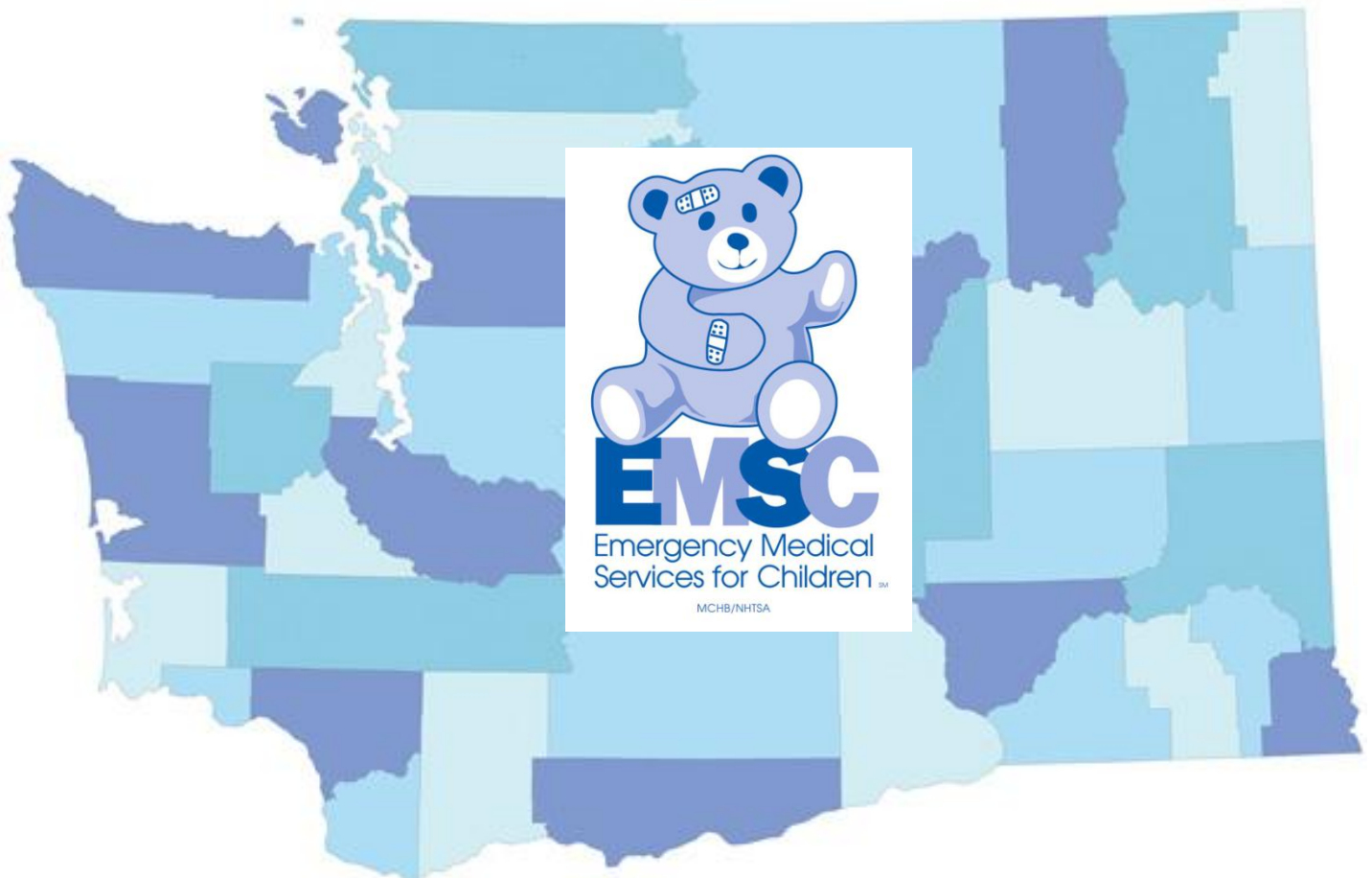


Emergency Medical Service Pediatric Guidelines and Procedure Manual

On Behalf of the Washington State Department of Health, the State Pediatric TAC Committee was charged with drafting proposed pediatric guidelines that the EMS agencies in Washington States thirty-nine counties could use in setting a standard for emergency medical care and treatment to the children of Washington State.

Please note that the proposed protocol guidelines are not mandatory for Washington State EMS agencies. The protocol guidelines are meant to assist in the development of local or regional protocols. It is the committees hope that county or regional EMS agencies will review these protocol guidelines with their respective Medical Program Directors and legal council when drafting their own individualized protocols.



Washington State Pediatric TAC

January 24, 2011

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Pediatric General Assessment

A child's psychosocial and communication skills are constantly changing. Therefore, a child may be unable to convey key information to assist the emergency personnel in their assessment. These differences, as well as numerous others, are why emergency personnel must develop assessment skills that address the unique aspects and needs of the child. The Prehospital pediatric initial assessment teaching tool provides a systematic and comprehensive approach to the initial assessment of the child.

General Approach to a Stable Pediatric Patient

Assessment and interventions must be tailored to each child in terms of age, size, development and metabolic status. The following information may be useful in communicating with a pediatric patient:

- Smile if appropriate to the situation.
- Keep voice at an even quiet tone, don't yell.
- Speak slowly; use simple age appropriate terms.
- Use toys or penlights as distracters; make game of assessment.
- Keep children with their caregiver(s); encourage assessment while caregiver is holding the child when appropriate.
- Whenever appropriate, transport the child with the caregiver.
- Kneel down to the level of the child if possible.
- Make as many observations as possible before touching the child.

Initial inspections while walking up to the child, observe/inspect the following:

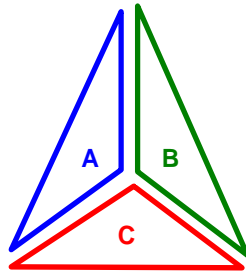
- General appearance
- Age appropriate behavior and level of consciousness
- Obvious respiratory distress or extreme pain
- Position of patient
- Unusual/significant odor
- Muscle tone: good or limp
- Movement: spontaneous, purposeful, symmetrical
- Color: pink, pale, flushed, cyanotic, mottled
- Obvious injuries



Pediatric Assessment

APPEARANCE

- Tone
- Interactiveness
- Consolability
- Look/Gaze
- Speech/Cry



BREATHING

- Abnormal Sounds
- Abnormal Position
- Flaring
- Retracting

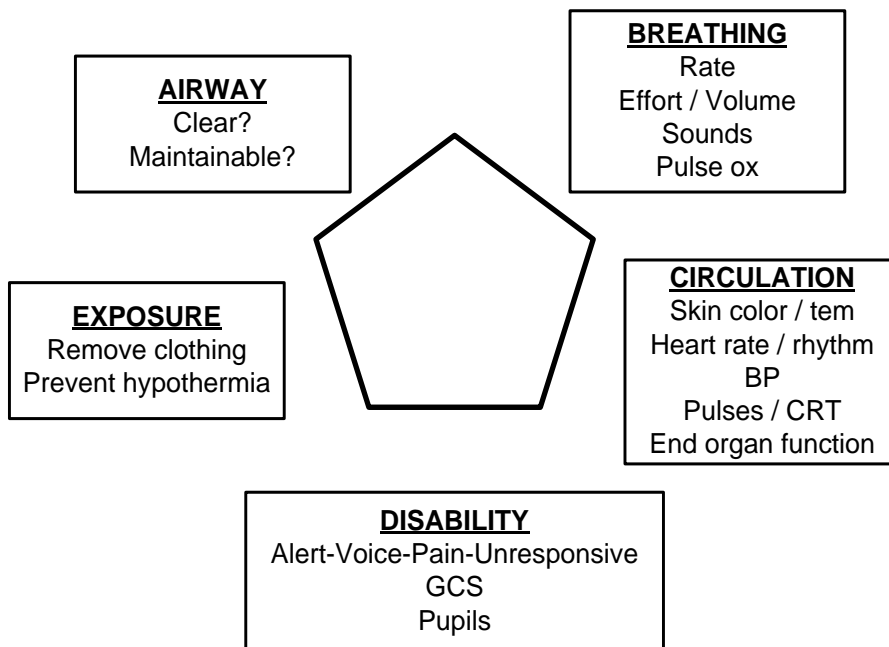
CIRCULATION

- Pallor
- Mottling
- Cyanosis

DECISION POINT

Any abnormalities above OR concerning life-threatening complaint?
Consider life saving interventions
Contact ALS if not enroute

Primary and Ongoing Assessment



DECISION POINT

Any abnormalities above OR concerning life-threatening complaint?
Consider life saving interventions
Contact ALS if not enroute



Pediatric References

Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Age	Newborn - 3 mos	6 mos	9 mos	1 yr	2 yrs	3 yrs	5 yrs	7 yrs	10 yrs
Pulse	100	100	100	90	90	80	70	70	70
Respiratory Rate	30-60	30-60	30-60	24-40	24-40	22-34	18-30	18-30	18-30
Blood Pressure	60 mmHg	60 mmHg	60 mmHg	70 mmHg	70 mmHg	80 mmHg	80 mmHg	80 mmHg	90 mmHg
Endotracheal uncuffed	3.0	3.5	3.5	4.0	4.5	5.0	5.5	6.0	6.5
Endotracheal cuffed	2.5	3.0	3.0	3.5	4.0	4.5	5.0	5.5	6.0
Nasogastric Tube	5 Fr	5 Fr	8 Fr	8-10 Fr	10 Fr	10 Fr	12 Fr	14 Fr	16 Fr
Defibrillation	8 J	12 J	16 J	20 J	24 J	30 J	38 J	48 J	60 J
BP cuff	Infant	Infant			Child	Child	Child	Child	Small Adult
Fluid Challenge	80 mL	120 mL	160 mL	200 mL	240 mL	300 mL	400 mL	430 mL	600 mL
BMV	Infant	Child			Child	Child	Child	Child	Adult
Cardioversion	2-4 J	3-6 J	0-0 J	0-0 J	6-12 J	8-15 J	0-0 J	12-24 J	15-30 J
Suction Catheter	6 Fr	8Fr			10Fr	10Fr		10Fr	12Fr



Pediatric Pain Assessment

(1) Children must have appropriate control of pain and anxiety.

All children need:

- **Background pain control.** Scheduled, not prn.
- **Breakthrough pain control.** PCA is an option for ≥ 10 y/o.
- **Procedural pain control.** If wound care or a procedure cannot be accomplished with meds you are comfortable prescribing, consider an anesthesia assisted procedure or booking the procedure in the OR.

Use pediatric pain scales: **FLACC** (0-2 yrs) or **Oucher** (3-7 yrs)

FLACC Category	Scoring		
	0	1	2
Face	No particular expression; smile	Grimace or frown; withdrawn; disinterested	Frequent quivering chin; clenched jaw
Legs	Normal position; relaxed	Uneasy; restless; tense	Kicking; legs drawn up
Activity	Lying quietly; moves easily	Squirming; shifting back & forth; tense	Arched; rigid or jerking
Cry	No cry	Moans / whimpers; occasional complaint	Crying steadily; screams, sobs; frequent complaint
Consolability	Content, relaxed	Reassured by touching, hugging or talk; distractible	Difficult to console or comfort



(2) Children deserve care with respect for developmental status.

Children need basic information about their care communicated to them in a developmentally appropriate manner. Always be honest about what is happening and how it may feel. Answer questions. Respect their needs for sleep, privacy, autonomy and play.

(3) Children should receive care that is family-centered.

Families are an important part of the pediatric care team. Keep them informed and involved in decision-making. Make sure a family member can stay comfortably with the child and has his/her basic needs met. Talk to the family daily. Family members can be your best ally in working with a child – but they need to understand the plan.

(4) Children need a safe place

The child's room and bed are a safe haven. Whenever possible, no painful or frightening procedures should happen there.



APGAR Scale

	0 Points	1 Point	2 Points
A – Appearance (Skin Color)	Blue / Pale	Normal, except for extremities	Normal over entire body
P – Pulse	Absent	Below 100	Above 100
G – Grimace (Reflex Irritability)	No Response	Grimace	Sneeze, cough, pulls away
A – Activity	Absent	Arms and Legs Flexed	Active Movement
R – Respiration	Absent	Slow, irregular	Good, strong cry

AVPU Infant / Child

Response	Infant	Child
A – Alert	Curious / Recognizes parents	Alert / Aware of surroundings
V – Responds to Voice	Irritable / Cries	Opens eyes
P – Responds to Pain	Cries in response to pain	Withdraws from pain
U – Unresponsive	No response	No response

CUPS Pediatric

C – Critical	Absent airway, breathing or circulation (cardiac or respiratory arrest or severe traumatic injury)
U – Unstable	Compromised airway, breathing or circulation (unresponsive, respiratory distress, active bleeding, shock, active seizure, significant injury, shock, near-drowning, etc.)
P – Potentially Unstable	Normal airway, breathing & circulation but significant mechanism of injury or illness (Post-seizure, minor fractures, infant <3 months with fever, etc.)
S – Stable	Normal airway, breathing & circulation No significant mechanism of injury or illness (small lacerations or abrasions, infant ≥3 months with fever)

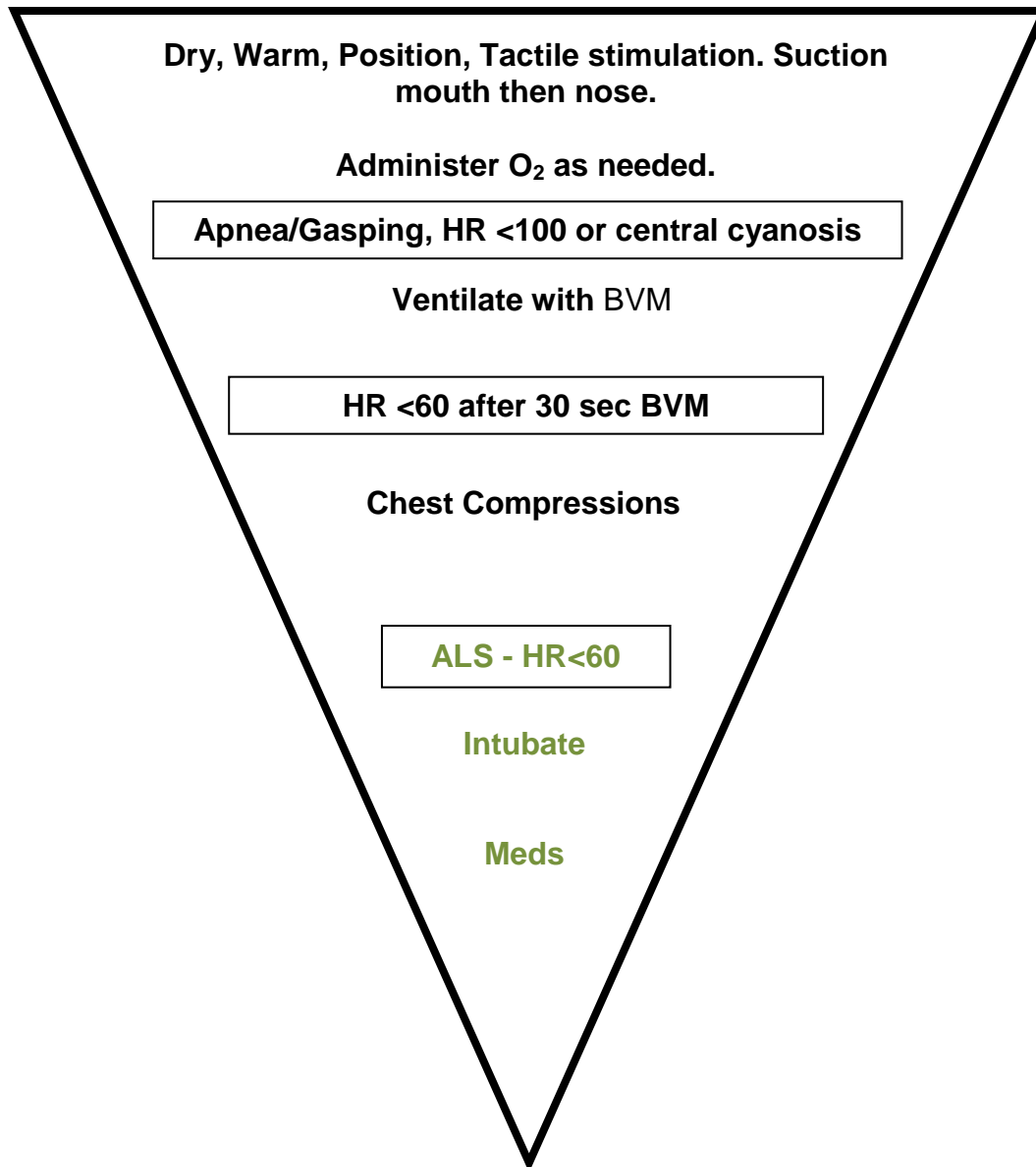


Glasgow Coma Score

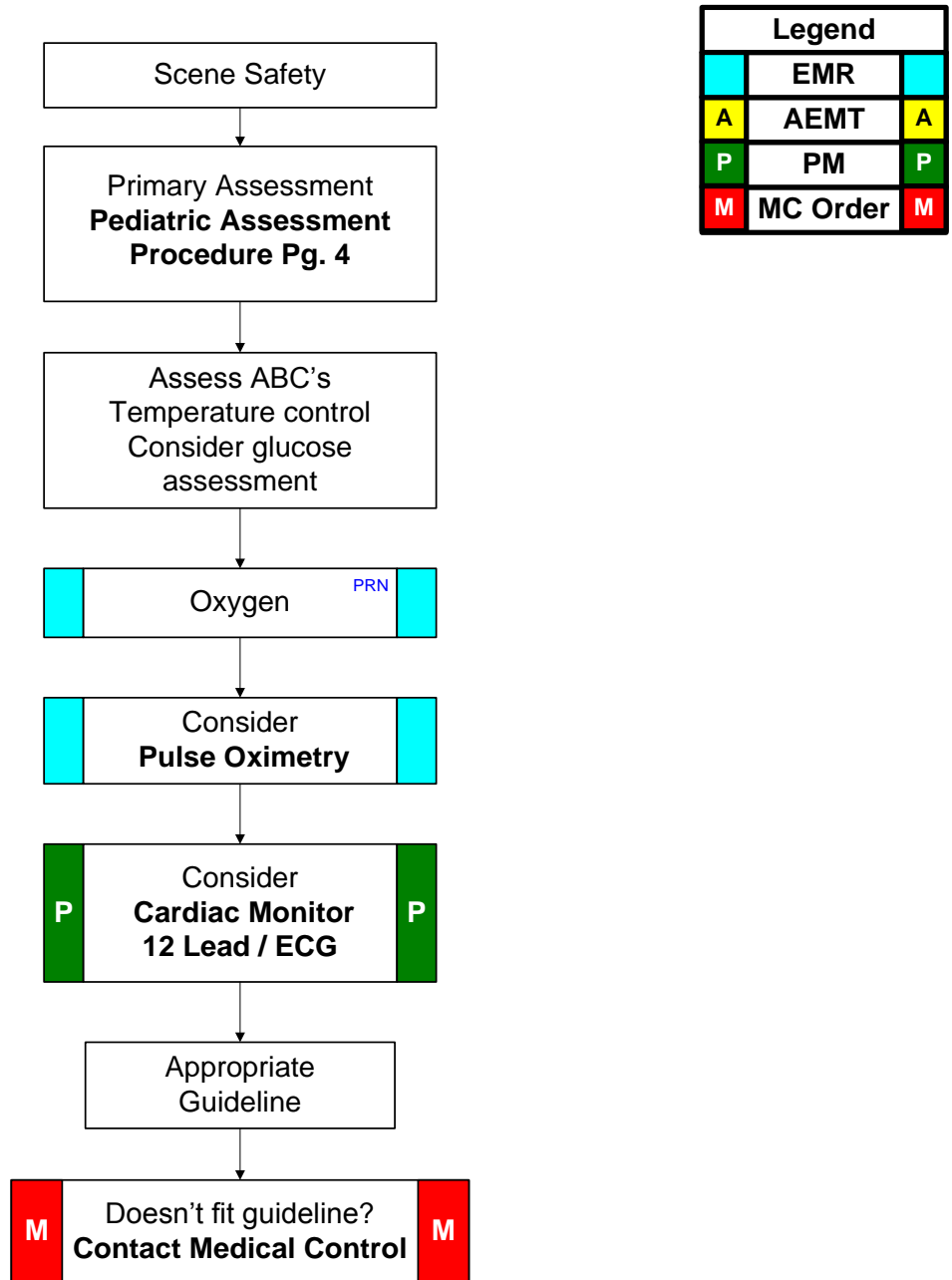
EYE	<1 y/o	>1 y/o	
1	None	None	
2	Opens to pain	Opens to pain	
3	Opens to shout	Opens to verbal command	
4	Opens spontaneously	Opens spontaneously	
VERBAL	< 2 y/o	2-5 y/o	> 5 y/o
1	None	None	None
2	Moans to pain	Moans to pain	Incomprehensible sounds
3	Persistent cries to pain	Persistent cries to pain	Inappropriate words
4	Irritable but consoles	Inappropriate words	Confused
5	Coos, babbles	Appropriate words	Oriented
MOTOR	<1 y/o	> 1 y/o	
1	None	None	
2	Extension to pain	Extension to pain	
3	Flexion to pain	Flexion to pain	
4	Withdrawal to pain	Withdrawal to pain	
5	Withdrawal from touch	Localizes to pain	
6	Spontaneous movement	Obeys commands	



Neonatal Resuscitation



Universal Pediatric Patient Care Guideline



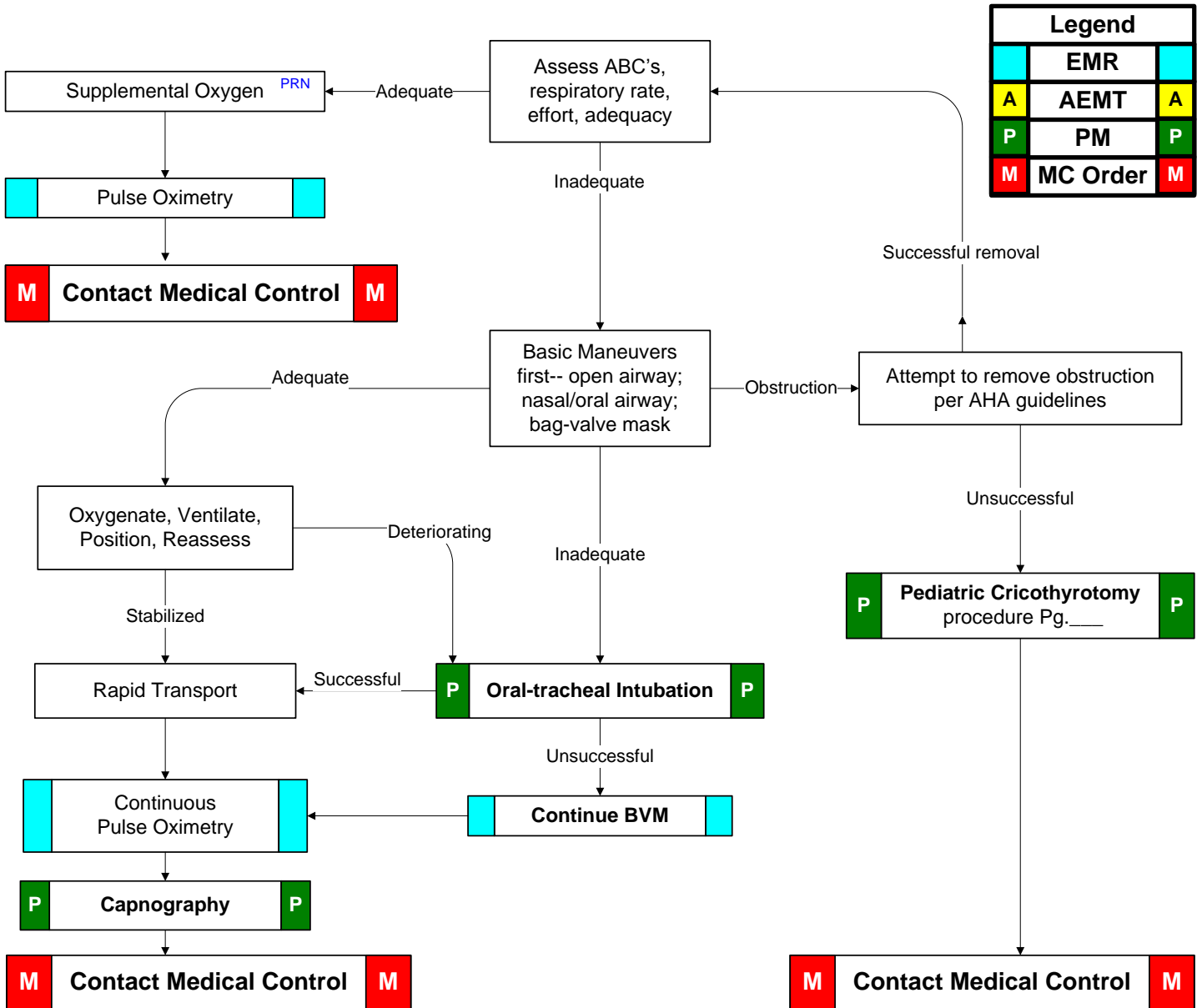
Notes:

- **Early notification to receiving hospital when appropriate.**
- **Required vital signs on every patient include blood pressure, pulse, respirations and saturations.**
- Any patient contact which does not result in an EMS transport should be documented.
- Exam: Minimal exam if not noted on the specific guideline is vital signs, mental status, and location of injury or complaint.
- Pulse oximetry and temperature documentation is dependent on the specific complaint.
- A pediatric patient is defined by the Length based tape. If the patient does not fit on the tape, they are considered adult.
- Timing of transport should be based on patient's clinical condition and the Washington State Trauma Triage Tool.



Pediatric Airway

History: <ul style="list-style-type: none"> Onset of symptoms Past Medical history 	Differential: <ul style="list-style-type: none"> Foreign body Asthma Croup Epiglottitis pneumonia
---	--



- Notes:**
- For this Guideline, child is defined as less than 12 years old.
 - EMT's must have multi-lumen airway training to use Combitubes or LMAs
 - Limit intubation attempts to 3 per patient
 - If unable to intubate, continue BVM ventilations, transport rapidly, and notify receiving hospital early.
 - Capnometry, or capnography is mandatory with all methods of intubation. Document results.
 - Maintain C-spine immobilization for patients with suspected spinal injury
 - Reconfirm ETT placement each time patient is moved
 - All choking victims need to be transported to the hospital. Children who have possibly aspirated anything may not be transported POV, but can be transported BLS if stable.**

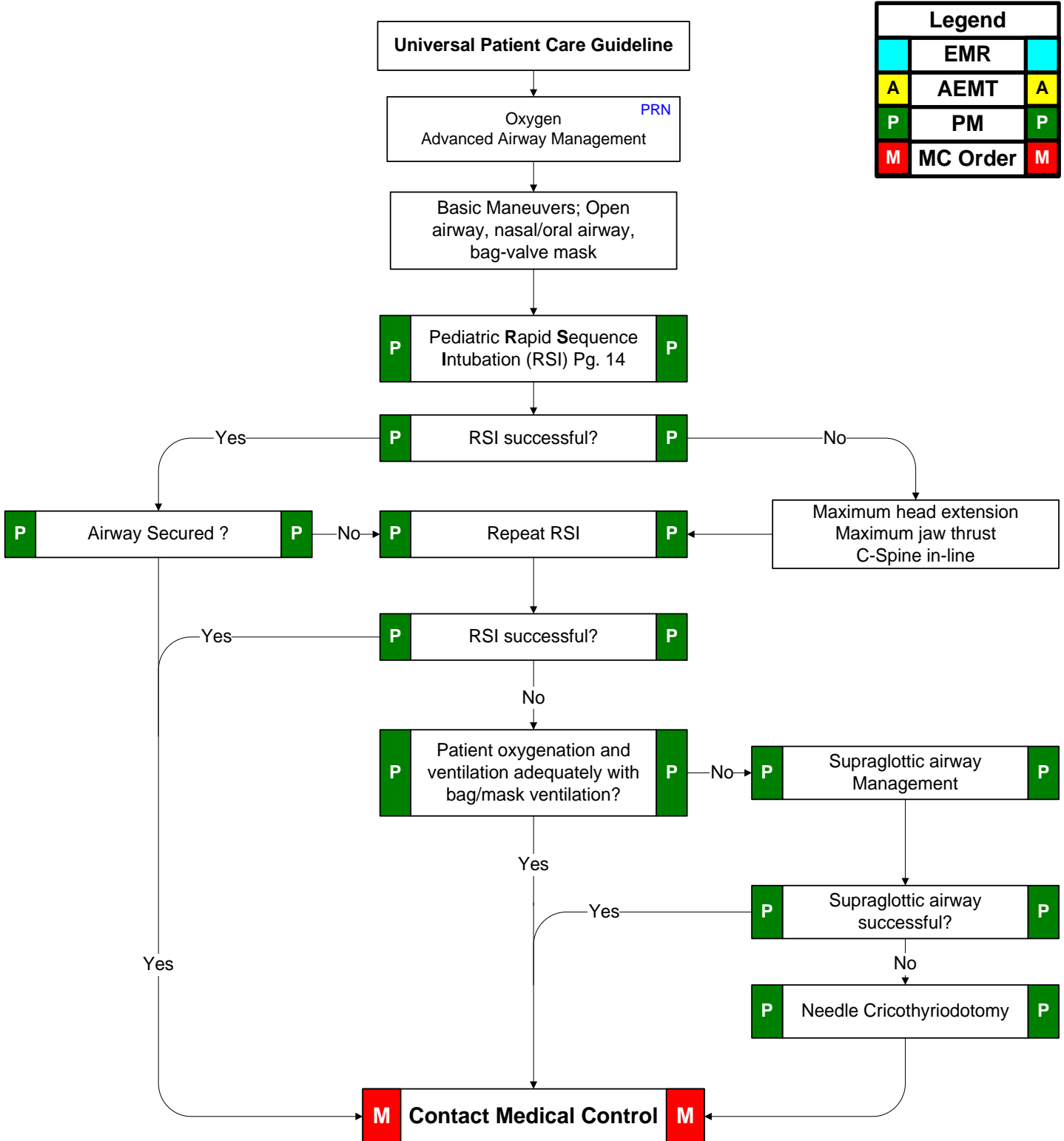
Pediatric Difficult Airway

History:

- Known difficult Airway
- Neck or head trauma
- Trisomy 21
- Congenital malformations

Differential:

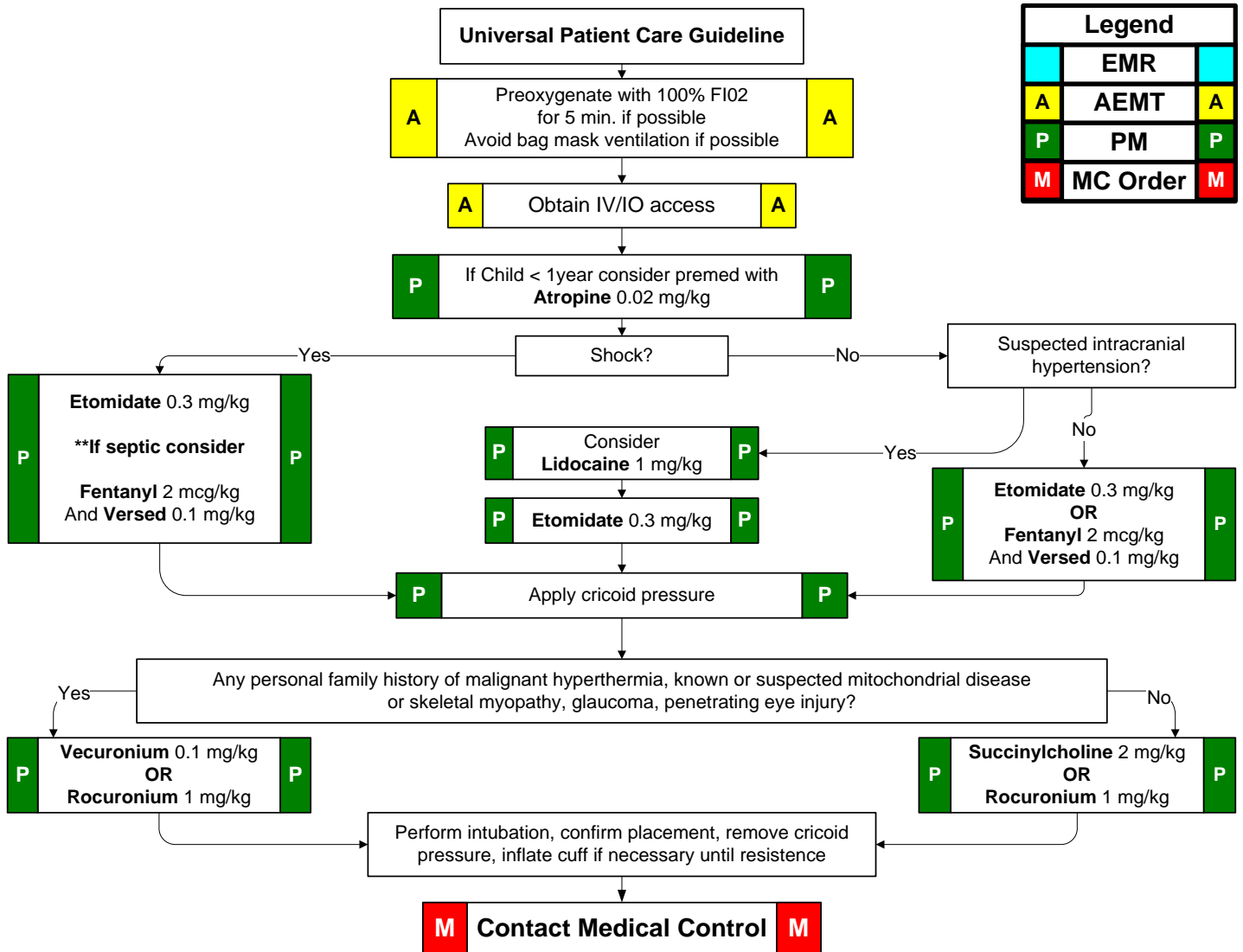
- Physical Examination
 - Small jaw or limited jaw opening
 - Limited cervical spine movement; swollen tongue, oropharynx, or neck; midface hypoplasia



Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M



Pediatric Rapid Sequence Intubation



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Atropine	0.8 mg	0.12 mg	0.16 mg	0.2 mg	0.24 mg	0.30 mg	0.38 mg	.048 mg	0.60 mg
Etomidate	1.2 mg	1.8 mg	2.4 mg	3 mg	3.6 mg	4.5 mg	5.7 mg	7.2 mg	9 mg
Lidocaine	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Fentanyl	8 mcg	12 mcg	16 mcg	20 mcg	24 mcg	30 mcg	36 mcg	48 mcg	60 mcg
Versed	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Succinylcholine	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	36 mg	48 mg	60 mg
Vecuronium	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Rocuronium	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg



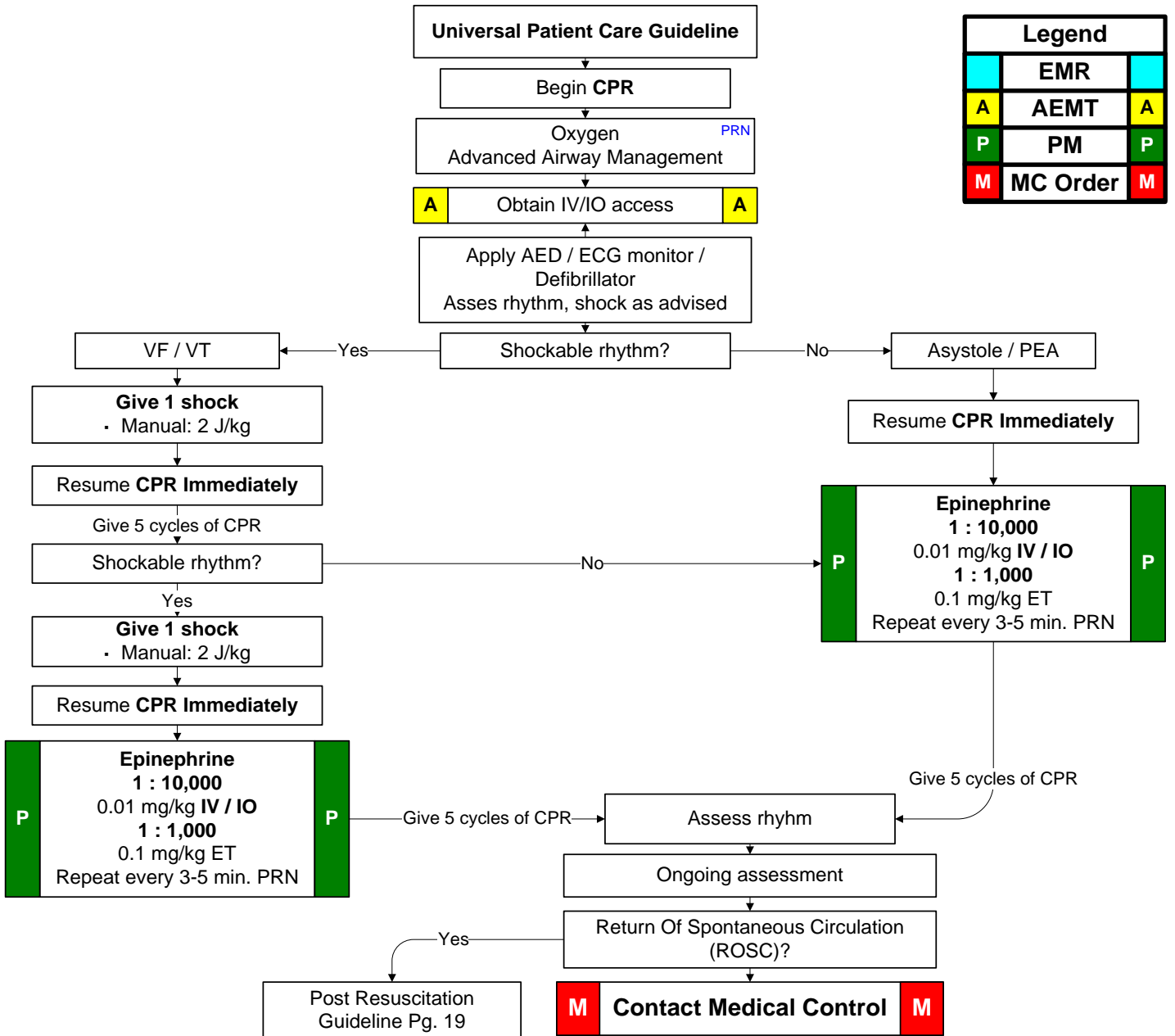
Pediatric Pulseless Arrest

History:

- Medical history
- Possibility of foreign body
- Respiratory distress or arrest
- Possible toxic or poison exposure
- Congenital disease
- Medication (maternal or infant)
- Time of arrest
- Hypothermia
- Non-accidental trauma
- SIDS

Differential:

- Respiratory effort
- Foreign body obstructions
- Hypovolemia (dehydration)
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypoglycemia
- Hypothermia
- Toxins
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis (coronary or pulmonary)
- Trauma (hypovolemia, increased ICP)

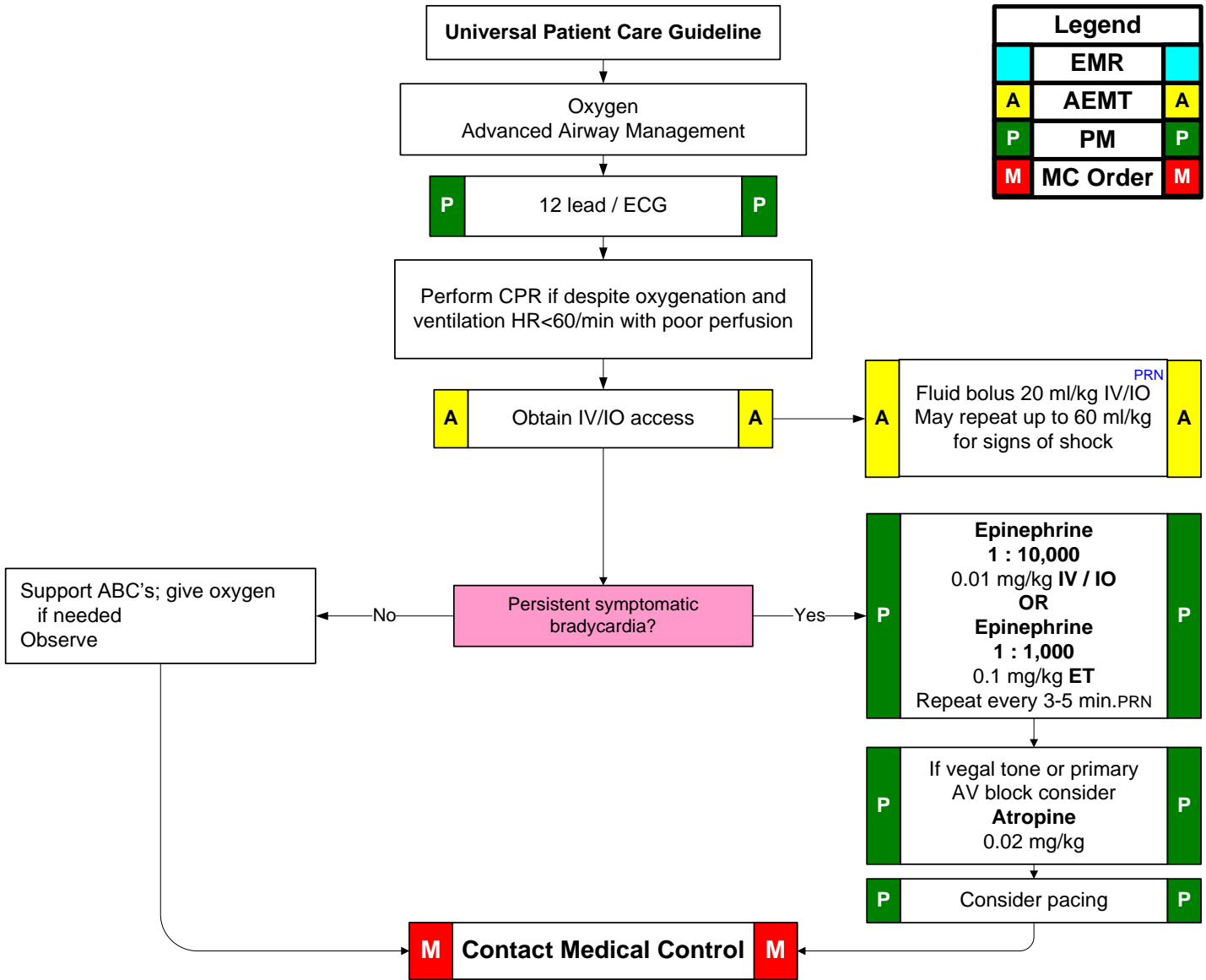


Weight	4 kg grey	6 kg pink	8 kg red	10 kg purple	12 kg yellow	15 kg white	19 kg blue	24 kg orange	30 kg green
Epinephrine 1 : 10,000 0.01 mg/kg IV / IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Epinephrine 1 : 1,000 0.1 mg/kg ET	0.4 mg	.06 mg	.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg



Pediatric Bradycardia

History: <ul style="list-style-type: none"> Medical history Possibility of foreign body Respiratory distress or arrest Possible toxic or poison exposure Congenital disease Medication (maternal or infant) Airway / Respiratory is most common cause 	Differential: <ul style="list-style-type: none"> Respiratory failure Foreign body obstructions Hypovolemia (dehydration) Hypoxia Hydrogen ion (acidosis) Hypo-/hyperkalemia Hypoglycemia Hypothermia Toxins Tamponade, cardiac Tension pneumothorax Thrombosis (coronary or pulmonary) Trauma (hypovolemia, increased ICP)
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Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Epinephrine 1 : 10,000 0.01 mg/kg IV / IO	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Epinephrine 1 : 1,000 0.1 mg/kg ET	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Atropine	0.1 mg	0.12 mg	0.16 mg	0.2 mg	0.24 mg	0.3 mg	0.38 mg	0.48 mg	0.6 mg



Pediatric Narrow Complex Tachycardia

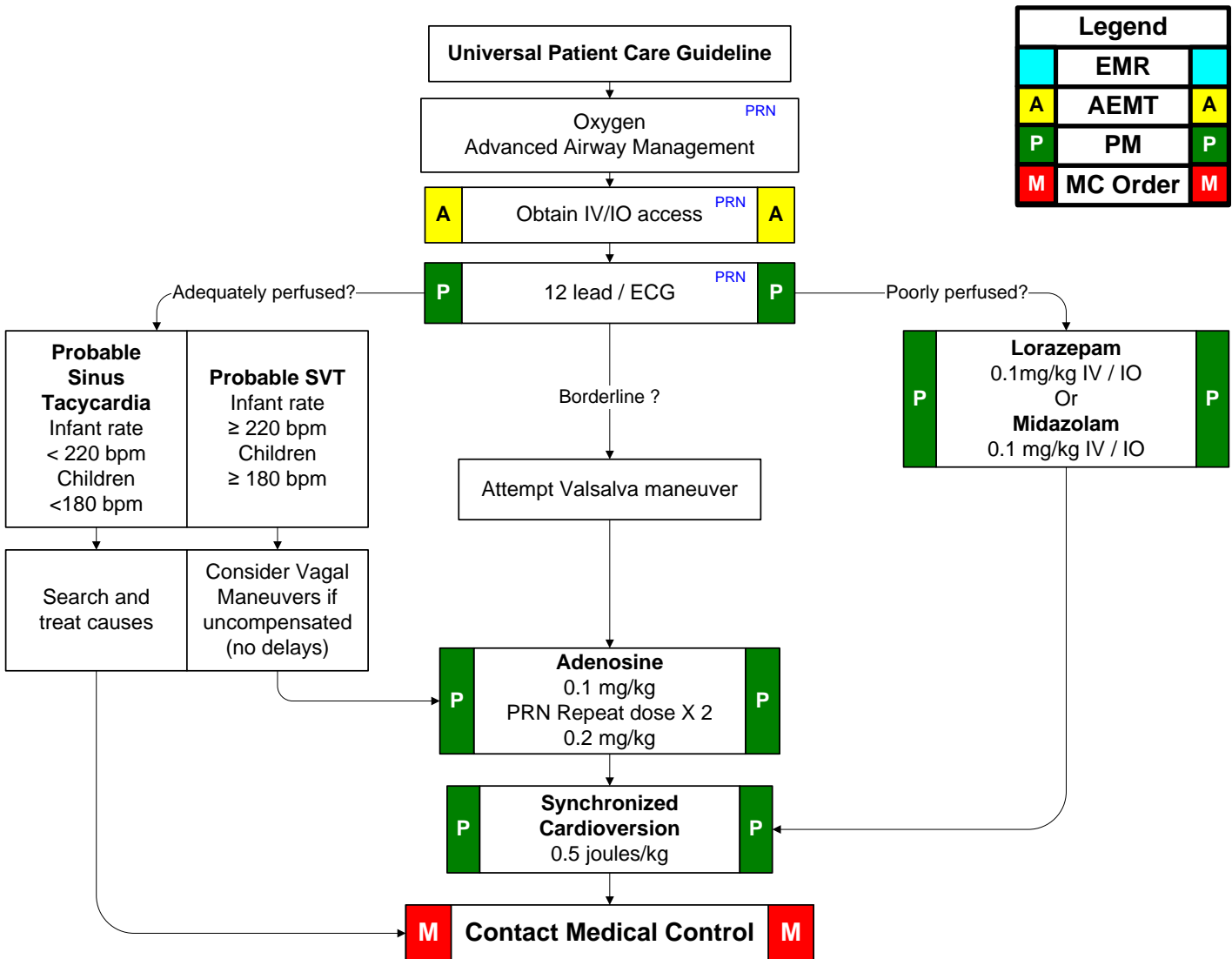
History:

- Medications or toxins
- Congenital heart disease
- Respiratory distress
- Syncope
- Volume loss (diarrhea / vomiting)
- Trauma?

Differential:

Sinus Tachycardia vs. SVT

- Heart disease (congenital)
- Electrolyte imbalance
- Hypotension
- Fever / infection / sepsis
- Medication / toxin / drugs
- Pulmonary Embolism
- Tension pneumothorax



Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg Grey	6 kg	8 kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Adenosine 0.1 mg/kg – 1 st dose	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Adenosine 0.2 mg/kg – 2 nd dose	0.8 mg	1.2 mg	1.6 mg	2 mg	2.4 mg	3 mg	3.8 mg	4.8 mg	6 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg



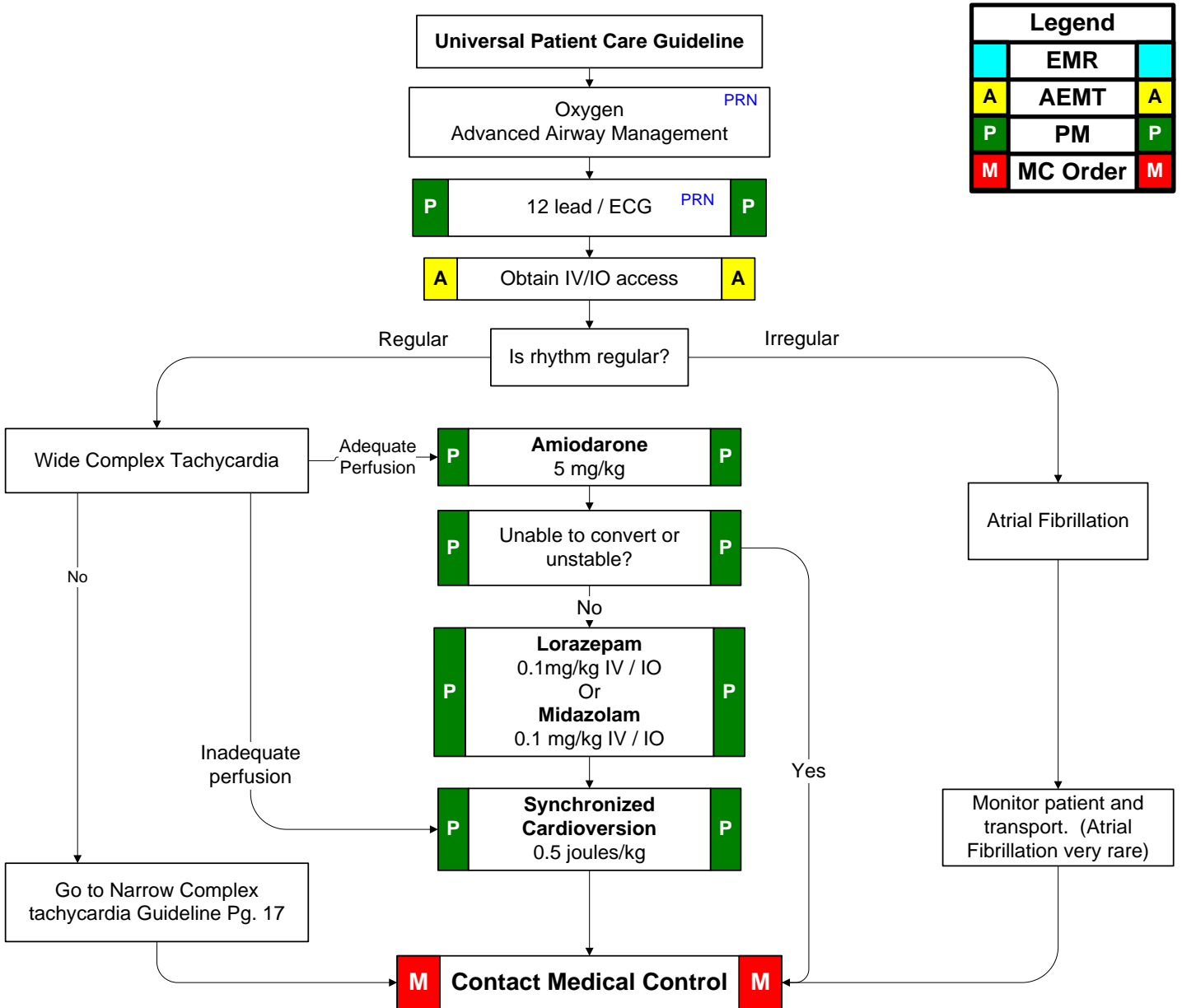
Pediatric Wide Complex Tachycardia

History:

- Medications or toxins
- Congenital heart disease
- Respiratory distress
- Syncope
- Drugs (cocaine)

Differential:

- Heart disease (congenital)
- Hypovolemia (dehydration) or anemia
- Electrolyte imbalance
- Anxiety
- Hypotension
- Medication / toxin / drugs



Legend		
EMR		
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg grey	6 kg pink	8 kg red	10 kg purple	12 kg yellow	15 kg white	19 kg blue	24 kg orange	30 kg green
Amiodarone	20 mg	30 mg	40 mg	50 mg	60 mg	75 mg	95 mg	120 mg	150 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg



Pediatric Post Resuscitation Management

History:

- Past Medical History
- Event / complaints

Differential:

- Hypovolemia (dehydration)
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-hyperkalemia
- Hypoglycemia
- Hypothermia
- Toxins
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis (coronary or pulmonary)
- Trauma (hypovolemia, increased ICP)

FINAL
With 2/23 changes
Sent to Dr. Horning
4/6/10 for proofing
Joanne Price

Universal Patient Care Guideline

Oxygen ^{PRN}
Advanced Airway Management

A Obtain IV/IO access **A**

A Fluid bolus 20 ml/kg IV/IO ^{PRN}
May repeat up to 60 ml/kg **A**

P 12 lead / ECG ^{PRN} **P**

P Monitor ECG / ^{PRN}
ETCO2 if available **P**

P Sedation Post Intubation **P**

Consider Pain Management
Guideline Pg. 27

P **Midazolam** ^{PRN}
0.1mg/kg IV / IO **P**
Or
Lorazepam
0.1 mg/kg IV / IO

Treat other associated signs
and symptoms per guideline
Consider temperature control
(avoid Hypothermia)

M **Contact Medical Control** **M**

Legend

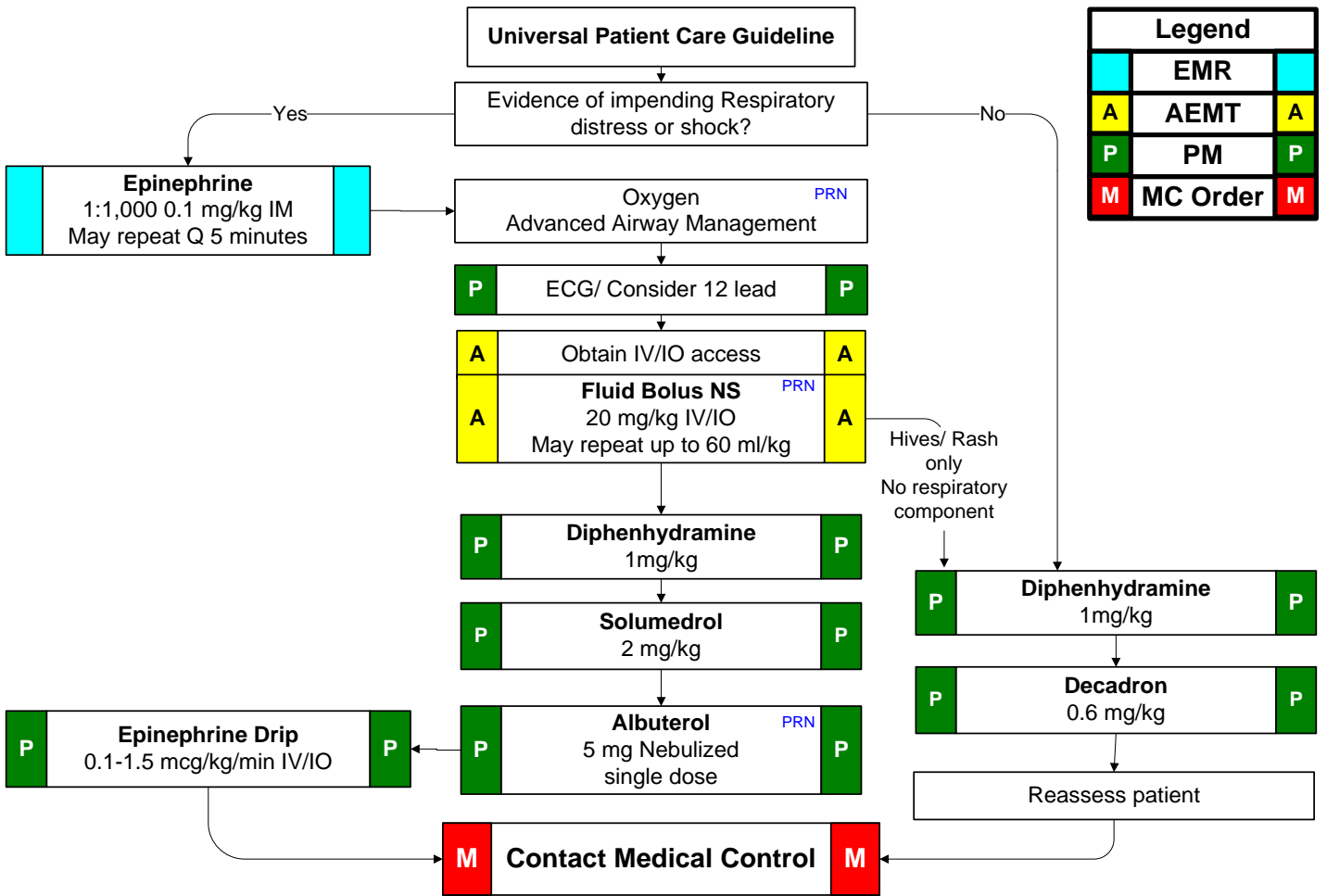
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg grey	6 kg pink	8 kg red	10 kg purple	12 kg yellow	15 kg white	19 kg blue	24 kg orange	30 kg green
Midazolam	0.04 mg	0.06 mg	0.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Lorazepam	0.04 mg	0.06 mg	0.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg



Pediatric Anaphylaxis

History: <ul style="list-style-type: none"> Allergies Medications Past Medical history 	<ul style="list-style-type: none"> Last oral ingestion Event preceding 	Differential: <ul style="list-style-type: none"> Acute respiratory failure Anxiety Aspiration 	<ul style="list-style-type: none"> Asthma Drug reaction Shock
--	--	---	--



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Fluid Bolus	80 mg	120 mg	160 mg	200 mg	240 mg	300 mg	380 mg	480 mg	600 mg
Diphenhydramine	4 mg	6 mg	8 mg	10 mg	12 mg	15 mg	19 mg	24 mg	30 mg
Solumedrol	8 mg	12 mg	16 mg	20 mg	24 mg	30 mg	38 mg	48 mg	60 mg
Decadron	2 mg	3 mg	4 mg	5 mg	6 mg	8 mg	10 mg	12 mg	15 mg
Nebulizer	Albuterol 2.5 mg				Albuterol 5 mg				
Epinephrine	0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg
Epinephrine Drip	1 mg Epinephrine 1:1,000 in 250 ml = 4 mcg/ml						Use 60 gtt tubing		
Mcg/min	2	4	6	8	10				
Administer	30 gtt/min	60 gtt/min	90 gtt/min	120 gtt/min	150 gtt/min				
Run gtt/sec	1 every 2 seconds	1 every second	1.5 every second	2 every second	2.5 every second				



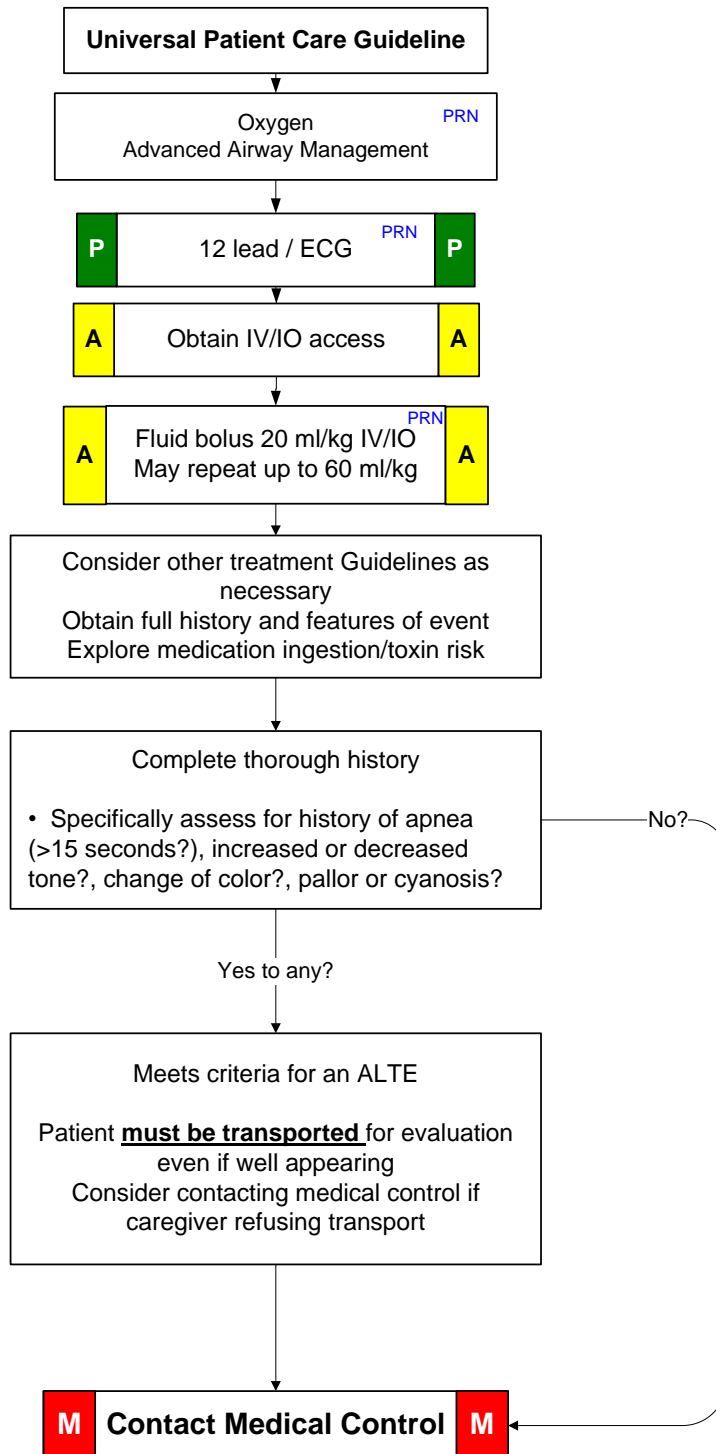
Pediatric Apparent Life Threatening Event (ALTE)

History:

- Altered Mental Status
- Cardiac
- Respiratory Failure
- Seizures
- Syncope
- Cyanosis change in tone

Differential:

- Hypovolemia (dehydration)
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-hyperkalemai
- Hypoglycemia
- Hypothermia
- Toxins
- Tamponade, cardiac
- Tension pneumothorax
- Thrombosis (coronary or pulmonary)
- Trauma (hypovolemia, increased ICP)



Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M



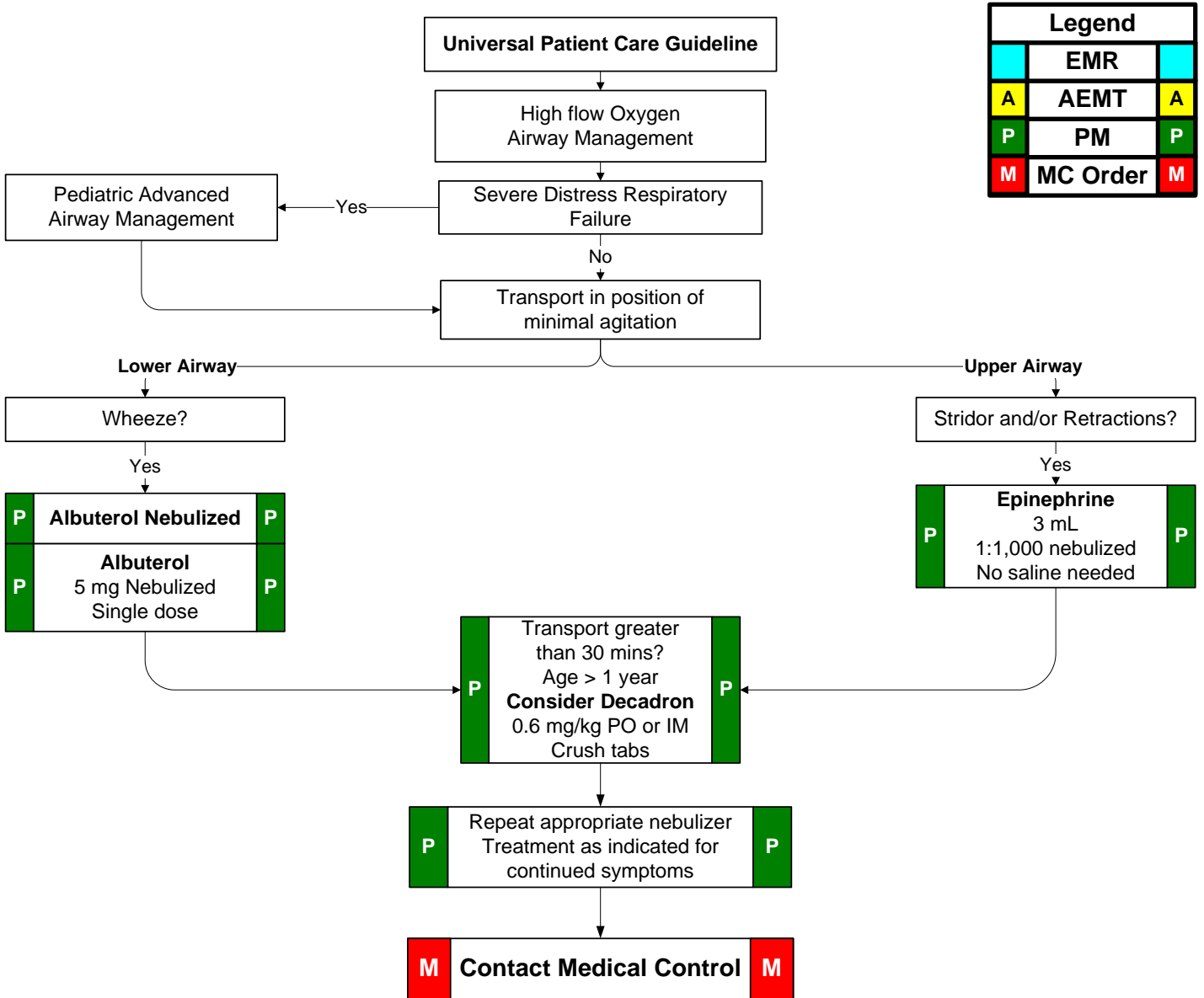
Pediatric Breathing Difficulty

History:

- Possibility of foreign body
- Cardiac/Respiratory history
- Respiratory infection

Differential:

- Asthma
- Aspiration
- Foreign body
- Pneumonia (aspiration)
- Croup
- Epiglottitis (Rare)
- Congenital heart disease
- Medication or Toxin
- Trauma



Weight	4 kg	6 kg	8 kg	10 kg	12 kg	15 kg	19 kg	24 kg	30 kg
Epinephrine 1 : 1,000	3 mL nebulized								
Atrovent	0.5 mg nebulized								
Nebulizer	Albuterol 2.5 mg				Albuterol 0.5 mg				
Decadron	2.4 mg	3.6 mg	4.8 mg	6 mg	7.2 mg	9 mg	11.4 mg	14.4 mg	18 mg



Pediatric Diabetic Ketoacidosis / Hyperglycemia

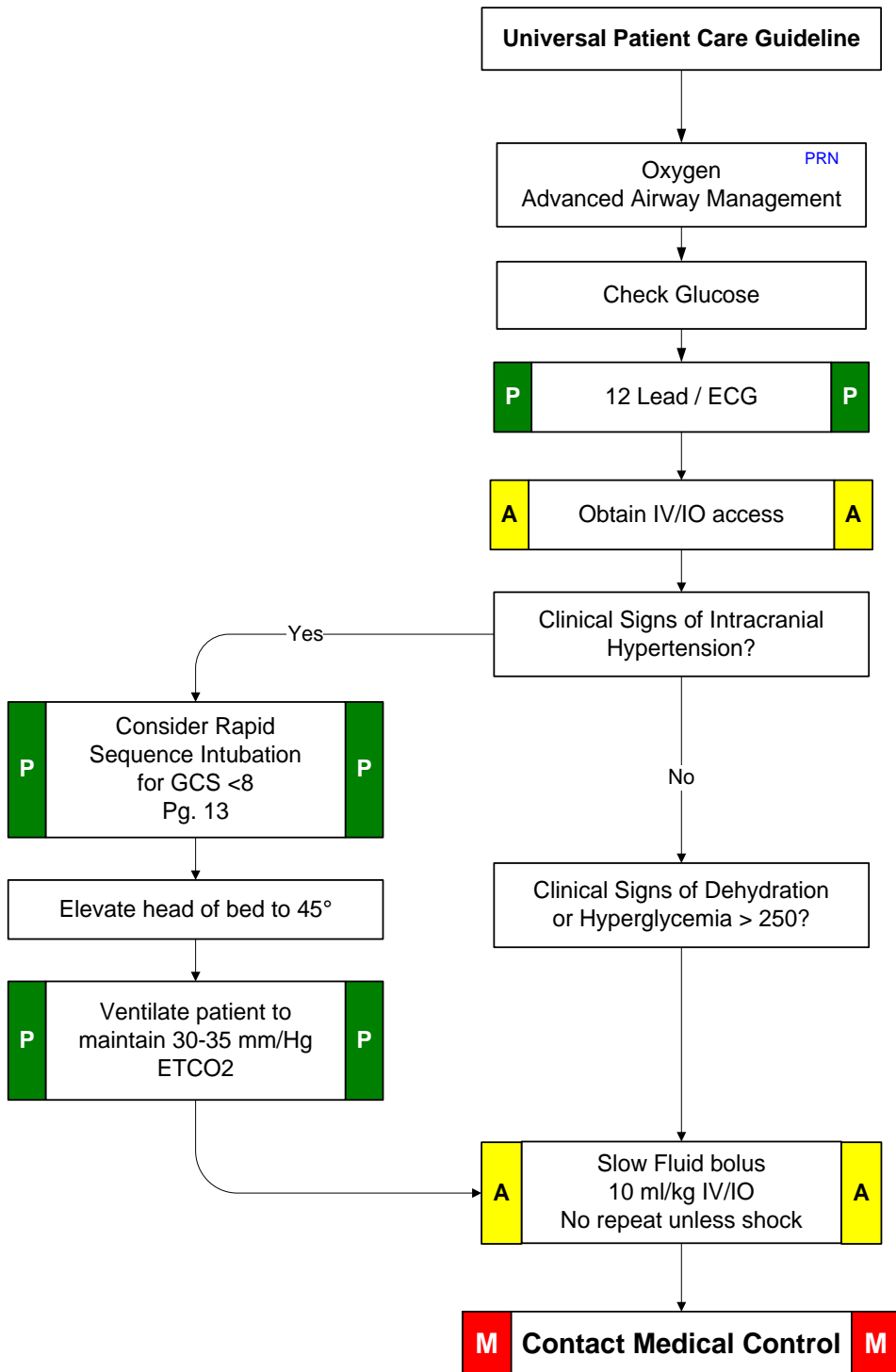
History:

- Polyuria
- Polydipsia
- Vomiting
- Weakness
- Confusion

Clinical Signs:

- Dehydration
- Kussmaul respirations
- Smell of ketones
- Change in mental status

Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M



Pediatric Hypoglycemia

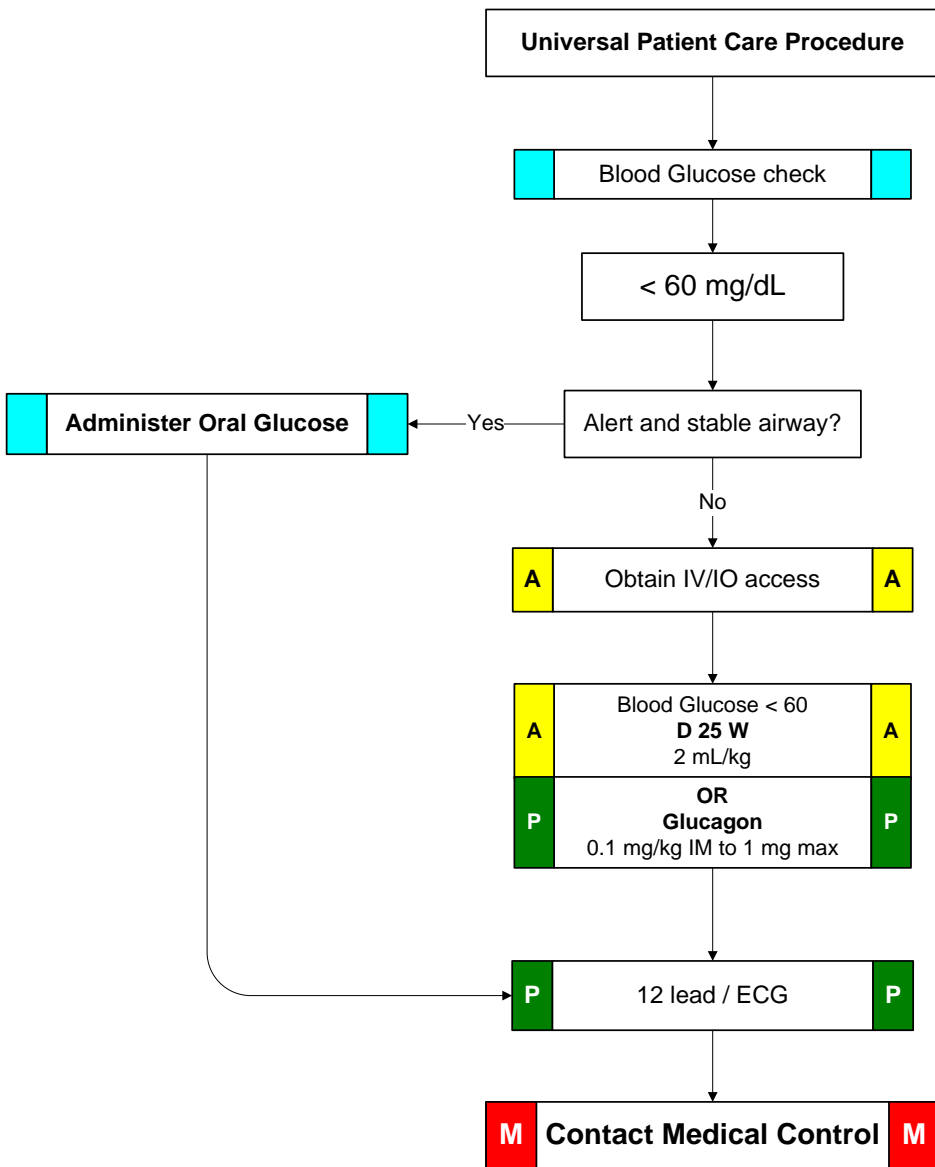
History:

- Known diabetic, medic alert tag
- Past medical history
- Medications
- History of trauma
- Ingestion
- Syncope

Differential:

- Head trauma
- CNS (stroke, tumor, seizure, infection)
- Infection
- Thyroid (hyper / hypo)
- Diabetes (hyper / hypoglycemia)
- Toxicologic
- Acidosis / Alkalosis
- Electrolyte abnormality

Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
D 25 W	8 mL	12 mL	16 mL	20 mL	24 mL	30 mL	36 mL	48 mL	60 mL
Glucagon	0.4 mg	0.6 mg	0.8 mg	1 mg	1 mg	1 mg	1 mg	1 mg	1 mg



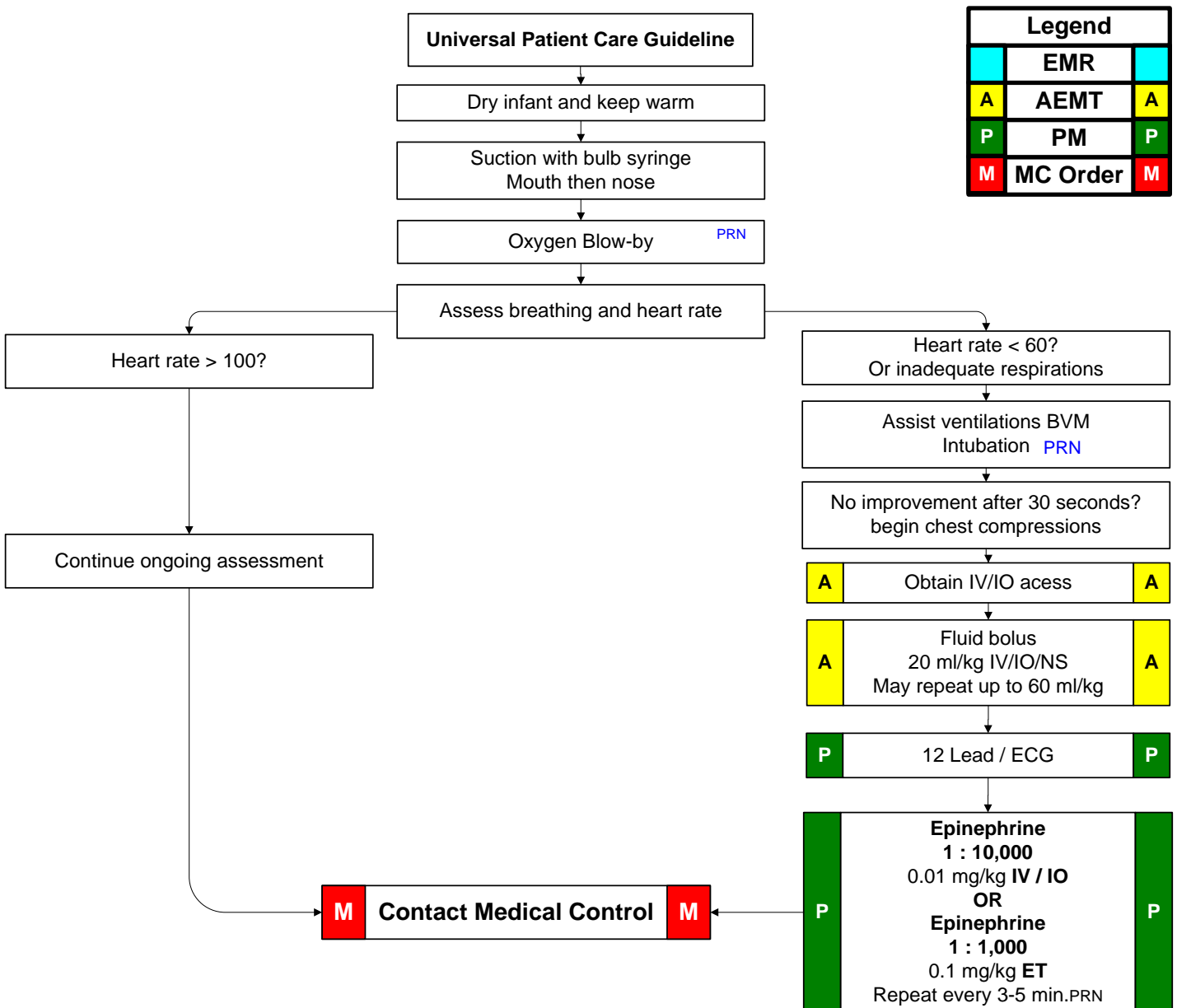
Newborn Resuscitation

History:

- Prenatal care and history
- Due date/LMP
- Expected multiple births
- Meconium
- Congenital disease
- Medications
- Maternal risk factors

Differential:

- Airway obstruction
- Respiratory effort
- Infection
- Hypovolemia
- Hypoglycemia
- Congenital heart disease
- Hypothermia



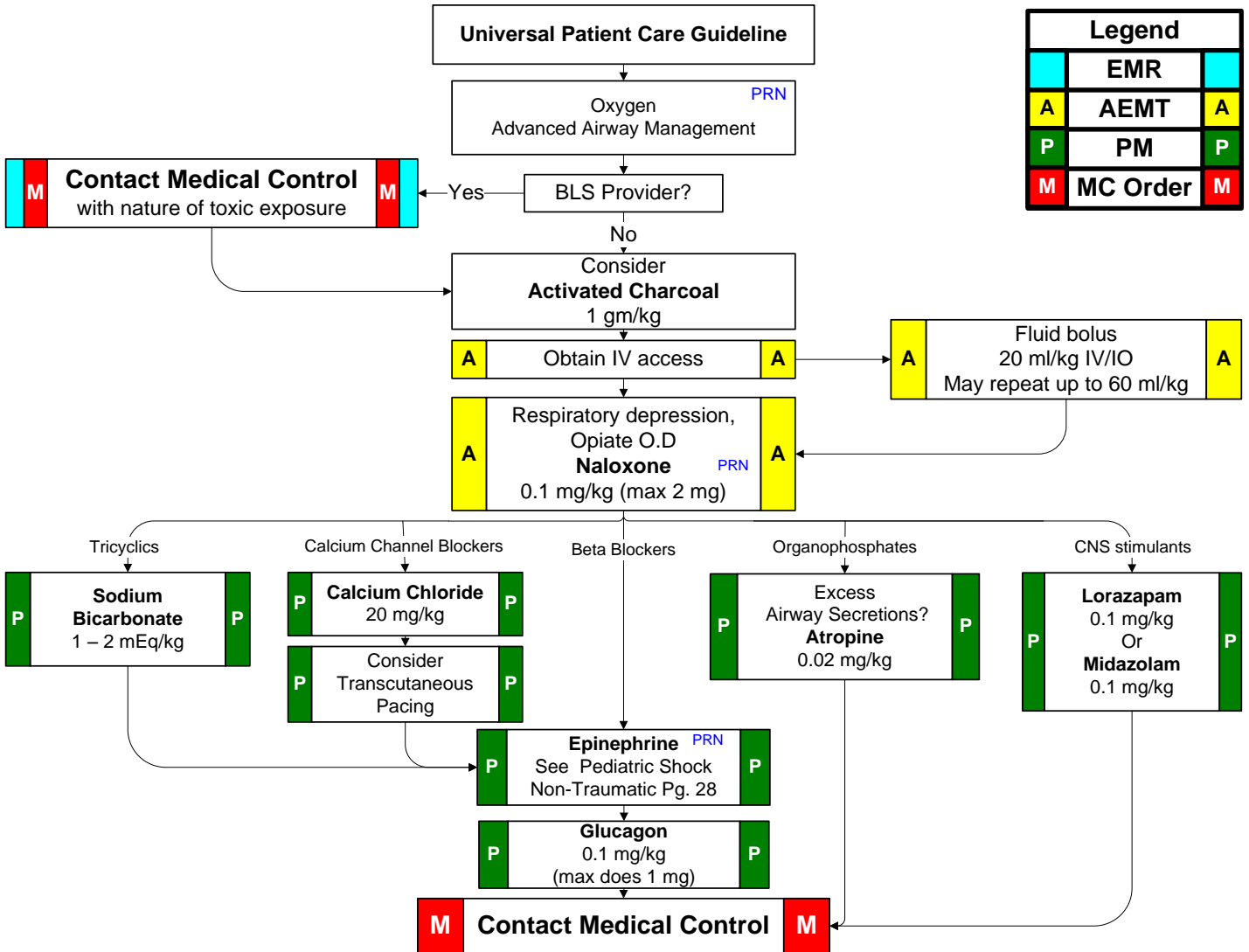
Legend		
EMR		EMR
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	2 kg <i>grey</i>	3 kg <i>grey</i>	4 kg <i>grey</i>	5 kg <i>red</i>
Epinephrine 1 : 10,000 0.01 mg/kg IV / IO	0.02 mg	0.03 mg	0.04 mg	0.05 mg
Epinephrine 1 : 1,000 0.1 mg/kg ET	0.2 mg	0.3 mg	0.4 mg	0.5 mg



Known Pediatric Toxic Exposure

History: <ul style="list-style-type: none"> Ingestion or suspected ingestion of a potentially toxic substance Substance ingested, route, quantity Time of ingestion Reason (suicidal, accidental, criminal) Available medications in home 	Differential: <ul style="list-style-type: none"> Tricyclic antidepressants (TCAs) Acetaminophen (tylenol) Depressants Stimulants Anticholinergic Cardiac medications Solvents, Alcohols, Cleaning agents Insecticides (organophosphates)
Poison Control 800-222-1222	



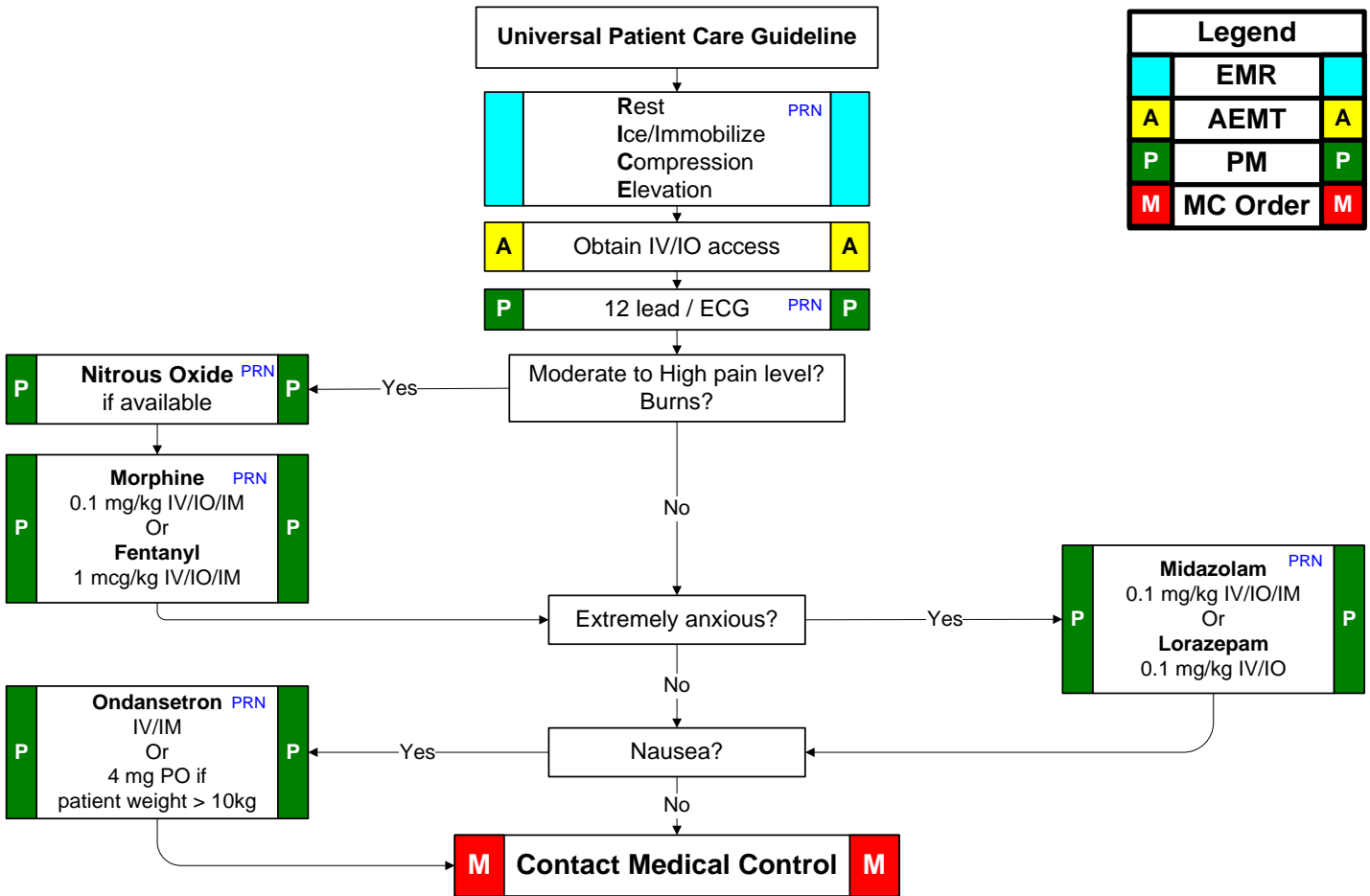
Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Activated Charcoal	4 gm	6 gm	8 gm	10 gm	12 gm	15 gm	19 gm	24 gm	30 gm
Naloxone	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Sodium Bicarbonate	4 mEq	6 mEq	8 mEq	10 mEq	12 mEq	15 mEq	19 mEq	24 mEq	30 mEq
Calcium Chloride	80 mg	120 mg	160 mg	200 mg	240 mg	300 mg	380 mg	480 mg	600 mg
Glucagon	0.4 mg	0.6 mg	0.8 mg	1 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Atropine	0.08 mg	0.12 mg	0.16 mg	0.2 mg	0.24 mg	0.3 mg	0.38 mg	0.48 mg	0.6 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg



Pediatric Pain Management

History: <ul style="list-style-type: none"> • Age • Location • Duration • Severity (1 - 10) • Past medical history • Medications – especially pain med • Drug allergies • Aggravating factors • Alleviating factors 	Differential: <ul style="list-style-type: none"> • Musculoskeletal • Visceral (abdominal) • Cardiac • Pleural / Respiratory • Neurogenic • Renal (colic) • Sickle cell
---	--



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Morphine	.04 mg	.06 mg	.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Fentanyl	4 mcg	6 mcg	8 mcg	10 mcg	12 mcg	15 mcg	19 mcg	24 mcg	30 mcg
Lorazepam	.04 mg	.06 mg	.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Lorazepam	.04 mg	.06 mg	.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Ondansetron IV/IM	0			1 mg	1 mg	1 mg	2 mg	2 mg	3 mg
Ondansetron PO	0			4 mg ODT					



Pediatric Fever

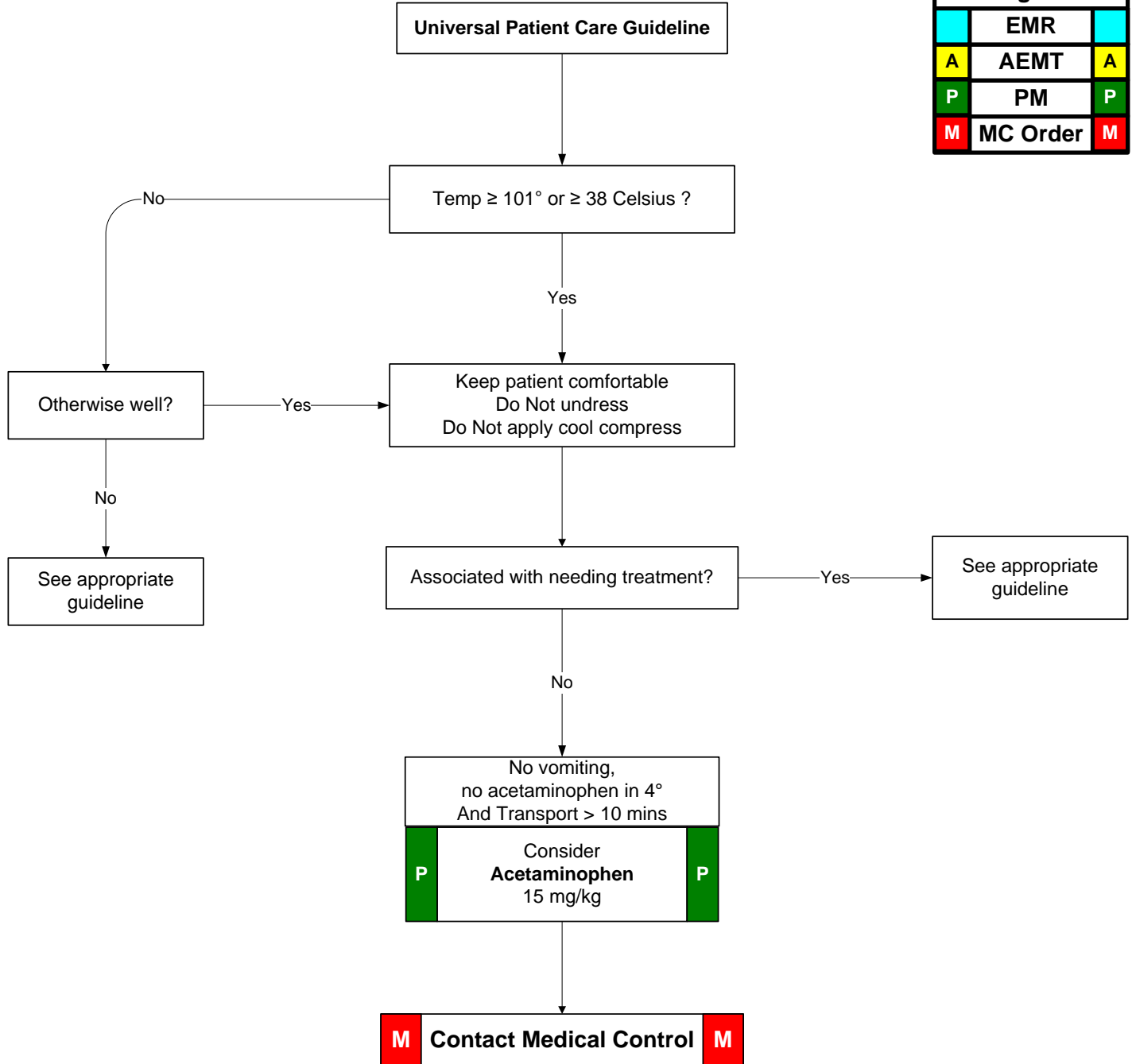
History:

- Fever not associated with heat injury
- Does not require rapid temperature reduction
- Fever less than 107° is not dangerous

Differential:

- Infections/Sepsis
- Medication or drug reaction

Legend		
EMR		EMR
A	AEMT	A
P	PM	P
M	MC Order	M

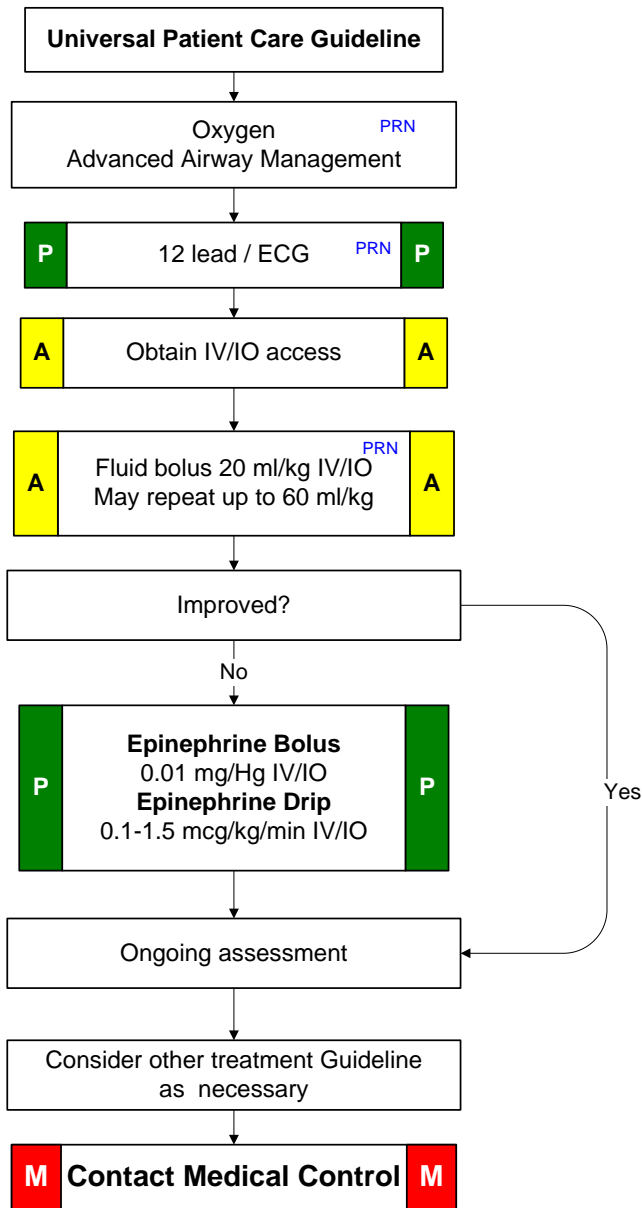


Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Acetaminophen	60 mg	90 mg	120 mg	150 mg	180 mg	225 mg	285 mg	360 mg	450 mg



Pediatric Shock Non-traumatic

History: <ul style="list-style-type: none"> • Medical history • Respiratory distress or arrest • Possible toxic or poison exposure • Congenital disease • Medication (maternal or infant) • Non accidental trauma 	Differential: <ul style="list-style-type: none"> • Respiratory effort • Hypovolemia (dehydration) • Hypoxia • Hydrogen ion (acidosis) • Hypo-hyperkalemia • Hypoglycemia • Hypothermia • Toxins • Tamponade, cardiac • Tension pneumothorax • Thrombosis (coronary or pulmonary)
--	--



Legend		
EMR		
A	AEMT	A
P	PM	P
M	MC Order	M

Epinephrine Drip		1 mg Epinephrine 1:1,000 in 250 ml = 4 mcg/ml					Use 60 gtt tubing			
Mcg/min		2	4	6	8	10				
Administer		30 gtt/min	60 gtt/min	90 gtt/min	120 gtt/min	150 gtt/min				
Run gtt/sec		1 every 2 seconds	1 every second	1.5 every second	2 every second	2.5 every second				
Epinephrine		0.04 mg	0.06 mg	0.08 mg	0.1 mg	0.12 mg	0.15 mg	0.19 mg	0.24 mg	0.3 mg



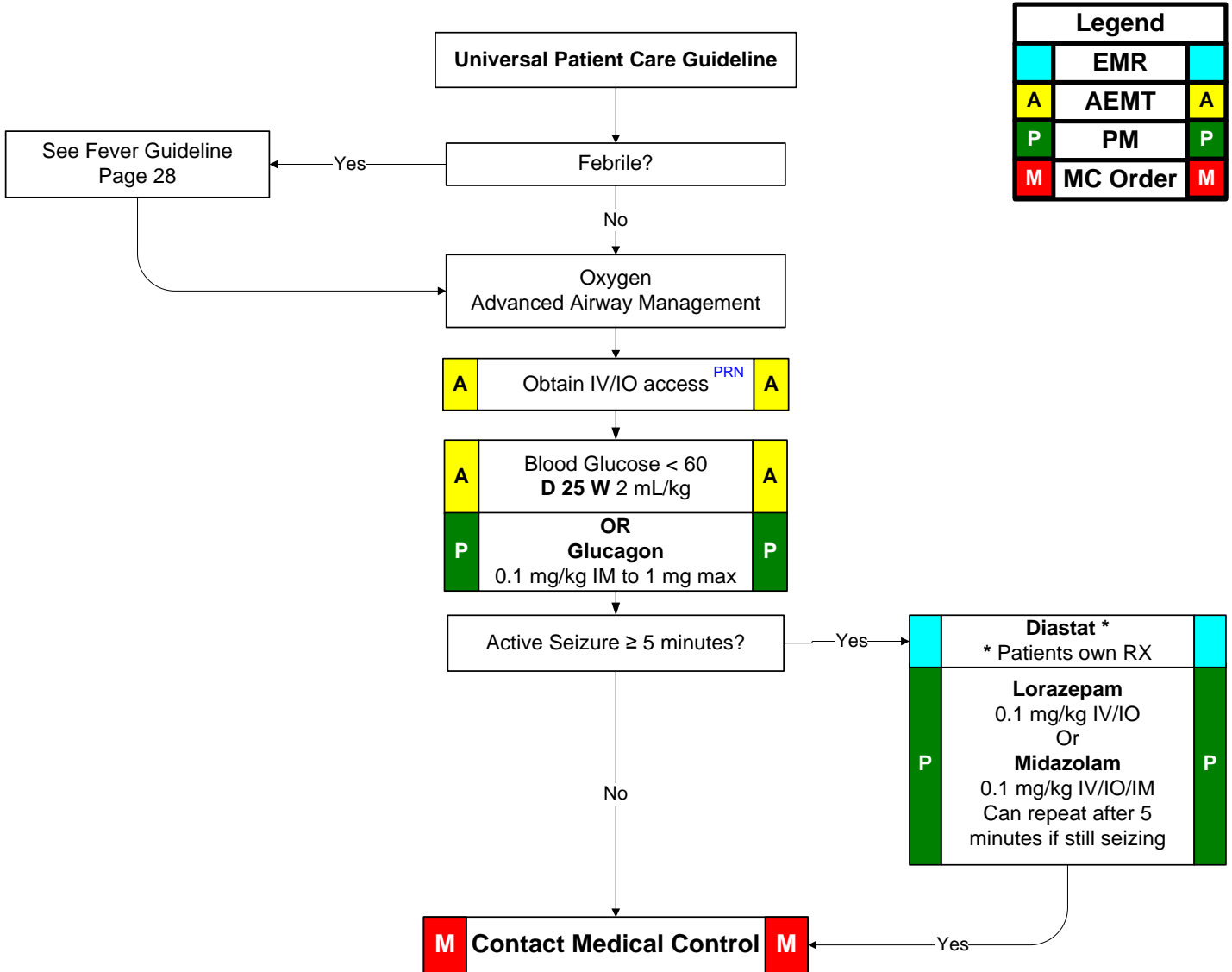
Pediatric Seizure

History:

- Prior history of seizures
- Seizure medications
- History of VP Shunt
- Fever
- Head Trauma

Differential:

- Medication or Toxin
- Hypoxia or Respiratory failure
- Hypoglycemia



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
D 25 W	8 mL	12 mL	16 mL	20 mL	24 mL	30 mL	38 mL	48 mL	60 mL
Glucagon	0.4 mg	0.6 mg	0.8 mg	1 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Lorazepam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg
Midazolam	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg



Unknown Pediatric Toxic Exposure / Ingestion Guideline

Smells:

- Almond = Cyanide
- Fruit = Alcohol
- Garlic = Arsenic, parathion, DMSO
- Mothballs = Camphor
- Natural gas = Carbon monoxide
- Rotten eggs = Hydrogen sulfide
- Silver polish = Cyanide
- Wintergreen = Methyl salicylate

Potential exposures:

- Burning overstuffed furniture = cyanide
- Old burning buildings = Lead fumes and Carbon monoxide
- Pepto-Bismol™ like products = Aspirin
- Pesticides = Organophosphates and Carbamates
- Common Plants = Treat symptoms and bring plant/flower to ED

Universal Patient Care Guideline

Assess scene safety as Indicated:

- Appropriate body substance isolation
- Refer to System/Department Haz/Mat Protocol
- Stop exposure

Oxygen
Advanced Airway Management

A Obtain IV/IO NS/LR access **A**

M **Contact Medical Control** **M**
Initial interventions per
Medical Control indicated for
identified exposure

For Altered Level of Consciousness

P **Naloxone** **P**
0.1 mg/kg (max 2 mg)

- Support ABC's
- Keep Warm
- Bring Container(s) of drug or substance to the ED

Special Considerations:

- Intubate for GCS<8
- Do not induce vomiting, especially in cases where caustic substance ingestion is suspected
- Poison Center Phone # 800-222-1222

M **Contact Medical Control** **M**

Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Naloxone	0.4 mg	0.6 mg	0.8 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2 mg	2 mg



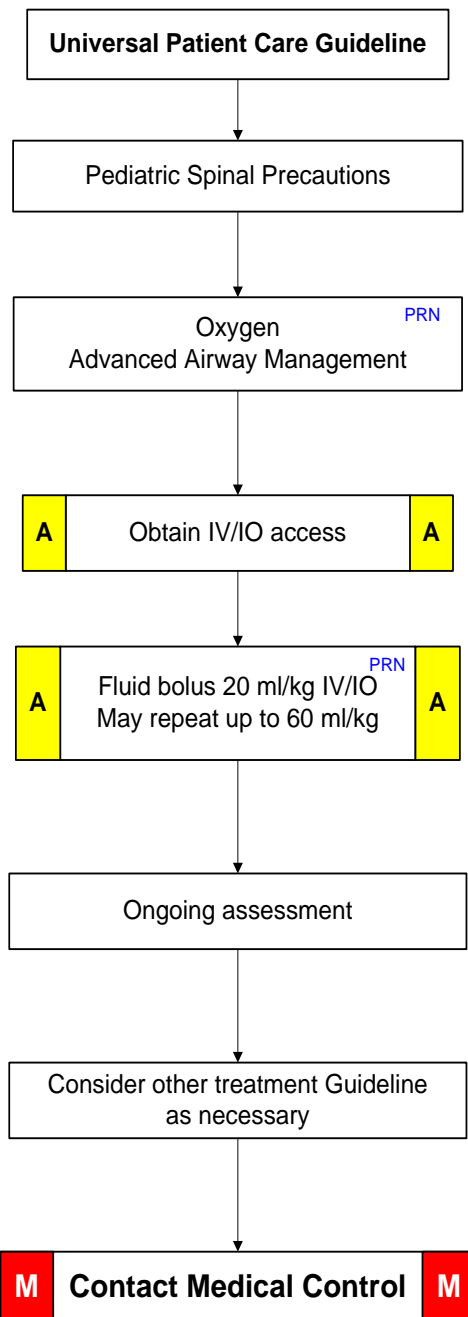
Pediatric Multi-System Trauma

History:

- Time and Mechanism of injury
- Damage to structure or vehicle
- Others injured or death
- Restraints / protective equipment
- Ejection
- Speed and details of MVC

Differential:

- Abnormal neurological exam
- Tamponade, cardiac
- Tension pneumothorax
- Intracranial Hypertension
- Toxins
- Tamponade (cardiac)
- Tension pneumothorax
- Thrombosis (Pulmonary, Coronary)
- Trauma
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-hyperkalemia
- Hypoglycemia
- Hypothermia



Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M



Pediatric Submersion Injury

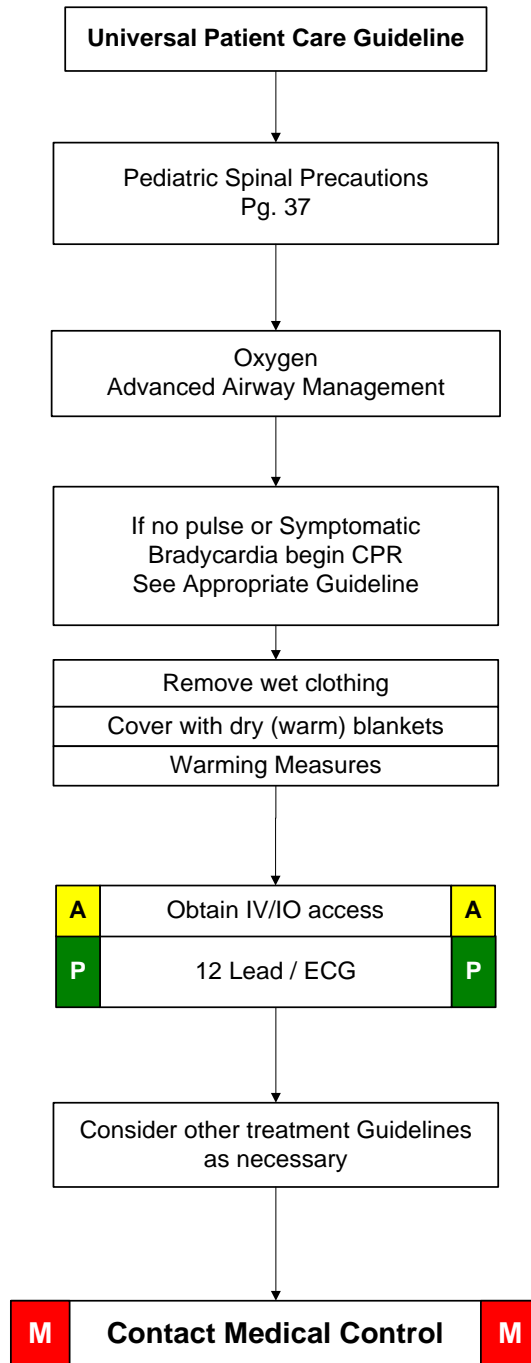
History:

- Submersion in water regardless of depth
- Possible history of trauma
- Duration of submersion
- Temperature of water

Differential:

- Trauma
- Pre-existing medical problems
- Barotrauma
- Decompression Sickness

Legend		
EMR		EMR
A	AEMT	A
P	PM	P
M	MC Order	M



Notes:

- Patients may have delayed respiratory symptoms. Transfer all patients for evaluation.



Pediatric Burns

History:

- Type of exposure
- Inhalation injury
- Time of injury
- Mechanism of Injury
- Non-accidental trauma

Differential:

- Superficial (1°) red and painful
- Partial thickness (2°) blistering
- Full thickness (3°) charred or leathery skin
- Chemical
- Thermal
- Electrical

Universal Patient Care Guideline

Oxygen ^{PRN}
Advanced Airway Management

Stop the burning process:
Remove jewelry and clothing that may be burned, covered in chemicals or restricting.

Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M

Thermal / Electrical

Chemical

Cover burn with a dry clean sheet or dressing

Keep warm

Brush off any excess chemical or powder

Flush area with water or Normal Saline (except materials that react with H₂O) Keep warm

Use Rule of 9's to calculate BSA

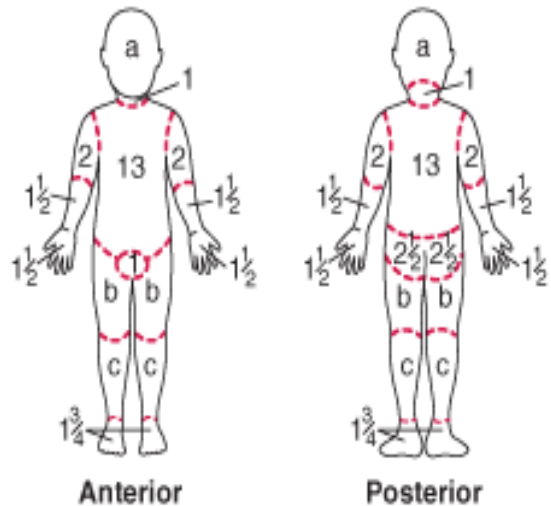
>15% then

Obtain IV/ IO access ^{PRN}
If Hypotensive
fluid bolus LR 20ml / kg
(if LR unavailable use NS)
If not Hypotensive
Maintenance fluid

Eye involvement?
Saline flush in the affected eye

Pain Management Guideline Pg. 27

M Contact Medical Control M



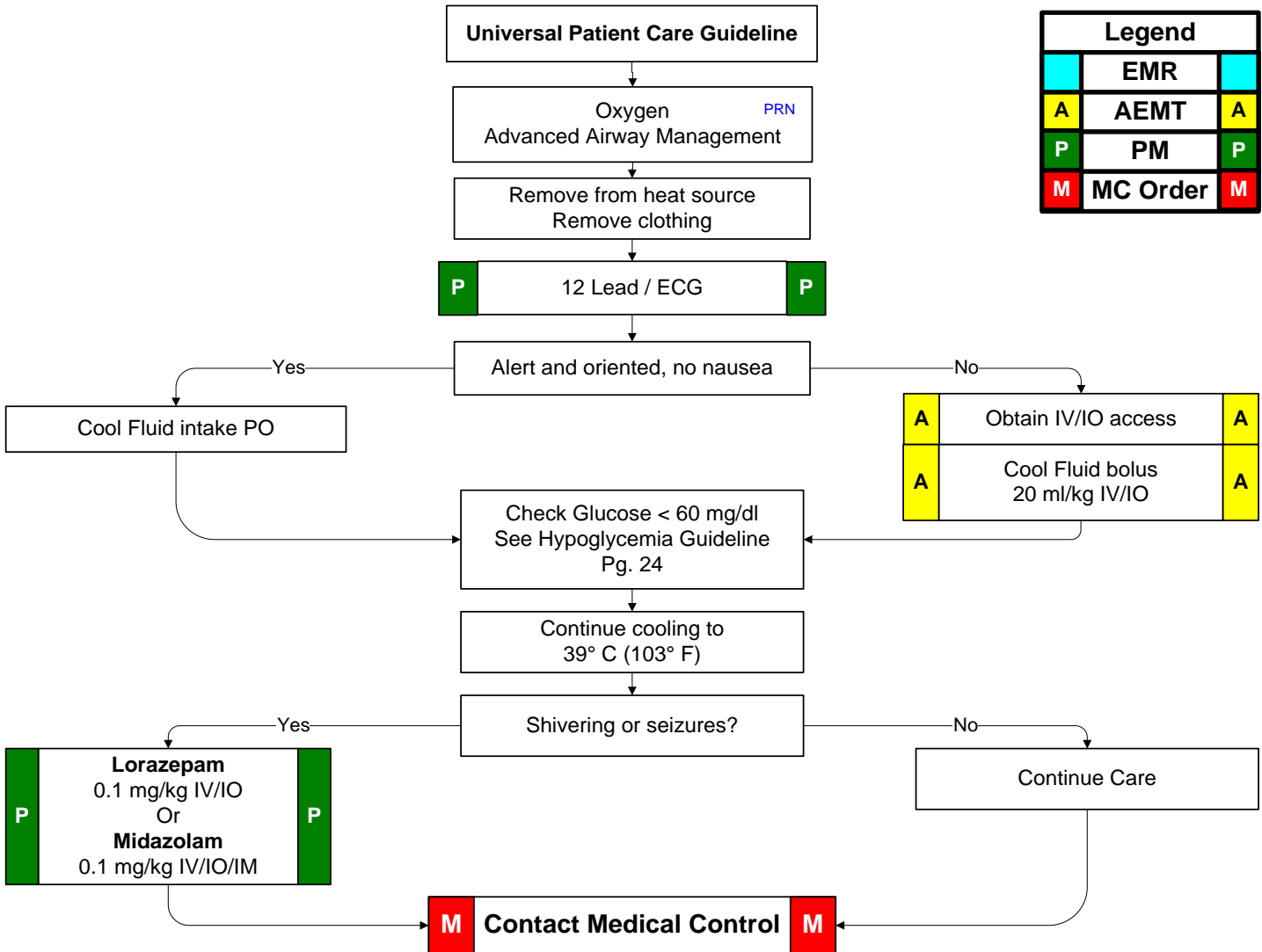
Relative percentage of body surface area (% BSA) affected by growth

Body Part	Age				
	0 yr	1 yr	5 yr	10 yr	15 yr
a = 1/2 of head	9 1/2	8 1/2	6 1/2	5 1/2	4 1/2
b = 1/2 of 1 thigh	2 3/4	3 1/4	4	4 1/4	4 1/2
c = 1/2 of 1 lower leg	2 1/2	2 1/2	2 3/4	3	3 1/4



Pediatric Heat Related Emergency

History: <ul style="list-style-type: none"> • Age • Exposure to increase temperature and/or humidity • Extreme exertion • Time and length of exposure • Fatigue and/or muscle cramping • Heat related emergency ≠ fever response to illness 	Differential: <ul style="list-style-type: none"> • Infection • Dehydration • Medications • Thyroid storm • Predisposing factors • Delirium tremors • CNS lesions or tumors • DKA
--	---



Legend		
EMR		EMR
A	AEMT	A
P	PM	P
M	MC Order	M

Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Lorazepam	0.04 mg	0.06 mg	0.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Midazolam	0.04 mg	0.06 mg	0.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg

Notes:

- Succinylcholine not recommended for Hyperthermic patients
- Document patient's rectal temperature
- Rapid cooling to 39° C (103° F) to avoid overshooting and shivering.
- Apply room temperature water to skin and increase airflow around patient if possible.
- Ice packs to axillae and groin



Pediatric Cold Related Emergency

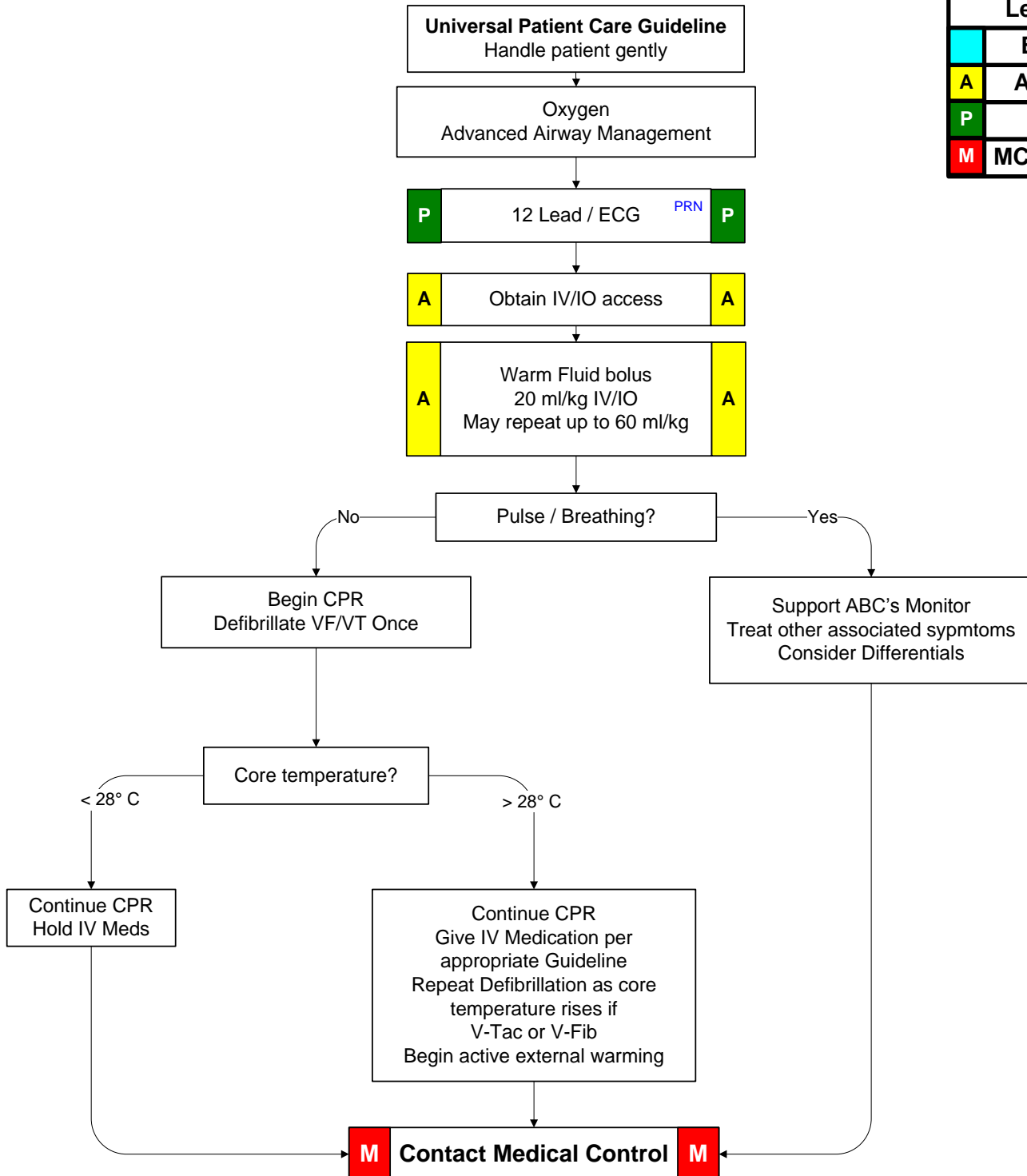
History:

- Age
- Exposure to decreased temperatures and / or humidity
- Past medical history / medications
- Time and length of exposure
- Hypothermia = core tem < 35° C

Differential:

- Medications
- CNS dysfunction
- Environmental exposure
- Poisoning/overdose

Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M

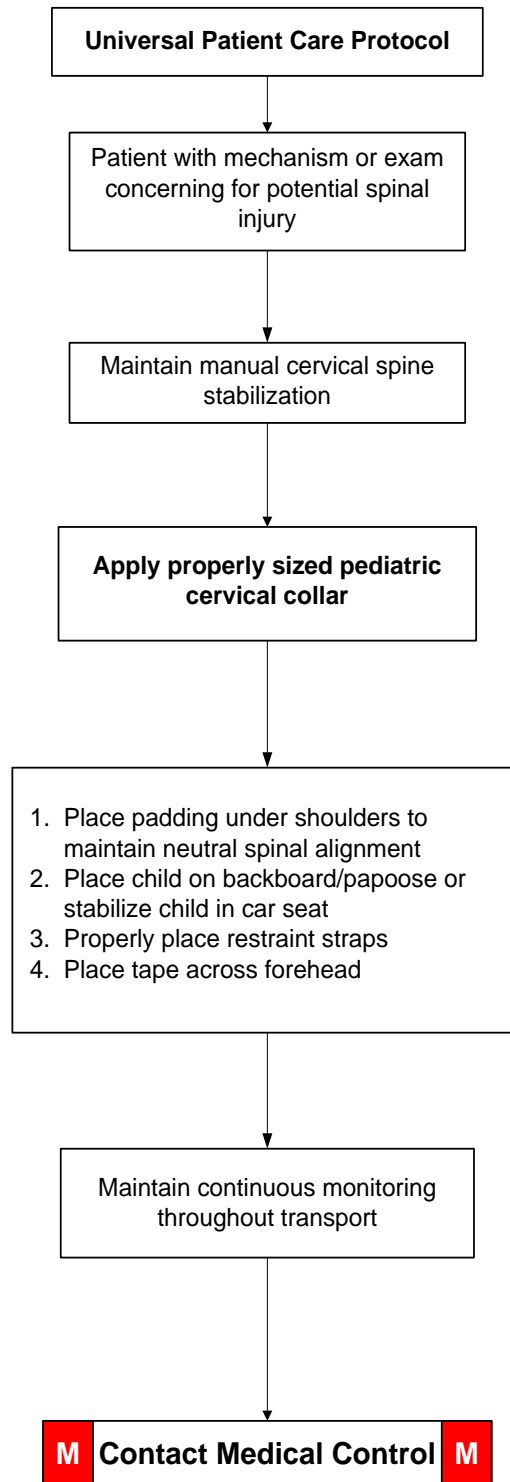


Pediatric Spinal Precautions

Recommended high-energy guidelines:

- High-speed motor vehicle collision
- Rollover motor vehicle accident
- Occupant ejected from motor vehicle
- Pedestrian/bicyclist struck by motor vehicle
- Any accident involving motorized recreational vehicles
- Diving accident
- Fall from height > 5 ft or > 5 stairs
- Any other high-energy mechanism with rapid acceleration and deceleration
- High contact sports injuries

Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M



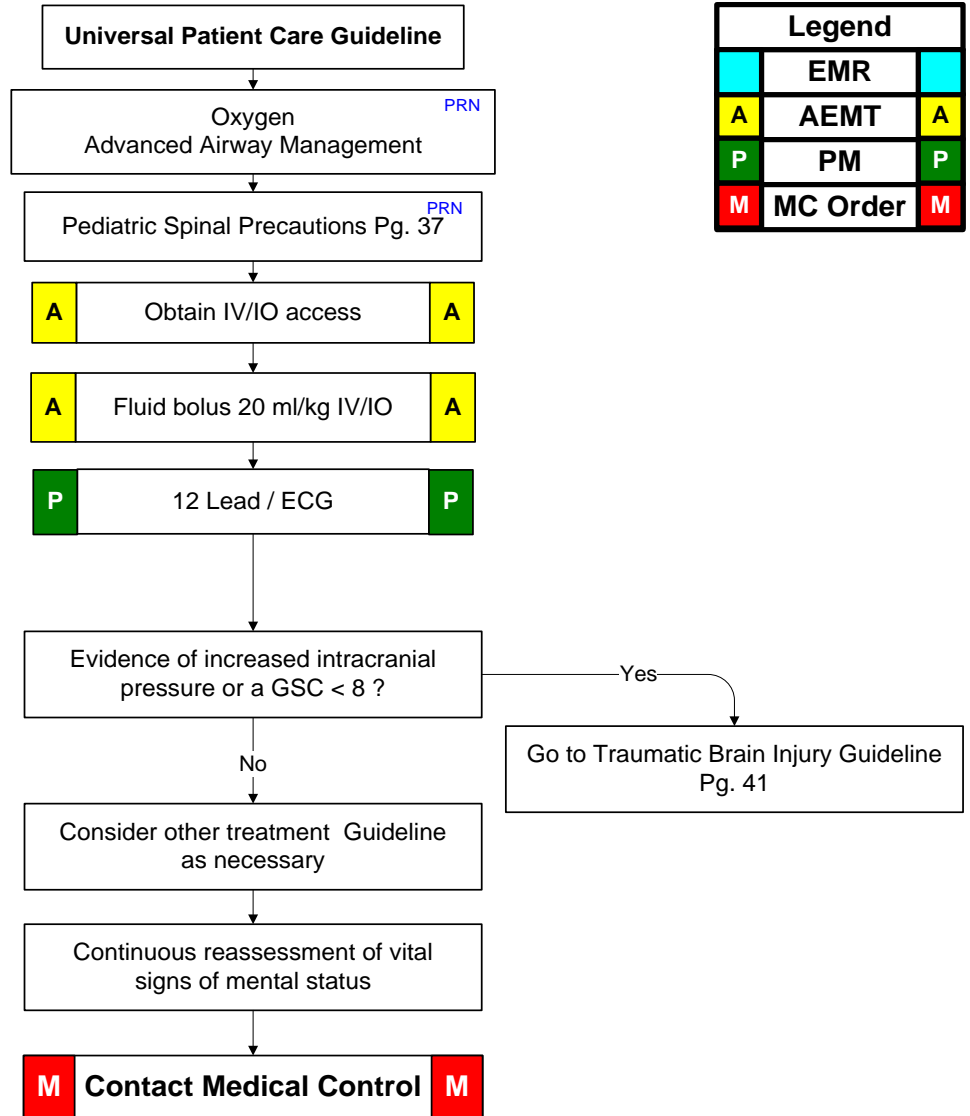
Sports Concussion

Signs observed by Others:

- Appears dazed or stunned
- Confusion
- Forgetfulness
- Unsure
- Moves Clumsily
- Answers Questions slowly
- Loses consciousness – not needed to have concussion
- Behavior or personality Changes
- Can't recall events prior to hit / fall
- Apparent weakness

Symptoms Report by Athlete:

- Headache
- Nausea or vomiting
- Balance problems or dizziness
- Double or blurry vision
- Sensitivity to light
- Sensitivity to noise
- Numbness or weakness in extremities
- Feeling sluggish, hazy, foggy, or groggy
- Concentration or memory problems
- Confusion
- DOES NOT "FEEL RIGHT"



Notes:

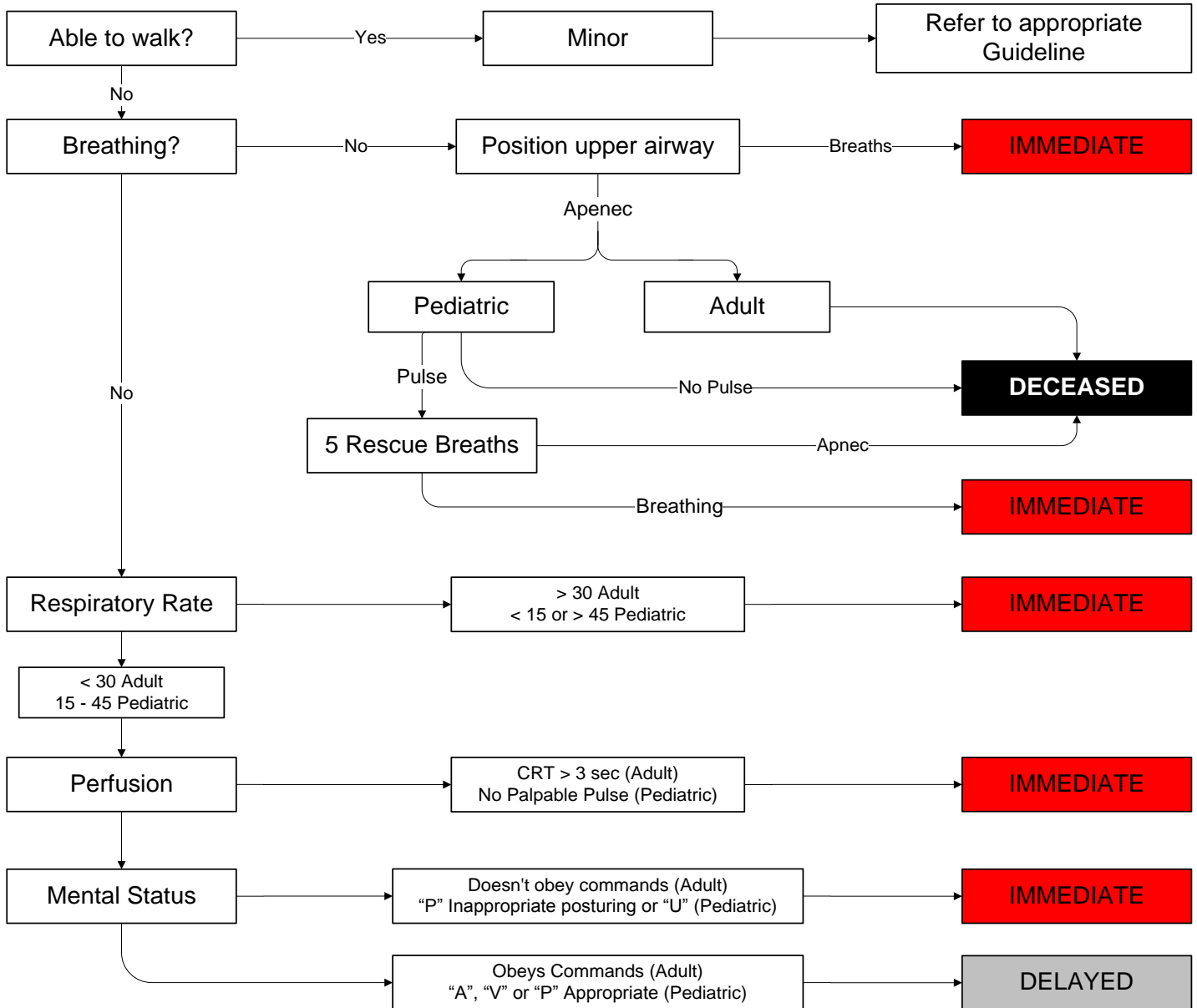
Signs of possible sports related concussion include:

- Trauma / Head Injury
- Headaches
- Dizziness
- Fatigue
- Uneven gait
- Nausea
- Blurred vision
- Amnesia
- Confusion
- Neurological deterioration over time



Pediatric START/JumpSTART Triage

Legend		
EMR		EMR
A	AEMT	A
P	PM	P
M	MC Order	M

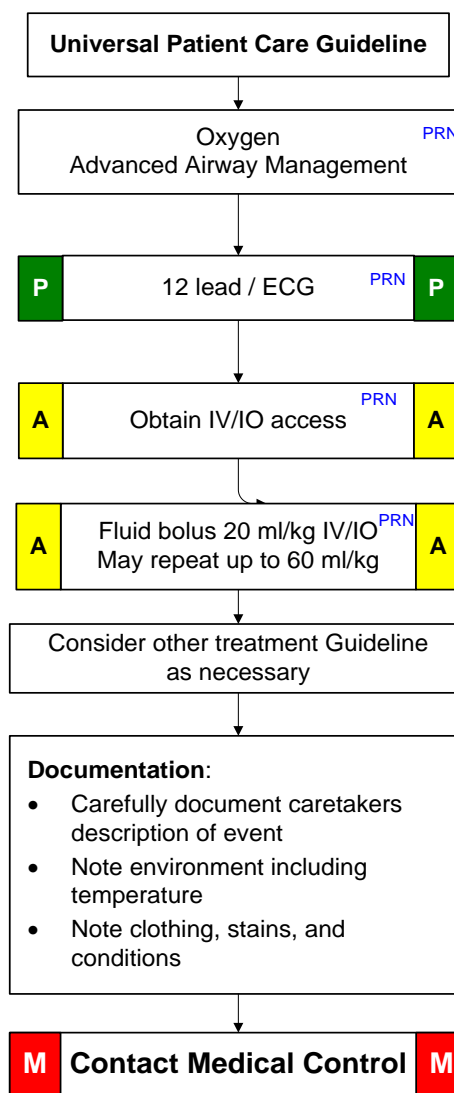


AVPU Infant / Child		
Response	Infant	Child
A - Alert	Curious / Recognizes parents	Alert / Aware of surroundings
V - Responds to Voice	Irritable / Cries	Opens eyes
P - Responds to Pain	Cries in response to pain	Withdrawals from pain
U - Unresponsive	No Response	Opens eyes



Suspected Child Abuse

<p>Physical findings:</p> <ul style="list-style-type: none"> • Unexplained bruises • Numerous/multiple bruises • Burns: <ul style="list-style-type: none"> ◦ Cigarette, Immersion, Rope, Infected, patterned • Torn, stained, bloody underclothes • Bleeding, irritation or pain of the genitals • Poor hygiene/malnourished • Child with repeated injuries/multiple calls to the same address • Flat/bald spots on head (infants) • Unexplained wet clothing/body 	<p>Behavioral:</p> <ul style="list-style-type: none"> • History of minor incident inconsistent with major injury • MOI inconsistent with developmental age • Inappropriate fear of parent • Inconsistent explanation for injury • Nervous disorders (rash, hives, stomachaches) • Age-inappropriate behaviors (bedwetting) • Lack of adult supervision • Delay in seeking medical care • Caregiver who refuses treatment or transport <p style="text-align: center;">Contact LE/CPS should caretaker not allow transport to hospital</p>
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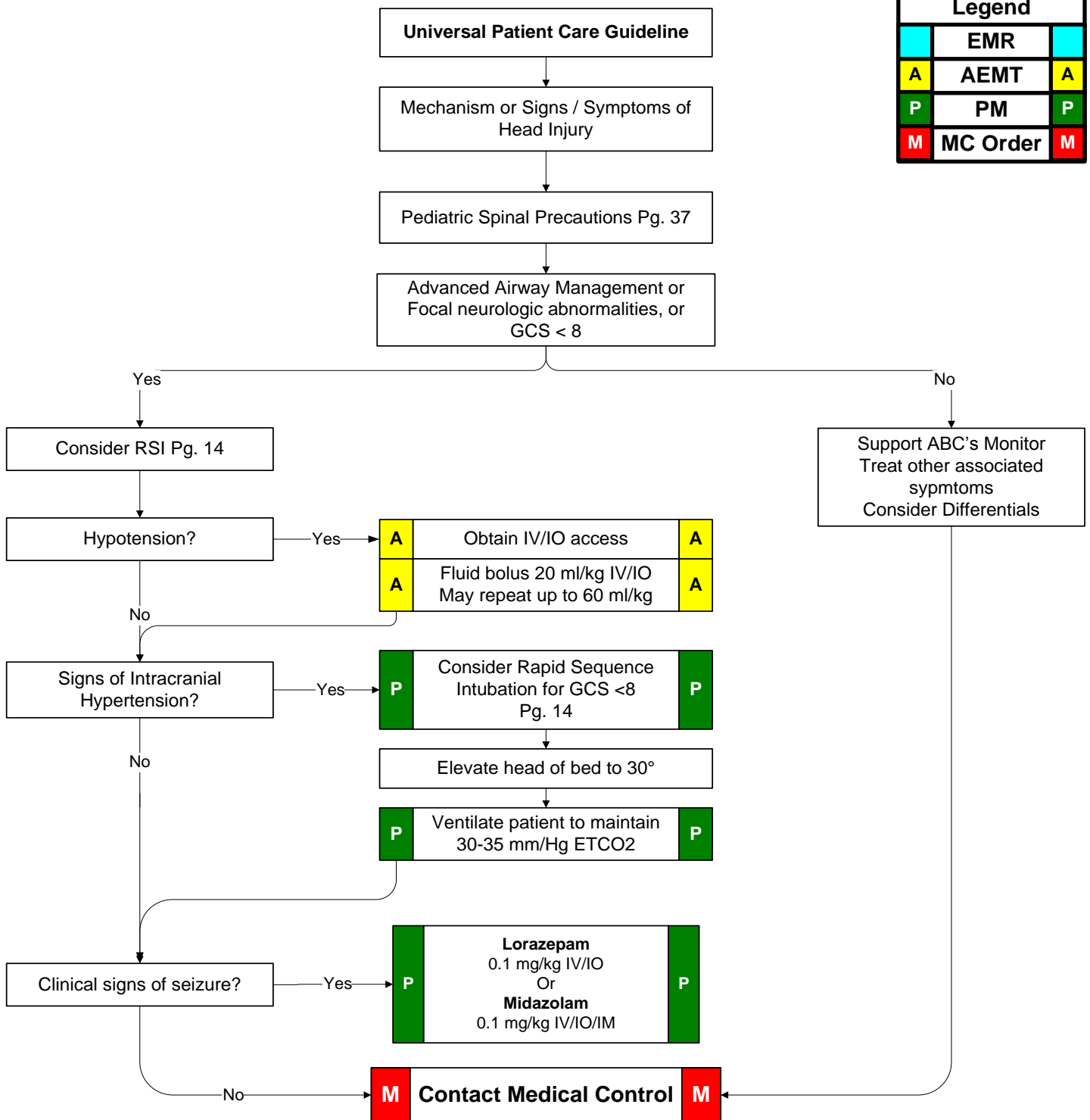
Legend		
	EMR	
A	AEMT	A
P	PM	P
M	MC Order	M

<p>Sexual abuse:</p> <ul style="list-style-type: none"> • May be present without apparent signs of physical abuse • Discourage patient from going to the bathroom • Don't allow patient to change clothes or wash • Bring clothing to hospital



Pediatric Traumatic Brain Injury

Legend		
EMR		EMR
A	AEMT	A
P	PM	P
M	MC Order	M



Weight	4 kg <i>grey</i>	6 kg <i>pink</i>	8 kg <i>red</i>	10 kg <i>purple</i>	12 kg <i>yellow</i>	15 kg <i>white</i>	19 kg <i>blue</i>	24 kg <i>orange</i>	30 kg <i>green</i>
Lorazepam	0.04 mg	0.06 mg	0.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg
Midazolam	0.04 mg	0.06 mg	0.08 mg	1 mg	1.2 mg	1.5 mg	1.9 mg	2.4 mg	3 mg



REFERENCES

Park MK Pediatric Cardiology for Practitioners, Mosby, 2002, 4th Edition

Pediatric Advanced Life Support: American Heart Association, 2002

Pediatric Advanced Life Support: American Heart Association, 2006

Rosen's Emergency Medicine: Concepts and Clinical Practice, 2006

John A Marx, Robert S. Hockberger, Ron M Walls, Mosby, 6th edition

Heatstroke: Robert S. Helmen, MD; Rania Habal, MD, eMedicine.medscape.com, September 18, 2009

NHLBI Guidelines for the Diagnosis and Management of Asthma (EPR-3), and updates
nhlbi.nih.gov/guidelines/asthma

eMedicine.medscape.com ; Brian E Benson, MD; Soly Baredes, MD; Robert A Schwartz, MD

eMedicine.medscape.com ; Antonio Muniz, MD; Rona E. Molodow, MD JD; Germaine L Defendi, MD

Medications: Harriet Lane Handbook, Lexicomp Pediatrics

Jamie Alison Edelstein, MD, James Li, MD, Mark Silverberg, MD, Wyatt Decker, MD; Update October 2009

American Burn Association; ameriburn.org

Advanced Trauma Life Support for Doctors; American College of Surgeons Committee on Trauma, 8th Edition, 2008

Cervical Spine Clearance Algorithm; Columbus Ohio Division of Fire, February 2004

Kwon BK, Vaccaro AR, Grauer JN, Fisher CG, Dvorak MF; Subaxial Cervical Spine Trauma, J American Academy Orthopaedic Surgeons, 2006; 14: 78-89

Yates D, Breen K, Brennan P. Head Injury: triage, assessment, investigation and early management, National Guideline Clearinghouse, June 2003

Luhs.org/depts./emsc/Prehospital

Markenson D, tunkik M, Cooper A, et al. A national assessment of knowledge, attitudes and confidence of prehospital providers in the assessment and management of child maltreatment, Pediatrics 119(1):e103-8, Jan. 2007

Ndhealth.gov/EMS/BLS.htm

Emsoffice.com/protocols

[Emsresponder.com/print/EMS-Magazine/EMS-and-Child-Abuse/1\\$4682](http://Emsresponder.com/print/EMS-Magazine/EMS-and-Child-Abuse/1$4682)

Cob.org/cob/policies.nsf/0/10311735FCE4882574D40064E0A2

