pressure initially.
5. Shock often is present with normal vital signs and may develop insidiously. Tachycardia may be the only manifestation.
6. Patients that remain hypotensive following standard fluid resuscitation:
   - **Push-Dose Pressor Epinephrine (1:100,000)**
     - Ø Dilute: Discard 9mL of Epi 1:10,000 (0.1mg/mL) and draw up 9mL of normal saline to create Push-Dose Pressor Epi 1:100,000. This will yield 10mcg/mL.
       - § Administer 1mL/minute IV/IO, titrate to maintain age-appropriate SBP.
       - § May repeat X 2 prn by standing order (protocol)
       - § Max total dose 300mcg (30mL)
     - Ø Push-Dose Pressor Epinephrine Precautions:
       - § Rapid (1 minute) onset, short (5-10) minute duration
       - § Monitor heart rate and blood pressure throughout administration

K
Pediatric
Multiple Trauma

History:	Signs / Symptoms:	Differential (Life Threatening):
• < 16 years of age • Time and mechanism of injury • Damage to structure or vehicle • Other injured or dead • Speed and details of MVC • Restraints / Protective equipment • Ejection • Past medical history • Medications	• Pain, swelling • Deformity, lesions, bleeding • Altered mental status • Unconscious • Hypotension or shock • Arrest	• Chest Injury — 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

Spinal Motion Restriction Protocol

Establish IV/IO Access

Vital Signs / Perfusion

Abnormal

Rapid Transport

Consider **ResQGARD (>25 lbs / 12Kg)**

P **NS Bolus PRN** P

Continued Hypotension ?
Continue fluid bolus

Consider:
Splinting of long bone fracture
Splinting of Pelvic fracture
Control of external hemorrhage

Tension Pneumothorax ?
Chest Decompression

Normal

Focused History and Physical Exam

Transport

Legend		
	EMT	
P	EMT-P	P
M	MC Order	M

K
Pediatric
Multiple Trauma

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.

2. Physical exam: Mental status, skin, HEENT, Heart, Lungs, Abdomen, extremities, back, and neurovascular status.

3. Mechanism of injury is the most reliable indicator of serious injury. Examine all restraints and protective equipment for damage.

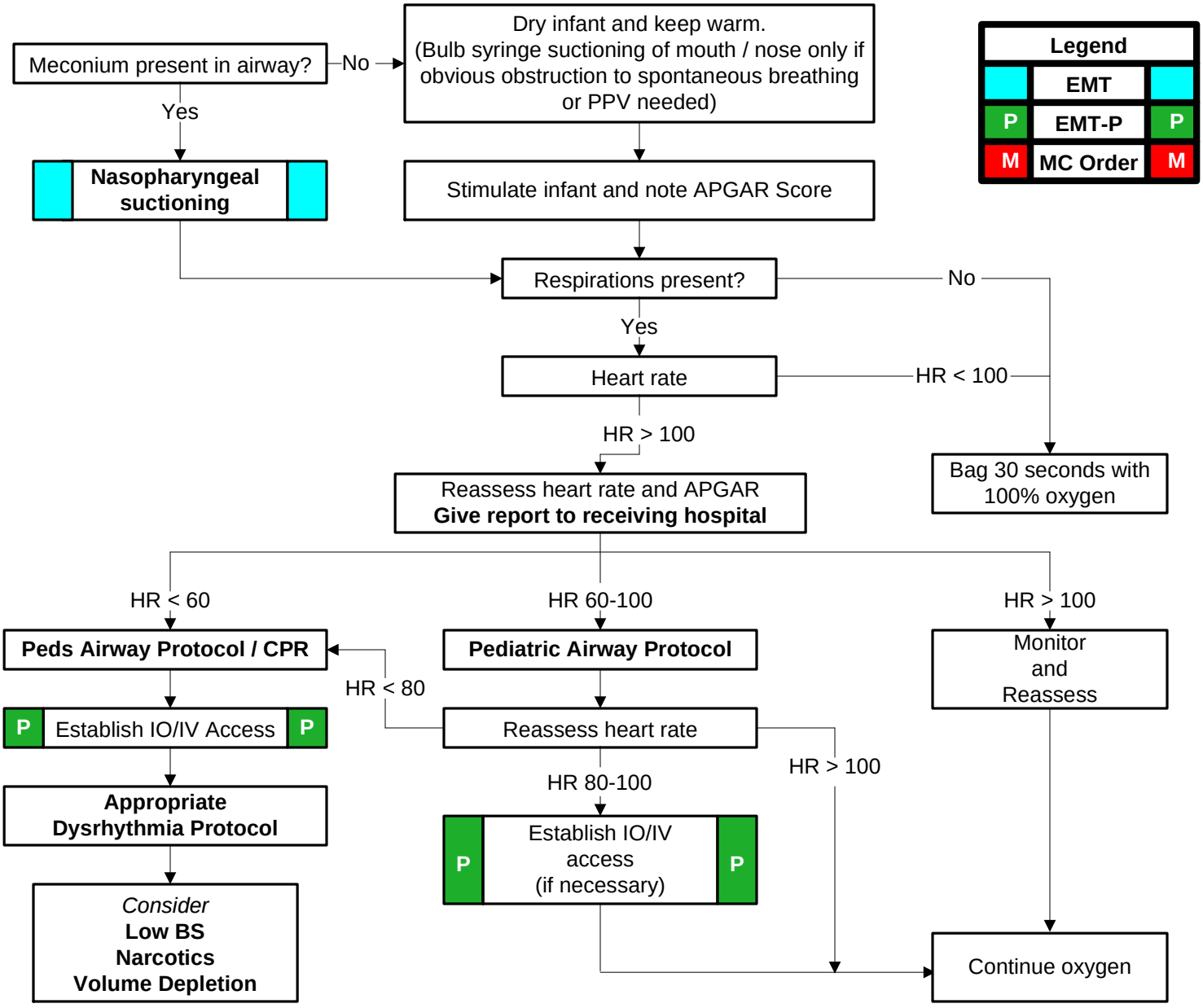
4. In prolonged extrications or serious trauma, consider air ambulance transportation.

5. Severe bleeding from an extremity, not rapidly controlled, may necessitate the application of a tourniquet.

6. Do not overlook the possibility of child abuse.

L
Neonatal Resuscitation

History:	Signs / Symptoms:	Differential:
• Due date and gestational age • Multiple gestation • Meconium • Delivery difficulties • Congenital disease • Medications (maternal) • Maternal risk factors	• Respiratory distress • Peripheral cyanosis or mottling (normal) • Central cyanosis (abnormal) • Altered level of response • Bradycardia	• Airway failure • Infection • Maternal medication effect • Hypovolemia • Hypoglycemia • Congenital heart disease • Hypothermia



L
Neonatal Resuscitation

Special Considerations:

1. Neonatal resuscitation priorities:
    a. Airway
    b. Breathing
    c. Circulation
    d. Temperature

2. Suctioning immediately following birth (including suctioning with a bulb syringe) should be reserved for babies who have obvious obstruction to spontaneous breathing or who require positive-pressure ventilation. Avoid stimulation of the back of the pharynx during suctioning. This may cause bradycardia in the newborn.

3. Light meconium staining, if present, may only need standard oral/nasal suctioning maneuvers with a neonate that presents vigorous (strong respiratory efforts, good muscle tone, heart rate > 100) upon assessment. If thick meconium is present, or an open adequate airway cannot be obtained, use laryngoscope and suction to clear the airway under direct visualization to avoid contamination of the lungs with meconium. Hypoxia and vagal stimulation can result if prolonged suctioning occurs. Do not stimulate the neonate to cry until the airway is cleared.

4. Supplementary oxygen is recommended whenever positive-pressure ventilation is indicated for resuscitation; free-flow oxygen should be administered to neonates who are breathing but have central cyanosis.

5. Neonates who remain apneic, gasping, HR < 100, or continued central cyanosis after administering initial steps, despite supplementary oxygen, should have positive-pressure ventilation initiated. Effective ventilation can be achieved with the appropriate sized bag-valve device and mask.

6. Endotracheal intubation may be indicated if bag-mask ventilation is ineffective. The timing of endotracheal intubation (field vs. ED) may also depend on the skill and experience of the available providers.

7. Establish intravascular access as necessary for volume and/or medication administration. **In a severely depressed neonate consider IO first for vascular access.**

L
Neonatal Resuscitation

Special Considerations (cont.),

APGAR Scoring Table

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
Respirations	Absent	Slow	Crying, Good

M
OPERATION SAFE HAVEN

RCOG EMS dispatch may receive calls requesting evaluation of an infant (up to 30 days after birth) who has been delivered by parent(s) to any fire or police station.

- A life squad shall be dispatched to perform any evaluation or intervention necessary to protect the infant's health or safety, and
- Transport the child to the closest appropriate hospital emergency department.

Response to the incident shall be un-interrupted Code 3 unless reliable medical information exists justifying a Code 2 response.

EMS workers obligations to whom a baby is ≤ 30 days old after birth
(ORC 2151; Effective March 24, 2009)

While acting in their official capacity an **EMS worker** (first responder, EMT-Basic, EMT-Intermediate, or EMT-Paramedic) on behalf of the Emergency Services Organization (as defined by 4765.01) that employs the worker or for which the worker provides services, **shall take possession** of a **child** who is ≤ 30 days after birth if that child's **parent** has **voluntarily delivered** the child to that person without the parent expressing an intent to return for the child.

Upon taking possession of the child the Emergency Services Organization **shall do all of the following**:

A. Perform any act necessary to protect the child's health or safety;

B. In Lucas County, notify RCOG EMS Dispatch that the child has been taken into possession;

C. When forms developed by the Ohio Department of Jobs and Family Service (ODJFS) are available designed to gather medical information concerning the child and the child's parents, provide such to surrendering parent;

Operation Safe Haven, continued

D. If available, offer written materials developed by ODJFS that describe services available to assist parents and newborns;

E. Only if the child appears to have a condition which reasonably indicates physical or mental abuse or neglect-attempt to identify and, if necessary, pursue the person who delivered the child;

EMS Workers Shall Not:

1. Coerce or otherwise try to force the parent into revealing the identity of the child's parents;

2. Pursue or follow the parent after the parent leave the place at which the child was delivered;

3. Coerce or otherwise try to force the parent not to desert the child;

4. Coerce or otherwise try to force the parent to accept the medical information forms promulgated by the ODJFS;

5. Coerce or otherwise try to force parent to accept materials promulgated by the ODJFS;

Items (1) and (2) above do not apply to a person who delivers or attempts to deliver a child who has suffered any physical or mental wound, injury, disability, or condition of a nature that reasonably indicates abuse or neglect of the child.

N
Pediatric Overdose
Toxic Ingestion

History:	Signs / Symptoms:	Differential:
• < 16 years of age • Ingestion or suspected ingestion of a potentially toxic substance • Substance ingested, route, quantity • Time of ingestion • Reason (suicidal, accidental, criminal) • Available medication in home • Past medical history, medications	• Mental status changes • Hypotension / Hypertension • Decreased respiratory rate • Tachycardia, dysrhythmias • Seizures	• Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Depressants • Stimulants • Anticholinergic • Cardiac medications • Solvents, alcohols, cleaning agents • Insecticides (organophosphates) • Cyanide Exposure

Universal Patient Care Protocol

↓

IV Protocol

↓

Differential

Legend	
	EMT
P	EMT-P
M	MC Order

Altered Mentation
Respiratory Depression → P | *Consider* **Narcan** 0.1mg/Kg IV/IO/IM/IN | P

Organophosphates → P | **Nerve Agent Antidote Kit** *(if available)* | P

Tricyclic Ingestion → P | Cardiac Arrhythmia? **Sodium Bicarbonate** 1mEq/Kg IV/IO | P

Beta Blocker → P | **Glucagon** IV / IN / IM 0.1mg/Kg | P

Calcium Channel Blocker → P | **Calcium Chloride** 20mg/Kg slow IV / IO | P

Cyanide Poisoning → P | **Cyanokit** 70mg/Kg IV/IO | P

Other → **Hypotension, Seizures, Ventricular dysrhythmias, or Mental status changes** → **Appropriate Protocol**

N
Pediatric Overdose
Toxic Ingestion

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age with suspected overdose or toxic ingestion.

2. All empty containers of ingested material should accompany patient to the hospital. All emesis should be saved for analysis.

3. Do not rely on patient history of ingestion, especially in suicide attempts.

4. **Maximum drug dosages:** Narcan = 2mg; Glucagon = 1mg; Calcium Chloride = 1 Gram; Sodium Bicarbonate = 50mEq; Atropine = 2mg/dose (minimum 0.1mg).

5. Overdose/Ingestion concerns:
    a. **Acetaminophen** – Initial presentation normal or nausea/vomiting. If not detected and treated, will cause irreversible liver failure.
    b. **Tricyclics** – 4 major areas of toxicity: seizures; dysrhythmias; hypotension; decreased mental status or coma; rapid progression from alert mental status to death.
    c. **Depressants** – decreased HR, decreased BP, decreased temperature, decreased respirations, non-specific pupils
    d. **Stimulants** – increased HR increased BP, increased temperature, dilated pupils, seizures.
    e. **Anticholinergic** – increased HR, increased temperature, dilated pupils, mental status changes.
    f. **Cardiac Meds** – dysrhythmias and mental status changes.
    g. **Solvents** – nausea, vomiting, and mental status changes.
    h. **Insecticides** – increased or decreased HR, increased secretions, nausea, vomiting, diarrhea, pinpoint pupils.

O
Pediatric
Pain Management

History:	Signs / Symptoms:	Differential:
• < 16 years of age • Location • Duration • Severity (1-10) • Past medical history • Medications • Drug allergies	• Severity (pain scale) • Quality (sharp, dull, etc.) • Radiation • Relation to movement, respiration • Increased with palpation of area	• Per specific protocol • Musculoskeletal • Visceral (abdominal) • cardiac • Pleural / Respiratory • Neurogenic • Renal (colic)

Universal Patient Care Protocol

Patient care according to **Protocol** based on **Specific Complaint**

Pain Severity ≥ 8 (FACES Scale)
-or-
Indication for parenteral analgesic

No → **Distraction Techniques**

Yes

P **IV Protocol** P

Isolated Extremity Traumatic Pain

No → M **Contact On-Line Medical Control** M

Yes

Pulse Oximetry

P **Fentanyl 1mcg/Kg IV/IO/IM/IN** P
Max. Initial dose: 50mcg

-Or-
Morphine 0.1mg/Kg IV/IO/IM
Max. initial dose: 5mg

M ***-Or-***
Ketamine IV/IO/IM/IN M
Dosing per ***On-Line Medical Control***

-Or-
Ketorolac (Toradol) IV/IM
Dosing per ***On-Line Medical Control***

-Or-
Dilaudid 0.015mg/Kg IV/IO/IM
Maximum dose: 2mg

Legend

	EMT	
P	EMT-P	P
M	MC Order	M

O
Pediatric
Pain Management

The practice of prehospital emergency medicine requires expertise in a wide variety of pharmacological and non-pharmacological techniques to treat acute pain resulting from myriad injuries and illnesses. Approaches to pain relief must be designed to be safe and effective in the dynamic prehospital environment. The degree of pain and the hemodynamic status of the patient will determine the urgency and extent of analgesic interventions.

A discussion with the patient (and/or caregivers) regarding realistic expectations for pain control is an element within the process of pain management that is frequently overlooked. Multiple factors that include, but are not limited to, type and severity of illness or injury, individual pain tolerance, extrication processes, and transport times are variables that may impact levels of pain as well as pain management. Dependent upon patient condition, scenario, and patient's pain tolerance, the goal of pain management may be pain control or reduction or discomfort rather than complete elimination of pain.

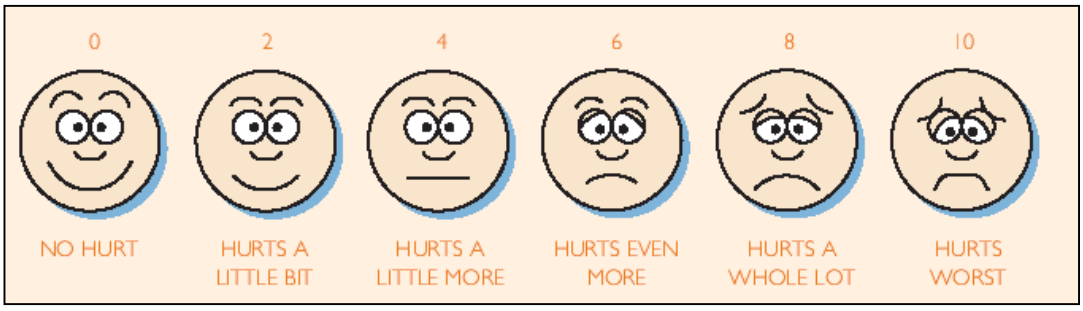
For this protocol, the pediatric patient is defined as < 16 years of age.

Objective measures or pain ratings improve pain management by:

- Balancing imprecise clinician pain assessment
- Tracking success of pain management

Pain Assessment:

- Numeric rating scale (1-10)
- Visual analog scale (pain level marked on a horizontal line
- Verbal rating scale (none, mild, moderate, severe, unbearable)
- Wong-Baker FACES Scale (pediatrics):



O
Pediatric
Pain Management

Pediatric Pain Management, continued

A number of studies have shown that early administration of analgesics allows patients to relax, removes voluntary guarding and permits better assessment of localized tenderness.

Safe Use of Analgesics:

A. Be aware of the effects of combining drugs: Adding one CNS depressant or hemodynamic depressant to another can create unpredictable changes.

B. Don't forget about medication allergies: Adding IV analgesics on top of recently taken oral sedatives, analgesics or muscle relaxants may cause unpredictable additive effects as well.

C. Know your pain management goal: Your goal may actually be different for different types of patients (Reduction of pain vs. removal of pain).

D. Reassess your patient frequently: Hemodynamic status and pain scale.

E. Give a complete report to ED staff: Drugs given, time, results, and adverse effects.

This guideline does not address pain management for the following patient presentations (for these patients, consultation with medical direction is recommended):

1. Pregnancy with active labor
2. Dental pain
3. Patients with care plans that prohibit the use of parenteral analgesics by EMS
4. Patients with chronic pain who are not enrolled in a hospice or palliative care plan

O
Pediatric
Pain Management

Pediatric Pain Management, continued:

Pain Management PEARLS:

- Assess serial vital signs with emphasis on blood pressure, respiratory status and level of consciousness.

B. **Parenteral analgesics administered in the field must be transported by a Lucas County EMS life squad or ALS service recognized by Lucas County EMS.**

C. **Parenteral analgesic administration may preclude a patient's ability to refuse transport due to possible altered mentation.**

General Considerations:

A. Determine the patient's onset and level of pain. A self-reported numeric scale is usually applicable to the adult population; however, the pediatric population presents a challenge to effectively evaluate pain level.

B. Utilize verbal reassurance to control anxiety.

C. If available, consider use of non-pharmaceutical pain management techniques:
   - Placement of the patient in a position of comfort
   - Application of ice packs and/or splints for pain secondary to trauma
   - Distraction techniques

D. Apply a cardiac monitor if indicated based upon patient assessment.

E. If the patient is experiencing moderate discomfort or if patient positioning and/or the application of ice packs and/or splints provides inadequate pain control, consider the administration of analgesics.

F. If the patient is experiencing severe to excruciating pain or the treatment provided to control moderate pain is ineffective or clinically inadequate, consider the administration of parenteral analgesics.

Pediatric Pain Management, continued:

G. **If indicated, based upon pain assessment and as vital signs allow, parenteral analgesics (Fentanyl, Morphine) may be administered by protocol following the dosing guide provided. Ketamine, Ketorolac (Toradol), and Dilaudid require On-Line Medical Control contact/authorization for administration.**

D. ***On-Line Medical Control*** contact required for any repeat dosing of parenteral analgesics (pediatric patients).

E. Contraindications to Fentanyl, Morphine and Dilaudid use include hypotension, head injury, respiratory distress or severe COPD.

Pain management for patient presentations not addressed by this protocol should receive On-Line Medical Control authorization before administration.

Q
Pediatric Pulseless Arrest

History:	Signs / Symptoms:	Differential:
• < 16 years of age • Time of arrest • Medical history • Medications • Possibility of foreign body • Hypothermia • Suspected abuse • SIDS	• Unresponsive • Cardiac arrest	• Respiratory failure (foreign body, secretions, infection) • Hypovolemia • Congenital heart disease • Trauma • Tension pneumothorax • Hypothermia • Toxin or medication • Hypoglycemia • Acidosis

Cardiac Arrest Protocol

CPR

Ventricular Fibrillation / Tachycardia

P **Defibrillate: 2J/Kg** P
Immediately start CPR

P **Airway Protocol** P
Establish IO/IV Access

Give 5 cycles of CPR after shock

P **Defibrillate 4 J/Kg** P
Resume CPR

P **Epinephrine 0.1mg/mL** P
0.01mg/Kg IO/IV
Repeat q 5 min.

Give 5 cycles of CPR after shock

P **Defibrillate 4 J/Kg** P
Resume CPR

P **Amiodarone** P
5mg/Kg IO/IV

Give 5 cycles of CPR after shock

Asystole / PEA

P **Airway Protocol** P
Establish IO/IV Access

P **Epinephrine 0.1mg/mL** P
0.01mg/Kg IO/IV
Repeat q 5 min.

Continue CPR 5 cycles at a time
Check rhythm between cycles of CPR

Consider and Treat Causes:

- Hypoxemia - **Oxygenate**
- Acidosis - **Oxygen**, **Bicarb**
- Volume depletion - **Fluid bolus**
- Tension pneumothorax
- Hypothermia - Warm the patient
- Hypoglycemia - **Dextrose**

Legend	
	EMT
P	EMT-P
M	MC Order

Transport: Pediatric Arrest

Any pediatric (<16) cardiac arrest not related to trauma or hemorrhage shall be transported to the closest available 'STEMI' / Cardiac Resuscitation Center:

- St. Vincent / Toledo / Flower / St. Anne / Mercy P-Burg
  (UTMC will not be assigned for Pediatric Arrest destination)

Q
Pediatric
Pulseless Arrest

Special Considerations:

1. This protocol applies to the pediatric patient (< 16 years of age) who has sustained cardiac arrest.

2. Cardiac arrest is a life-threatening condition and treatment should begin utilizing the appropriate outlined therapies. Contact with ***On-Line Medical Control*** should occur when time permits to allow for early notification of patient assessment, treatments rendered in the field, and transport capabilities/decisions.

3. The pediatric emergency is rarely preceded by chronic disease. The most common cause of pediatric cardiac arrest is hypoxia.

4. For considerations specific to Pediatric Traumatic Arrest refer to LCEMS protocol Pediatric Traumatic Arrest (Tab 1100).

5. For considerations specific to Pediatric Hypothermic Arrest refer to LCEMS protocol Pediatric Hypothermic Arrest (Tab 1100).

6. Aggressive, appropriate BLS and ALS interventions are necessary for improved survivability from cardiac arrest. The on-scene paramedics should make any necessary field assignments so that all resources are utilized to their fullest extent (i.e., CPR, ventilation control, patient packaging).

7. Vascular access is essential for administering medications and fluid. Venous access may be challenging in infants and children during an emergency, whereas intraosseous (IO) access can be easily achieved. Limit the time you attempt venous access, and if you cannot achieve reliable access quickly, establish IO access. **In cardiac arrest immediate IO access is recommended if no other IV access is already in place.**

8. The first paramedic on scene should check effectiveness of CPR. Make modifications as necessary for optimal compression / ventilation performance.

9. In the pediatric patient, bag-mask ventilation can be as effective as ventilation through an endotracheal tube for short periods and may be safer. Repeated attempts at advanced airway placement should not be performed.

10. All intubated pediatric cardiac arrests patients shall have capnographic monitoring initiated.

Q
Pediatric
Pulseless Arrest

Special Considerations (cont.),

11. The AutoVent (ATV), using pediatric settings, can deliver consistent tidal volume (TV) and rate. Consider its use on a basic facemask or advanced airway for better ventilatory control. **The AutoVent should not be used on pediatric patients < 20Kg.**

12. The ResQPOD (ITD) attached to a basic facemask and/or advanced airway improves hemodynamics during chest compressions and increases the likelihood of ROSC from a cardiac arrest state. **The ResQPOD should be used in the pediatric patient > 1 year of age.**

13. In an un-witnessed pediatric V-Fib/Pulseless V-Tach arrest, CPR should be performed for 1-2 minutes before defibrillation and pulse check. Compressions delivered up until the time of defibrillation will raise coronary perfusion pressures (CPP) and ROSC may be more successful. **Perform CPR for 1-2 minutes immediately following defibrillation, before the rhythm is checked.**

14. The importance of efficient, high-quality CPR cannot be over emphasized. Compression to ventilation ratio for two rescuers is 15:2. In a patient with an unsecured airway, the ResQPOD should be attached to a facemask and a tight face seal maintained. CPR should continue at a 15:2 ratio without the ResQPOD timing light engaged. Once an advanced airway is placed, the ResQPOD should be attached, timing light engaged, and ventilations become asynchronous with chest compressions. Care should be taken not to over-ventilate the patient. Follow the AHA recommended pediatric guidelines for the performance of CPR.

15. Respiratory reserve is small in the pediatric patient. Insults such as improper positioning, vomitus or airway narrowing can lead to major airway problems.

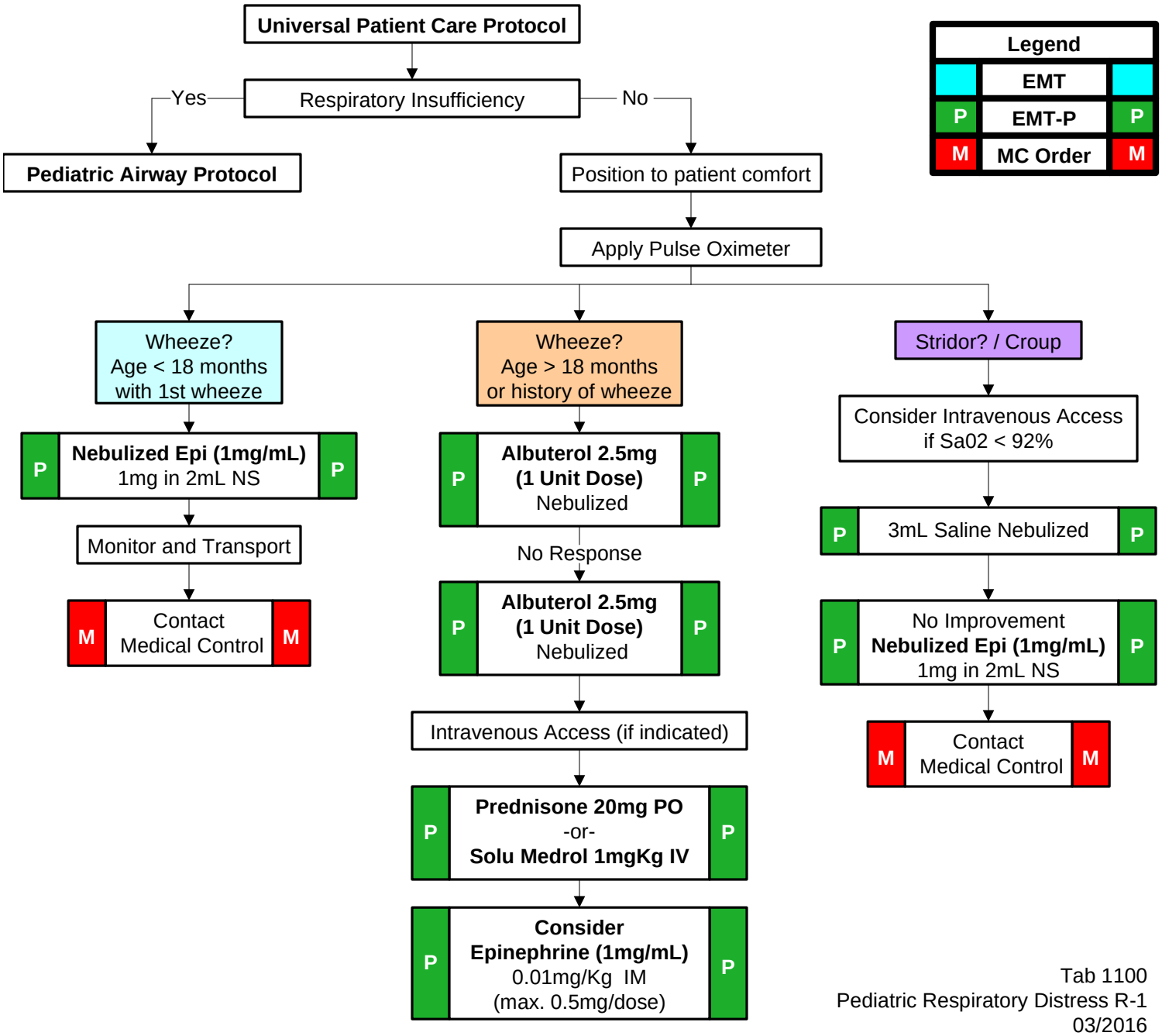
Transport Considerations: Pediatric Pulseless Arrest

A. Any pediatric (<16) cardiac arrest not related to trauma or hemorrhage should be triaged to the closest “STEMI” / Cardiac Resuscitation Center. Upon notification, LCEMS Dispatch will determine the closest open facility, and assign med channel for MC contact.

B. “STEMI” / Cardiac Resuscitation Centers include Mercy St. Vincent, Promedica Toledo, Promedica Flower, Mercy St. Anne and Mercy Perrysburg hospitals. **UTMC will not be utilized as a transport destination for pediatric cardiac arrest.**

R
Pediatric
Respiratory Distress

History:	Signs / Symptoms:	Differential:
• < 16 years of age • Time of onset • Possibility of foreign body • Medical history • Medications • Fever or respiratory infection • Other sick siblings • History of trauma	• Wheezing or stridor • Respiratory retractions • Increased heart rate • Altered level of consciousness • Anxious appearance	• Asthma • Aspiration • Foreign body • Infection (pneumonia, croup, epiglottitis) • Congenital heart disease • Medication or toxin • Trauma



R
Pediatric
Respiratory Distress

Special Considerations:

1. This protocol applies to the pediatric patient (< 16 years of age) who is characterized in a clinical state to have respiratory distress requiring medical intervention to prevent respiratory and/or cardiac arrest.

2. Pulse oximetry should be monitored continuously if initial saturation is ≤ 96%, or there is a decline in patient status despite normal pulse oximetry readings.

3. Do not force a child into a position. They will protect their airway by their body position.

4. With respiratory distress of sudden onset, think of foreign body airway aspiration. The mouth is a major sensory organ for children. The paramedic must anticipate infants and children placing a multitude of obstructive hazards in their airway.

5. Total airway obstructions that cannot be cleared by conventional methods may require surgical needle cricothyrotomy in emergency situations.

6. Wheezing is the hallmark of lower airway obstruction. Decreased unequal or absent breath sounds also can occur. The respiratory rate is generally rapid (although when expiration becomes prolonged, the rate may fall). Bronchiolitis, asthma, and foreign body obstruction should be strongly considered. Bronchiolitis is a viral infection typically affecting infants which results in wheezing which may not respond to Albuterol treatment.

7. Consider CPAP in the pediatric patient over 12 years of age when clinical indications are present for use ***(Refer to the CPAP Protocol: Tab 500 – Section H).*** The patient must fit the CPAP mask.

Special Considerations (cont.),

8. Upper airway obstruction and stridor are usually due to croup, viral disease with inflammation, edema, or narrowing of the larynx, trachea or bronchioles. Croup usually affects infants and toddlers (< 2 years of age). Most children with croup present with a history of cold-type symptoms followed by the development of a barking or "seal" cough, stridor and various levels of respiratory distress. Many times accompanied by a low-grade fever, the symptoms of croup often worsen during the night-time hours. The severity of symptoms will vary widely among patients.

9. 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, and drooling is common. Airway manipulation and patient agitation may lead to total airway obstruction and worsening of the patient's condition. IV attempts, which may increase patient agitation, are strongly discouraged.

10. If children with croup, Epiglottitis or laryngeal edema present in respiratory arrest, it is usually due to exhaustion or airway obstruction. Ventilation by bag-valve mask may be difficult due to airway edema. Epiglottitis and croup can become total airway obstructions very quickly.

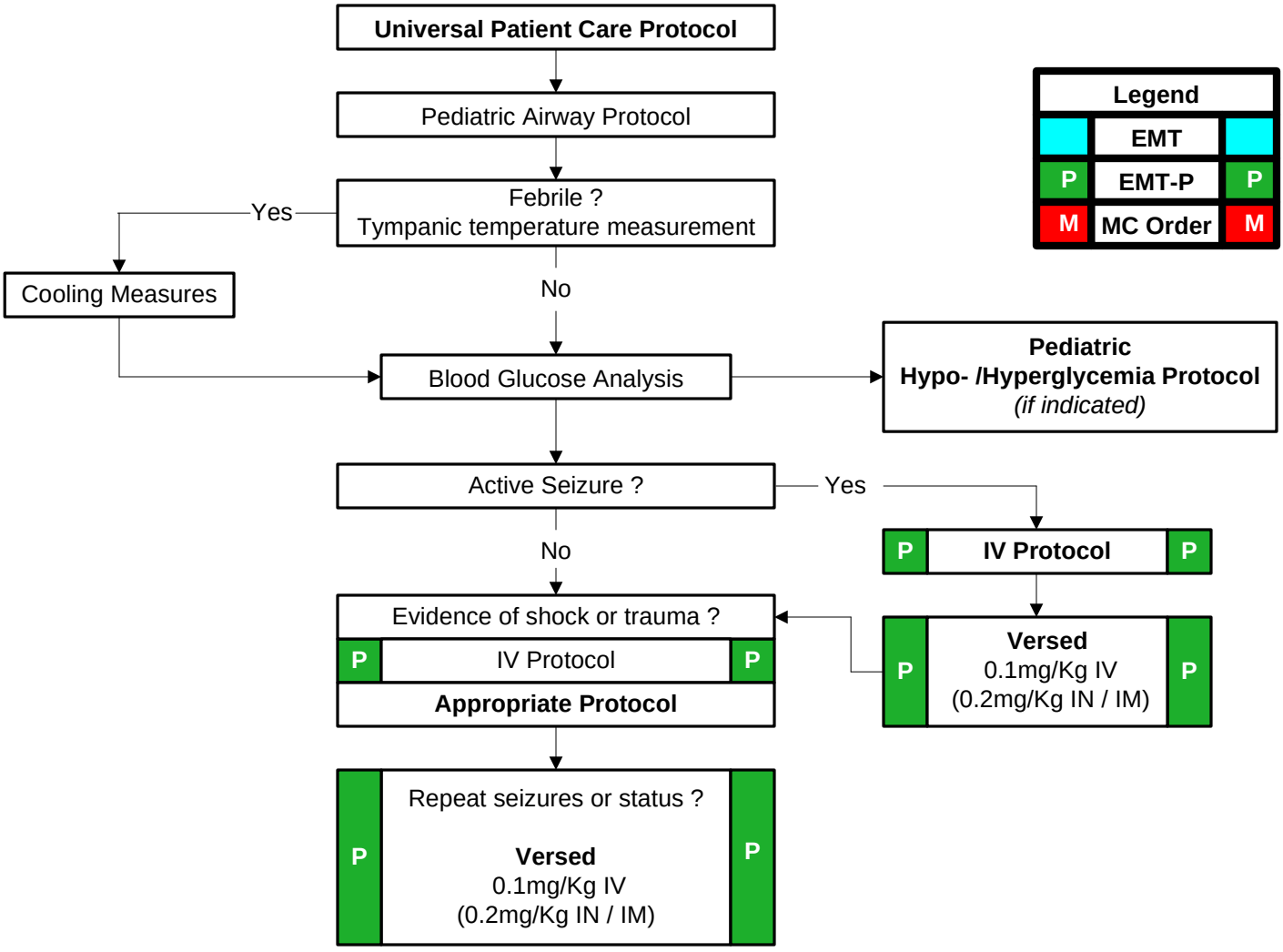
11. If administration of a Steroid is required, evaluate your patient's ability to swallow. Solu Medrol should be administered IV for those patients unable to swallow Prednisone PO.

12. Nebulized Epinephrine (1mg/mL) is administered by adding 1mg Epinephrine to 2mL normal saline. Maximum = 3mL/dose.

13. For patients using Xopenex, you may continue a treatment or initiate one treatment in place of Albuterol. Use patient meds (Dosing 0.31 – 1.25mg) via nebulizer.

S
Pediatric Seizures

History:	Signs / Symptoms:	Differential:
• Fever • Prior history of seizures • Seizure medications • Reported seizure activity • History of recent head trauma • Congenital abnormality	• Observed seizure activity • Altered mental status • Hot, dry skin or elevated body temperature	• Fever • Infection • Head trauma • Medication or toxin • Hypoxia or respiratory failure • Hypoglycemia • Metabolic abnormality / acidosis • Tumor



S
Pediatric Seizures

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.

2. If actively seizing patient is encountered, move hazardous material away from the patient. Protect the patient's head from injury. Remember to always immediately check for pulses after seizure activity stops.

3. Trauma to the tongue during seizure activity is unlikely to cause serious problems. Attempt to force anything into the patient's airway may cause complete obstruction.

4. If febrile, remove clothing and sponge with room temperature water. Do not delay transport for cooling measures. Removal of clothing may be all that is necessary.

5. Unlike the adult with a diagnosis of Epilepsy, a child who has had a seizure usually requires transport. Do not be falsely reassured by a child who appears to return to normal status quickly.

6. Seizures in children may not always present tonic-clonic (generalized) in nature. Unusual gaze/eye movement, unresponsiveness, or localized twitching may be the only clue. Parents or caregivers are usually very sensitive to the abnormality and potential seriousness of the child's presentation.

7. The diagnosis of "febrile seizures" can be difficult to make in the field. Other causes must be excluded. Temperature measurements (tympanic thermometer) should be acquired with suspicion of fever.

8. ***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 start as a focal seizure and become generalized.

Special Considerations (cont.),

9. If evidence or suspicion of trauma, full c-spine immobilization is required.\

10. For control of seizures, administer Versed 0.1mg/Kg IV (0.2mg/Kg IN / IM) not to exceed a single maximum dose of 2mg. Versed may be repeated x 1 in 5 minutes as needed for seizure control. Additional dosing of anti-seizure medication must be authorized by ***On-Line Medical Control***. A perfusing blood pressure must be maintained with dosing of Versed..

T
Pediatric Tachycardia

History:	Signs / Symptoms:	Differential:
• < 16 years of age • Past medical history • Medications or toxic ingestion • Drugs • Congenital heart disease • Respiratory distress • Syncope or near-syncope	• Heart rate: Child > 180/bpm Infant > 220/bpm • Pale or cyanosis • Diaphoresis • Tachypnea • Vomiting • Hypotension • Altered level of consciousness • Pulmonary congestion • Syncope	• Heart disease (congenital) • Hypo / Hyperthermia • Hypovolemia or Anemia • Electrolyte imbalance • Anxiety / Infection / Sepsis • Hypoxia • Hypoglycemia • Medication / Toxin / Drugs • Pulmonary embolus • Trauma • Tension pneumothorax

Universal Patient Care Protocol

Continuous Cardiac Monitor
Attempt to Identify Cause

Legend	
	EMT
P	EMT-P
M	MC Order

12-Lead ECG
Evaluate Rhythm

Evaluate
QRS Duration

QRS Duration
(< 0.09 sec.)

Wide QRS
(> 0.09 sec.)

Probable Sinus Tachycardia

Search for
and
treat cause

Probable Supraventricular Tachycardia

Stable

Vagal Maneuvers
Ice Pak to face
or Valsalva

Establish IV Access

P **Adenocard**
0.1mg/Kg IV (1st)
0.2mg/Kg IV (2nd)
flush each w/5mL NS P

Unstable
No palpable BP
Altered Mental Status

P **Cardioversion**
1.0 Joules/Kg
Consider Sedation P

P **Repeat Cardioversion**
2.0 Joules/Kg P

Establish IV Access

P **Adenocard**
0.1mg/Kg IV (1st)
0.2mg/Kg IV (2nd)
flush each w/5mL NS P

Probable Ventricular Tachycardia

P **Cardioversion**
1.0 Joules/Kg
-If not effective-
2.0 Joules/Kg
Consider
Sedation P

M **Contact**
Medical Control

Amiodarone
5mg/Kg IV
over 20 minutes M

If rhythm changes
Go to Appropriate Protocol

T
Pediatric Tachycardia

Special Considerations:

1. This protocol applies to pediatric patients (< 16 years of age) who present with symptomatic tachycardia which may include:
    a. Atrial Fibrillation/Flutter
    b. Wide Complex Tachycardia of uncertain type
    c. SVT (Supraventricular Tachycardia)
    d. VT (Ventricular Tachycardia)

2. If there are no palpable pulses proceed with the Pulseless Arrest Protocol. If pulses are palpable, look for signs of hemodynamic compromise (i.e., poor perfusion, tachypnea, weak pulses).

3. Sinus tachycardia should be differentiated from SVT:

Sinus Tachycardia	SVT
Compatible history consistent with known cause	Compatible history (vague, nonspecific); history of abrupt rate changes
P waves present / normal	P waves absent / abnormal
Variable R-R; constant PR	HR not variable
Infants: rate usually < 220bpm	Infants: rate usually > 220 bpm
Children: rate usually < 180bpm	Children: rate usually > 180 bpm

4. Tachycardia can be caused by many underlying factors. The following possible causes should be considered, and if verified, appropriate treatment administered:

    a. Hypovolemia
    b. Hypoxia
    c. Hydrogen ion – Acidosis
    d. Hyper / Hypokalemia
    e. Hypothermia
    f. Hypoglycemia
    g. Toxins
    h. Tamponade, Cardiac
    i. Tension pneumothorax
    j. Thrombosis, Coronary / Pulmonary

T
Pediatric Tachycardia

Special Considerations (cont.),

5. For symptomatic SVT, attempt vagal stimulation first unless the patient is very unstable and if it does not unduly delay chemical or electrical cardioversion. In infants and young children, apply ice to the face without occluding the airway. In older children, Valsalva maneuvers are safe.

6. Chemical cardioversion with Adenocard is very effective. In the pediatric patient dose at 0.1mg/kg (not to exceed 6mg) rapid push followed by rapid 5mL bolus of normal saline. The second dose of Adenocard may be doubled (0.2mg/kg) not to exceed 12mg. NOTE: If vascular access is not readily available or patient demonstrates cardiovascular compromise cardiovert at 1.0 Joules/kg.

7. Patients requiring sedation prior to cardioversion should receive Versed 0.1mg/Kg IV/IO (maximum single dose 2mg). Absent IV access, consider administration of Versed (0.2mg/Kg) IN.

    - If Versed allergy exists, consider analgesic administration as outlined in **Tab 1100 Section O: Pediatric Pain Management.**

U
Pediatric
Traumatic Cardiac Arrest

History:	Signs / Symptoms:	Differential:
• < 16 years of age • Mechanism of injury • Time of arrest • Medical history • Medications	• Unresponsive • Cardiac arrest	• Hypoxia secondary to respiratory arrest (chest trauma) • Injury to vital structures • Severe head injury with secondary cardiovascular collapse • Underlyng medical problems causing the trauma • Extreme blood loss

Universal Patient Care Protocol

Cardiac Arrest Protocol

Pediatric Airway Protocol
with Trauma Precautions

Legend	
	EMT
P	EMT-P
M	MC Order

Ventricular Fibrillation / Tachycardia

P — **Defibrillate: 2J/Kg**
Immediately start CPR
Airway Protocol
Establish IO/IV Access — P

Give 5 cycles of CPR after shock

P — **Defibrillate 4J/Kg**
Resume CPR — P

P — **Volume Replacement**
Fluid Bolus IO/IV
(repeat as necessary) — P

P — **Pediatric Pulseless Arrest Protocol** — P

Asystole / PEA

P — Establish IO/IV Access — P

P — **Volume Replacement**
Fluid Bolus IO/IV
(repeat as necessary) — P

P — **Pediatric Pulseless Arrest Protocol** — P

Consider and Treat Causes:

- Hypoxemia - Oxygenate
- Acidosis - Oxygen, **Bicarb**
- Volume depletion - **Fluid bolus**
- Tension pneumothorax
- Hypothermia - Warm the patient
- Hypoglycemia - **Dextrose**

U
Pediatric
Traumatic Cardiac Arrest

Special Considerations:

1. This protocol applies to the pediatric patient (< 16 years of age) who has sustained cardiac arrest due to significant trauma.

2. Common errors in pediatric trauma resuscitation include failure to open and maintain the airway, failure to provide appropriate fluid resuscitation, and failure to recognize and treat internal bleeding.

3. When the mechanism of injury is compatible with spinal injury, restrict motion of the cervical spine and avoid traction or movement of the head and neck. Open and maintain the airway with a jaw thrust, and do not tilt the head.

4. Do not over-ventilate even in case of head injury. Intentional brief hyperventilation may be used as a temporizing rescue therapy when you observe signs of impending brain herniation.

5. Suspect thoracic injury in all thoracoabdominal traumas, even in the absence of external injuries. Tension pneumothorax, hemothorax, or pulmonary contusion may impair breathing.

6. Treat signs of volume depletion with a bolus of 20mL/kg of Normal Saline. Repeat (x 2) as necessary. Any additional bolus amounts should be approved through ***On-Line Medical Control Contact***.

7. Consider intra-abdominal hemorrhage, tension pneumothorax, pericardial tamponade, spinal cord injury in infants and children. Consider intracranial hemorrhage in infants with signs of shock.

8. The most common terminal cardiac rhythms observed in victims of trauma are PEA, bradyasystolic rhythms, and occasionally VF/VT. Although epinephrine is typically administered during the ACLS treatment of these arrhythmias, it will likely be ineffective in the presence of uncorrected severe hypovolemia

U
Pediatric
Traumatic Cardiac Arrest

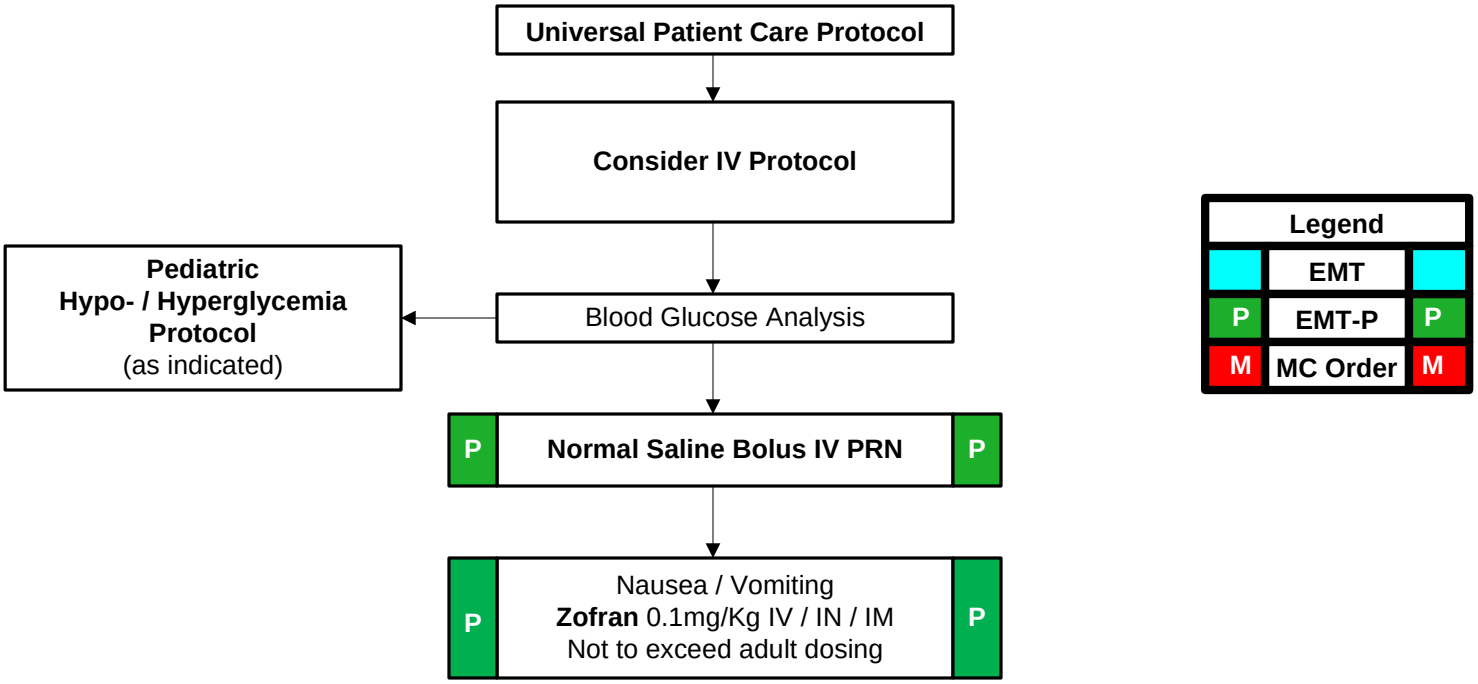
Special Considerations (cont.),

9. Pediatric traumatic arrest patients should be **transported to the closest available Level 1 or Level 2 Trauma Center.**

10. Consider air ambulance response in settings where long extrication is necessary. On-scene physician evaluation and treatment may prove beneficial for patient survival. Mode of transport (ground vs. air) should be evaluated for most expeditious delivery of patient to the emergency department.

V
Pediatric
Vomiting and Diarrhea

History:	Signs / Symptoms:	Differential:
• Age < 16 • Time of last meal • Last bowel movement/ emesis • Improvement or worsening with food or activity • Duration of problem • Other sick contacts • Past medical history • Medications • Menstrual history (pregnancy) • Travel history • Bloody emesis / diarrhea	• Pain • Character of pain • Distention • Constipation • Diarrhea • Anorexia • Radiation **Associated symptoms:** **(Helpful to localize source)** Fever, headache, blurred vision, weakness, malaise, cough, headache, dysuria, mental status changes, rash	• CNS • Myocardial infarction • Drugs (NSAID's, antibiotics, narcotics, chemotherapy) • GI or renal disorders • Diabetic ketoacidosis • Gynecologic disease • Infections (pneumonia, influenza) • Electrolyte abnormalities • food or toxin induced • Medication or substance abuse • Pregnancy • Psychological



V
Pediatric
Vomiting and Diarrhea

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.

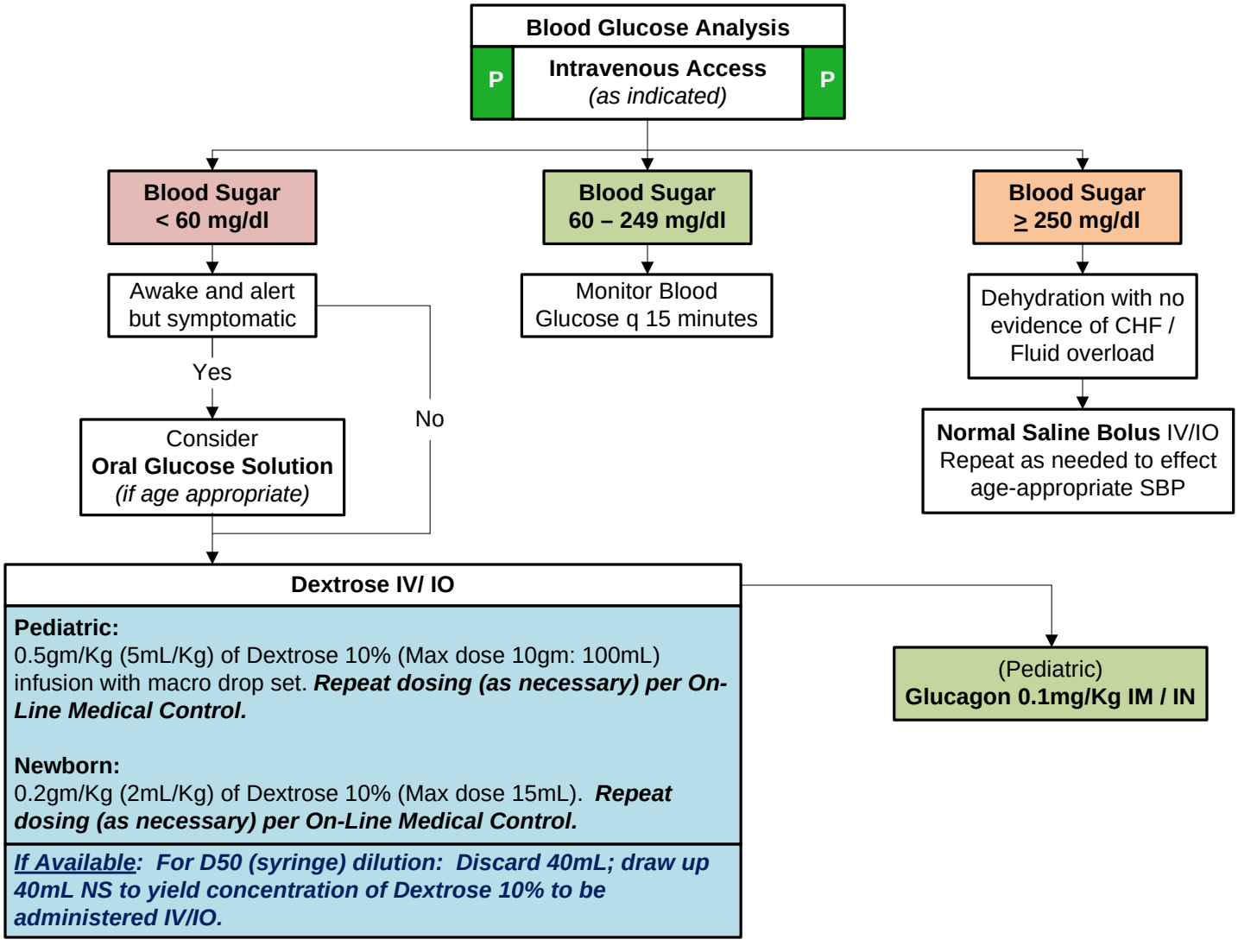
2. Complete assessment and physical exam including evaluation of mental status, skin, HEENT, neck, heart, lungs, abdomen, back, extremities and neuro.

3. Frequent re-assessments are needed to monitor vascular status.

4. For severe nausea and/or vomiting administer Zofran 0.1mg/Kg (Ages 2-15) not to exceed normal adult dose.

W
Pediatric
Hypo- / Hyperglycemia

History:	Signs / Symptoms:	Differential:
· Past medical history · Medications · Recent illness · Recent blood glucose check · Last meal	· Altered mental status · Combative / irritable · Diaphoresis · Seizures · Abdominal pain · Nausea / vomiting · Weakness · Dehydration · Deep / rapid breathing	· Alcohol / drug use · Toxic ingestion · Trauma; head injury · Seizure · CVA · Altered baseline mental status



W
Pediatric
Hypo- / Hyperglycemia

Important Dosing Information:

(Manufacturer allocation and supply dictates inventory of Dextrose that is available for patient administration. Dextrose 10% is the preferred concentration for patient use. In the event that Dextrose 10% is not available, protocol provisions allow for alternate dosing using a dilution process with Dextrose 50% (if available). Always follow the dosing guidelines provided within this protocol/document.)

Special Considerations:

1. For this protocol, the pediatric patient is defined as < 16 years of age.

2. It is safer to assume hypoglycemia than hyperglycemia if doubt exists. Recheck blood glucose after therapy with Dextrose or IN / IM Glucagon.

3. Do not administer oral glucose to patients that are not able to swallow or protect their own airway.

4. For symptomatic patients with low blood sugar values, and absent intravenous access, administer Glucagon IN / IM (age-appropriate dosing).

5. Patients with prolonged hypoglycemia may not respond to Glucagon.

6. For patients with altered mentation and combative (or aggressive) behavior, consider restraints for patient and/or personnel's protection.

7. ***On-Line Medical Control*** contact is **required** for any treat/release or refusal of treatment and/or transport with appropriate documentation and signatures obtained in the ePCR.