Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Quick Reference – Peds (<12 y/o)

Vital Signs In Children						
Age	**Heart Rate (Beats Per Minute)**		**Age**	**Respiratory Rate (Breaths Per Minute)**	**Age**	**Minimum Systolic Blood Pressure**
	Awake Rate	Sleeping Rate				
Newborn – 3mos	85-205	80-160	Infant	30-60	Term Neonates (0-28days)	>60
3mos – 2years	100-190	75-160	Toddler	24-40	Infants (1-12mos)	>70
2years – 10years	60-140	60-90	Preschooler	22-34	Children 1-10years	>70 + (age in years x 2)
>10years	60-100	50-90	School-Aged Child	18-30	Chilcren >10years	>90
			Adolescent	12-16		

Modified Glasgow Coma Scale for Infants and Children			
	Child	**Infant**	**Score**
Eye Opening	Spontaneous	Spontaneous	4
	To Speech	To Speech	3
	To Pain	To Pain	2
	None	None	1
Best Verbal Response	Oriented, Appropriate	Coos and Babbles	5
	Confused	Irritable, Cries	4
	Inappropriate Words	Cries in Response to Pain	3
	Incomprehensible Sounds	Moans in Response to Pain	2
	None	None	1
Best Motor Response	Obeys Commands	Moves Spontaneously and Purposely	6
	Localizes Painful Stimulus	Withdraws in Reponse to Touch	5
	Withdraws in Response to Pain	Withdraws in Response to Pain	4
	Flexion in Response to Pain	Abnormal Flexion Posture to Pain	3
	Extension in Response to Pain	Abnormal Extension Posture to Pain	2
	None	None	1

Wisconsin EMSC Recommended Weight Conversion (2.2lbs = 1kg -OR- 1lb = 0.45kg)					
Lbs.	**Kgs.**	**Lbs.**	**Kgs.**	**Lbs.**	**Kgs.**
5 lbs	**2 kgs**	**20 lbs**	**9 kgs**	**35 lbs**	**16 kgs**
6	**3**	**21**	**10**	**36**	**16**
7	**3**	**22**	**10**	**37**	**17**
8	**4**	**23**	**10**	**38**	**17**
9	**4**	**24**	**11**	**39**	**18**
10 lbs	**5 kgs**	**25 lbs**	**11 kgs**	**40 lbs**	**18 kgs**
11	**5**	**26**	**12**	**41**	**19**
12	**5**	**27**	**12**	**42**	**19**
13	**6**	**28**	**13**	**43**	**20**
14	**6**	**29**	**13**	**44**	**20**
15 lbs	**7 kgs**	**30 lbs**	**14 kgs**	**45 lbs**	**20 kgs**
16	**7**	**31**	**14**	**46**	**21**
17	**8**	**32**	**15**	**47**	**21**
18	**8**	**33**	**15**	**48**	**22**
19	**9**	**34**	**15**	**49**	**22**
www.chawisconsin.org				**50 lbs**	**23 kgs**

Equipment	**GRAY 3-5kg**	**PINK Small Infant 6-7kg**	**RED Infant 6-9kg**	**PURPLE Toddler 10-11kg**	**YELLOW Small Child 12-14kg**	**WHITE Child 15-18kg**	**BLUE Child 19-23kg**	**ORANGE Large Child 24-29kg**	**GREEN Adult 30-36kg**
Resuscitation Bag		Infant/Child	Infant/Child	Child	Child	Child	Child	Child	Adult
Oxygen Mask (NRB)		Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric/ Adult
Oral Airway (mm)		50	50	60	60	60	70	80	80
Laryngoscope Blade (Size)		1 Straight	1 Straight	1 Straight	2 Straight	2 Straight	2 Straight OR Curved	2 Straight OR Curved	3 Straight OR Curved
Endotracheal Tube (mm)		3.5 Uncuffed 3.0 Cuffed	3.5 Uncuffed 3.0 Cuffed	4.0 Uncuffed 3.5 Cuffed	4.5 Uncuffed 4.0 Cuffed	5.0 Uncuffed 4.5 Cuffed	5.5 Uncuffed 5.0 Cuffed	6.0 Cuffed	6.5 Cuffed
King Airway	Size 0 (Clear)	Size 1 (White)	Size 1 (White)	Size 1 (White)	Size 2 (Green)	Size 2 (Green)	Size 2.5 (Orange)	Size 3 (Yellow)	Size 3 (Yellow)
LMA	NA	#1	#1	#1.5	#2	#2.5	#3	#3.5	#4
Suction Catheter (French)		8	8	10	10	10	10	10	10-12
BP Cuff	Neonatal #5/ Infant	Infant/Child	Infant/Child	Child	Child	Child	Child	Child	Small Adult
IV Catheter (ga)		22-24	22-24	20-24	18-22	18-22	18-20	18-20	16-20
IO (ga)		18/15	18/15	15	15	15	15	15	15
NG Tube (French)		5-8	5-8	8-10	10	10	12-14	14-18	16-18

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Destination Determination

Step One — Measure Vital Signs and Level of Consciousness

Glasgow Coma Scale ≤13
Systolic blood pressure (mmHg) <70 + (age in years x 2)mmHG
Respiratory rate <10 or Inadequate Effort
OR need for ventilation support

Yes → Transport to Pediatric ICU Capable Facility; Notify via Radio as early as possible

Any Airway Compromise not able to be managed by EMS should be taken to the CLOSEST FACILITY for stabilization immediately

No

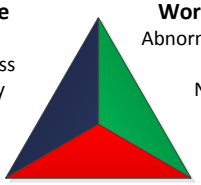
Step Two — Assess Severity of Illness

- Prolonged Seizure **OR** Status Epilepticus
- Cardiac Arrest **OR** Respiratory Arrest
- Severe Respiratory Distress (Cyanosis **OR** SpO2 ≤90%)
- Massive Gastrointestinal Bleeding
- Life Threatening Dysrhythmias
- Compromised Airway not relieved by EMS
- Signs or Symptoms of Sepsis or Shock

Yes → Transport to Pediatric ICU Capable Facility; Notify via Radio as early as possible

Appearance
Tone
Interactiveness
Consolability
Look/Gaze
Speech/Cry

Work of Breathing
Abnormal Breath Sounds
Retractions
Nasal Flaring



Circulation to the Skin
Pallor
Mottling
Cyanosis

No

Step Three — Assess for Potential Time-Sensitive Problems

- Altered Mental Status **NOT** Explained by Simple Hypoglycemia
- Significant Allergic Reaction
- Impending Cardiac **OR** Respiratory Collapse
- Multiple Medications Administered During Transport (*Including* Albuterol)

Yes → Transport to closest appropriate Pediatric ICU Capable Facility

No

Step Four — Assess Special Patient or System Considerations

- Age ≤1 year
- Anticoagulation **AND/OR** history of bleeding disorder(s)
- Significant Toxic Ingestion / Poisoning / Overdose History (Proven **OR** Suspected) with deteriorating vital signs **OR** not responding to therapy
- Burns
  - without other trauma, transport to B*urn Facility*
  - with traumatic mechanism, transport to T*rauma Center*
- End Stage Renal Disease requiring Hemodialysis
- Medically complex patients requesting transport to non-PICU Facility
- **EMS provider judgment**

Yes → **Contact Medical Control**; Consider Pediatric ICU Capable Facility **OR** Specialty Resource Center

No

Transport according to Appropriate Medical Protocol

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

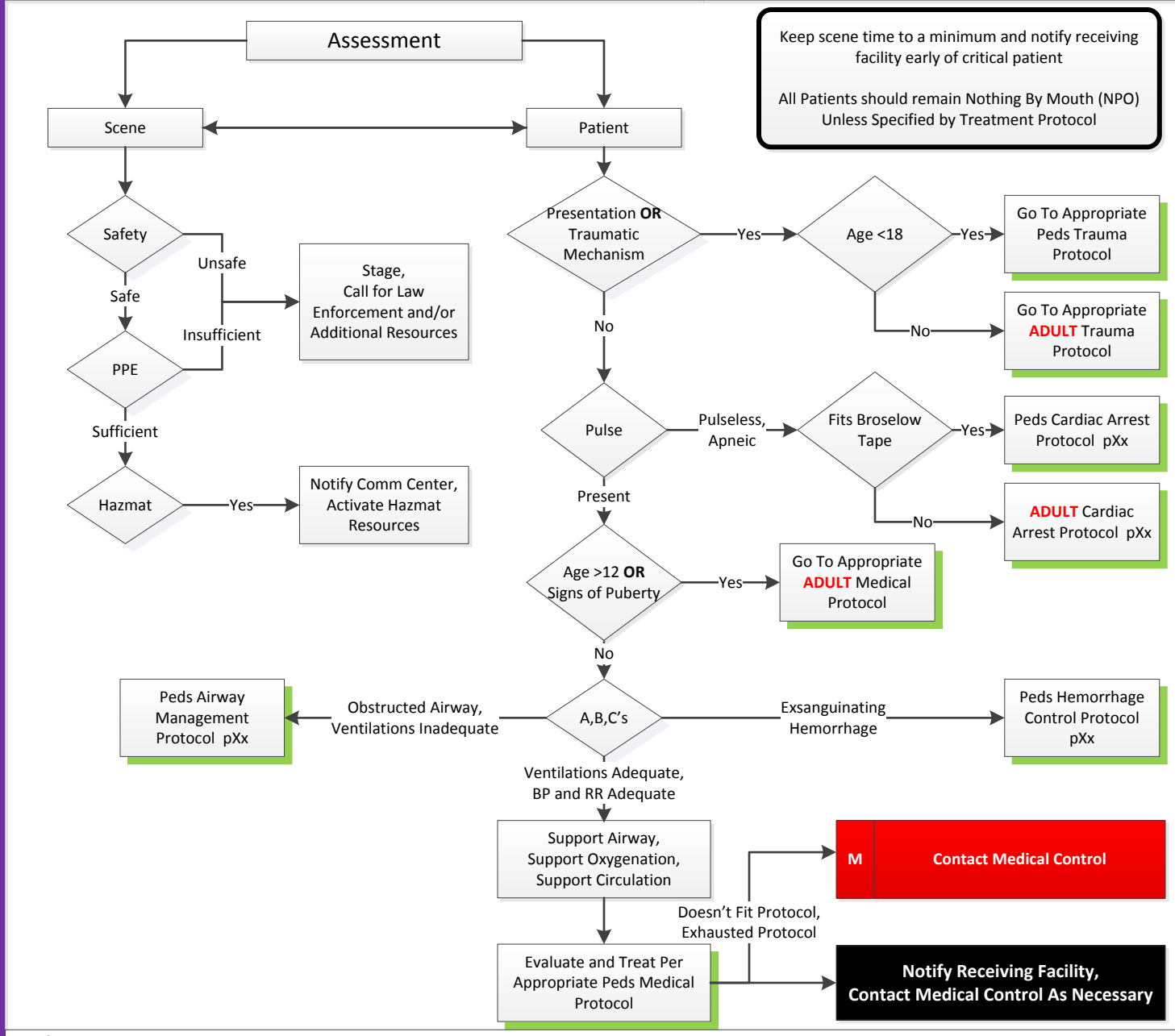
General Approach – Peds, Medical

Pertinent Positives and Negatives

- Age, VS, BP, RR, SpO2
- SAMPLE history
- OPQRST history
- Source of blood loss, if any (GI, vaginal, AAA, ectopic)
- Source of fluid loss, if any (vomiting, diarrhea, fever)
- Pregnancy history
- Mental Status
- Pale, Cool Skin
- Delayed Cap Refill
- Coffee Ground Emesis
- Tarry Stools
- Allergen Exposure

Differential

- Cardiac Dysrhythmia
- Hypoglycemia
- Ectopic Pregnancy
- AAA
- Sepsis
- Occult Trauma
- Adrenal Insufficiency



Pearls

REQUIRED EXAM: VS, GCS, Nature of Complaint

- Continuous Cardiac Monitor should be applied early for *any* non-traumatic pain complaint between the ear lobes and the umbilicus (belly button). Consider 12-Lead if concerning findings on Cardiac Monitor.
- Include Blood Glucose reading for *any* patient with **weakness, altered mental status, seizure, loss of consciousness or known history of diabetes**
- Measure *and document* SpO2, EtCO2 for ANY patient with complaint of weakness, altered mental status, respiratory distress, respiratory failure or EMS managed airway
- If hypotensive (Systolic BP<Reference Page Value) and/or clinical evidence of dehydration, consider Peds IV Access Protocol and Shock (Non-Trauma) Peds Medical Protocol
- Any patient contact which does not result in an EMS transport must have an appropriately executed and completed refusal form.
- Never hesitate to consult Medical Control for assistance with patient refusals that can't meet all required fields, clarification of protocols or for patients that make you uncomfortable.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Airway Management - Peds

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of CHF, COPD, Asthma
- Lung Sounds before *AND after* intervention
- Allergen Exposure
- Toxic / Environmental Exposure

Differential

- Head Injury
- Electrolyte Abnormality
- COPD Exacerbation
- CHF Exacerbation
- DM, CVA, Seizure, Tox
- Sepsis
- Asthma Exacerbation
- Drug Ingestion / Overdose

General Approach – Peds, Medical

Assess A,B,C's (RR, Effort, Adequacy)

Adequate → Supplemental Oxygen As Appropriate (Nasal Cannula, Facemask)

Evaluate and Treat Per Appropriate Peds, Medical Protocol

Inadequate

Basic Airway Maneuvers (Open Airway, Suction, NPA vs. OPA)

Consider Need for ALS Level Service EARLY

Anticipate and Prepare for the Difficult Airway

LEMON Rule

- **L**ook Externally
- **E**valuate with 3:3:2 Rule
- **M**allampati Classification
- **O**bstruction
- **N**eck Mobility (or lack thereof)

Assess Mental Status

Altered **AND/OR** Apneic → Bag-Valve Mask

Bag-Valve Mask → Failed → Consider Advanced Airway; Max 2 Attempts pXx-Xx

P **x2** Consider Invasive Airway Protocol pXx

Each Attempt should include change in approach, operator and/or equipment **NO MORE THAN TWO (2) ATTEMPTS TOTAL**

Awake **OR** Protecting Airway → Consider CPAP Procedure IF mask fits patient, Awake, Following Commands **and** SBP ≥100 pXx

M **Consider Midazolam 0.1mg/kg IV (max 2.0mg) If needed for CPAP compliance**

Decomp-ensated → Consider Advanced Airway; Max 2 Attempts pXx-Xx

Successful / Successful

Assess Air Movement and Chest Rise

Poor Chest Rise **OR** Poor Air Exchange → Consider Airway Obstruction Procedure pXx

Consider Peds Failed Airway Protocol pXx

P **x2** Consider Invasive Airway Protocol pXx

Good Chest Rise **AND** Good Air Exchange → Document Response to Procedure Continuous EtCO2, SpO2 Monitoring

Transport to PICU Capable Facility Contact Medical Control As Necessary

Pearls

REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

- Digital capnography is the standard of care and is to be used with ALL methods of advanced airway management and endotracheal intubation
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 >93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- *Always* assume that patient reports of dyspnea and shortness of breath are physiologic, **NOT** psychogenic! Treatment for dyspnea is O_2, not a paper bag!
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allow
- Each Attempt should include change in approach, operator and/or equipment - **NO MORE THAN TWO (2) ATTEMPTS TOTAL**
- Once secured, every effort should be made to keep the advanced airway in the airway; commercially available tube holders and C-collars are good adjuncts
- For this protocol, an Attempt is defined as passing the tip of the laryngoscope blade or Advanced Airway past the teeth

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Invasive Airway - Peds

Airway Management – Peds, Medical

P**x2** Consider Rapid Sequence Airway - Peds Procedure pXx

Preparation (8 Minutes Before Attempt)
IV, O2, Continuous Cardiac Monitor, SpO2, EtCO2, BP
Confirm Video Laryngoscope Function, ETT Balloon, Stylet, Syringes
Prepare Rescue Airway Device
Medications Drawn Up and Labeled

Preoxygenate (5 Minutes Before Attempt)
100% O2 x 5 Minutes
8 Vital Capacity Breaths via BVM or NRB
Continue Until Airway Secured
Continue apneic oxygenation via high-flow Nasal Cannula throughout procedure (if available)

Pretreatment (3 Minutes Before Attempt)
Cricoid Pressure (Sellick's Maneuver)
Lidocaine 1.5mg/kg IV/IO If Head Injury (max 150mg)

Induction (0 Minutes Before Attempt)
Etomidate 0.3mg/kg IV/IO (max 20mg) **OR**
M **Ketamine 2mg/kg IV/IO, max 200mg**

Unsuccessful

Placement with Proof (<30 Seconds After Attempt)
Continuous EtCO2, Auscultation, Chest Rise, Fogging in Tube
Secure Device
Print capnography strip and document depth

Unsuccessful **OR** Poor Proof → Failed Airway, Peds Protocol pXx

Post Placement Management (60 Seconds After Success)

Post-Advanced Airway Sedation, Peds pXx

→ **Notify Receiving Facility, Contact Medical Control As Necessary**

Indications for Invasive Airway Management

- Age >18 years old for Paralytic Use
- Apnea
- Decreased Level of Consciousness with Respiratory Failure
- Poor Ventilatory Effort with Hypoxia
- Unable to Maintain Airway with Noninvasive Methods
- Burns with Suspected Airway Involvement
  - Singed Facial Hair
  - Hoarseness
  - Wheezing
  - Subjective Shortness of Breath

Each Attempt should include change in approach, operator and/or equipment
NO MORE THAN TWO (2) ATTEMPTS TOTAL

Contraindications for Invasive Airway Management

- Medication Hypersensitivities
- Inability to Ventilate with BVM
- Suspected Hyperkalemia
  - History of ESRD, Burns, Crush Injury
- History Malignant Hyperthermia
- Myopathy or Neuromuscular Disease
- Recent Burn (≥48 Hours after Burn and <1 week)
- Recent Spinal Cord Injury (≥72 Hours but ≤6 Months)

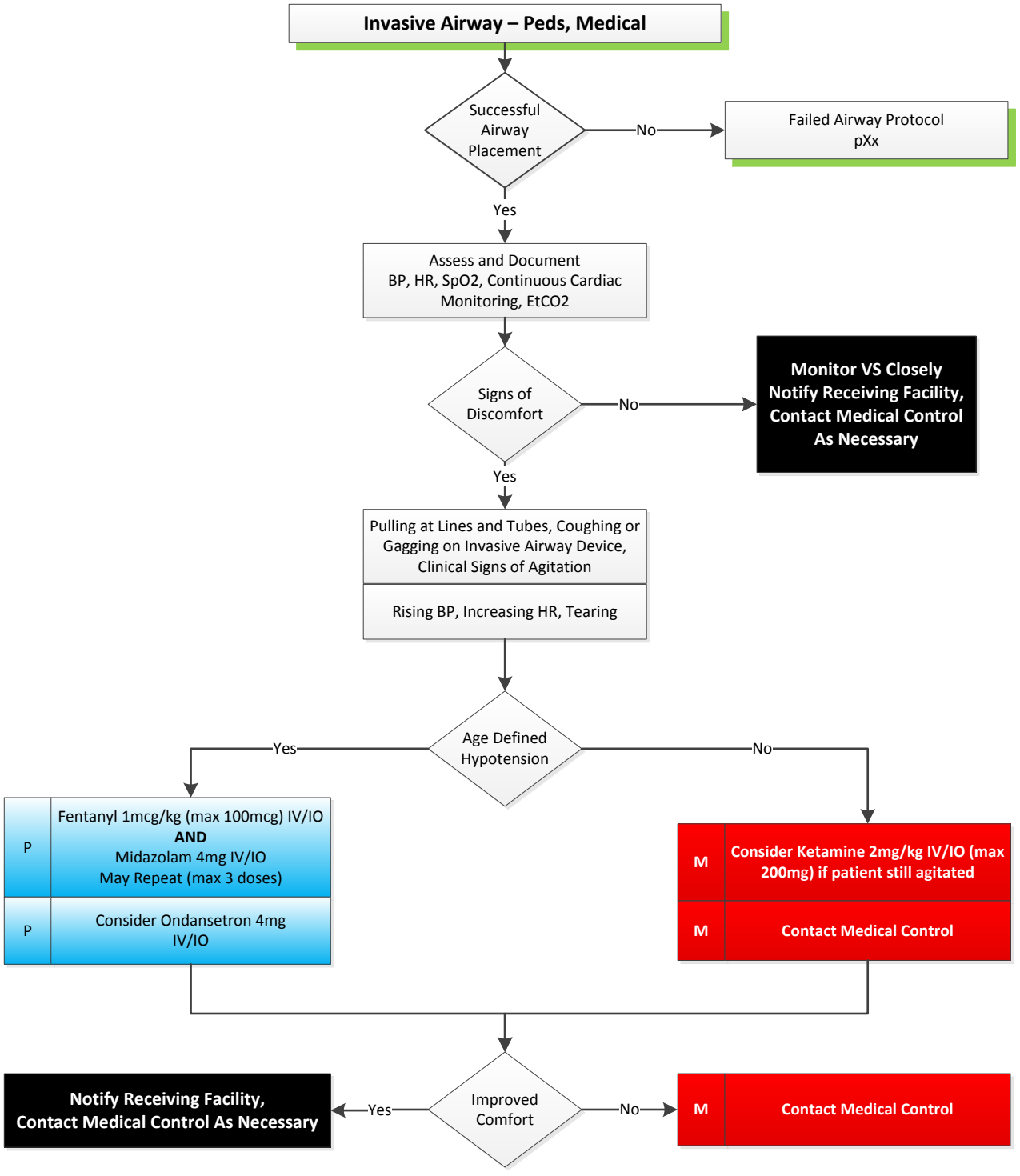
Pearls

REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose, Lung Exam, Posterior Pharynx

- Digital capnography is the standard of care and is to be used with all methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Advanced Airway Device is placed, an intercept with a capable service **MUST** be completed
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 ≥93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allows
- Once secured, every effort should be made to keep the endotracheal tube in the airway; commercially available tube holders and C-collars are good adjuncts
- For all protocols, an Intubation Attempt is defined as passing the tip of the laryngoscope blade or Blindly Inserted Airway Device (BIAD) tube past the teeth
- Recent history of Upper Respiratory Infection, Missing / Loose Teeth or Dentures all will increase complexity of airway management

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Post Airway Sedation - Peds



Pearls

REQUIRED EXAM: VS, GCS, Nature of Complaint

- Paralytics block movement of skeletal muscle but do **NOT** change awareness. Remember that without sedation, patients may be **awake** but **paralyzed**
- Monitor Vital Signs closely when managing airways and sedation. Changes that indicate pain, anxiety ***as well as tube dislodgment*** may be subtle (at first)!!
- Document Vital Signs before and after administration of every medication to prove effectiveness
- ANY change in patient condition, reassess from the beginning. Use the mnemonic DOPE (Dislodgment, Obstruction, Pneumothorax, Equipment) to troubleshoot problems with the ET Tube
- Ketamine may be considered for sedation AFTER standard regimen exhausted AND if Ketamine **NOT** used as induction agent for intubation
- Continuous End Tidal CO2 is mandatory for all intubated patients – color change is not sufficient proof of ET Tube in the trachea

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Failed Airway - Peds

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of CHF, COPD, Asthma
- Lung Sounds before *AND after* intervention
- Allergen Exposure
- Toxic / Environmental Exposure

Differential

- Head Injury
- Electrolyte Abnormality
- COPD Exacerbation
- CHF Exacerbation
- DM, CVA, Seizure, Tox
- Sepsis
- Asthma Exacerbation
- Drug Ingestion / Overdose

Airway Management Protocol – Peds, Medical

Each Airway Placement Attempt should include change in approach, operator and/or equipment
NO MORE THAN TWO (2) ATTEMPTS TOTAL

One (1) unsuccessful attempts at BIAD Placement
OR
Anatomy Inconsistent with Continued Attempts
AND
Unable to Ventilate or Oxygenate adequately during or after one (1) unsuccessful BIAD Placement Attempt

Call for additional resources as available
Expedite Transport to **CLOSEST** Emergency Dept. Do NOT spend time on scene

Bag-Valve Mask
Airway Adjuncts
Adjust Positioning

SpO_2 ≥93% → Go To Appropriate Medical Protocol

Unsuccessful

Significant Facial Trauma / Swelling / Airway Distortion

Yes →
- M: **Notify Medical Control (As Practical)**
- P: Needle Jet Insufflation Procedure pXx (>5 but ≤12 years old)
- P: Cricothyrotomy (Open) Surgical Procedure pXx (>12 years old)

No →
- Px2: Peds Invasive Airway Protocol, pXx

Airway Successful

No →
- M: **Notify Medical Control (As Practical)**
- P: Needle Jet Insufflation Procedure pXx (>5 but ≤12 years old)
- P: Cricothyrotomy (Open) Surgical Procedure pXx (>12 years old)

Yes →
- Continue Ventilations and Support Airway Maintain SpO2 >93%, Goal EtCO2 35-45mmHg

Continue Ventilations and Support Airway
Maintain SpO2 ≥93%
Goal EtCO2 is 35-45mmHg

- M: **Notify Medical Control (If Not Already Done)**

Notify Receiving Facility, Contact Medical Control As Necessary

Pearls

REQUIRED EXAM: VS, GCS, Lung Sounds, RR, Skin, Neuro

- A patient with a "failed airway" is near death or dying, not stable or improving. Inability to place a BIAD airway or low SpO2 alone are not indications for surgical airway.
- Continuous digital capnography is the standard of care and is to be used with **ALL** methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Invasive Airway Device is placed, an intercept with a capable service **MUST** be completed
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 ≥93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allow
- Once secured, every effort should be made to keep the advanced airway in the airway; commercially available tube holders and C-collars are good adjuncts
- For this protocol, *an Attempt is defined as* passing the tip of the laryngoscope blade or advanced airway past the teeth

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

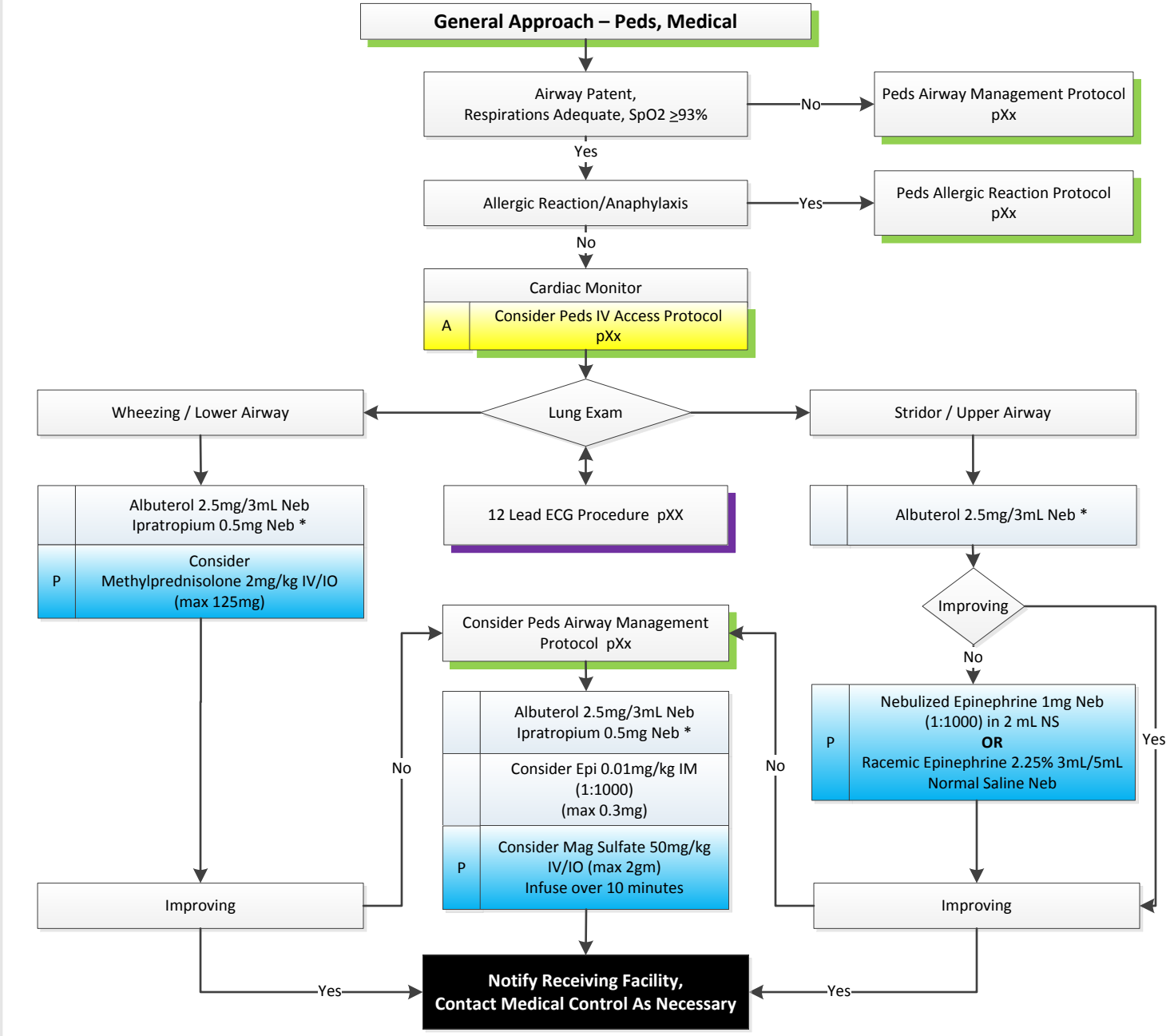
Wheezing / Asthma - Peds

Pertinent Positives/Negatives:

- Age, VS, SpO2, EtCO2
- SAMPLE history
- OPQRST history
- Asthma, COPD, CHF history
- Home meds used prior to call (Nebs, Steroids, Theophylline)
- Wheezing, Rhonchi
- Accessory Muscle Use
- Decreased Ability to Speak
- History of CPAP/Intubation/ICU Admission from previous flares
- Smoke Exposure, Inhaled Toxins

Differential

- Simple Pneumothorax
- Tension Pneumothorax
- Pericardial Tamponade
- STEMI, CHF
- Inhaled Toxins (CO, CN, etc.)
- Anaphylaxis
- Asthma/COPD



Pearls

REQUIRED EXAM: VS, 12 Lead, GCS, RR, Lung Sounds, Accessory muscle use, nasal flaring

- Do not delay inhaled meds to get an extended history. Assessments and interviews may be carried out simultaneously with breathing treatments
- Supplemental O2 should be administered for all cases of hypoxia, tachypnea, and subjective air hunger
- Magnesium Sulfate is contraindicated if there is a history of renal failure
- Keep patient in position of comfort if partial obstruction
- EpiPen Jr. is 0.15mg and is indicated for patients <60lbs. The adult EpiPen is 0.30mg and is indicated for patients ≥60lbs
- Severe Asthma attacks may have such severe obstruction that they do NOT wheeze. Cases of "Silent Chest" need aggressive management with inhaled and IV medications. This is an ominous sign of impending respiratory failure.
- * **Albuterol** max 3 doses total, **Ipratropium** max 2 doses total. If pt. requires repeat dosing of either medication, contact Med Control **AND/OR** Activate ALS

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

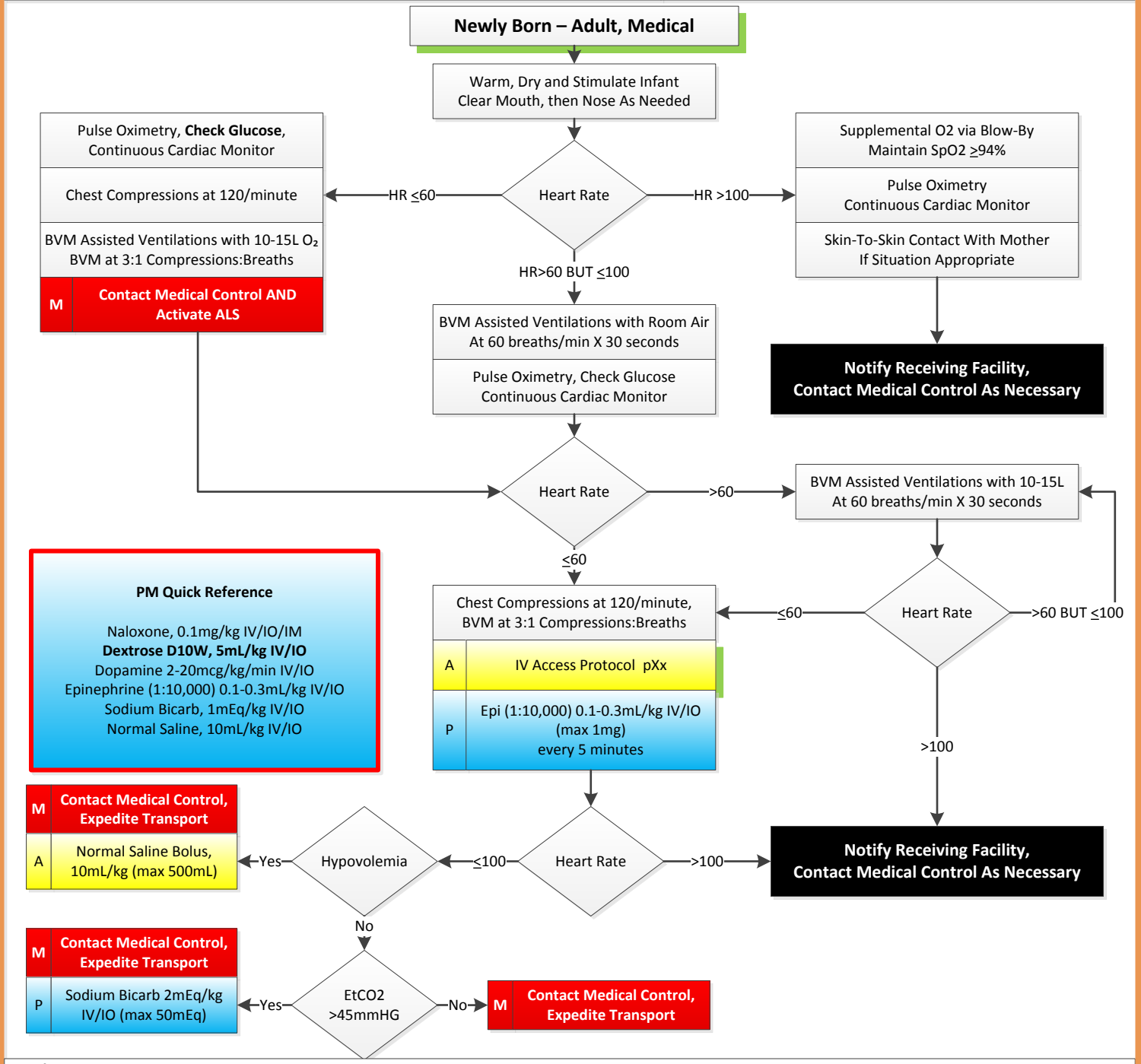
Neonatal Resuscitation - Peds

Pertinent Positives and Negatives

- Time of Delivery, Estimated Weight or Broselow
- Events Surrounding Arrest
- Estimated Time of Arrest
- Past Medical History (if known)
- Medications
- Concern for Foreign Body Aspiration
- Body Temperature
- History of Congenital Heart Defect

Differential

- Hypoxemia, Hypovolemia, Hypotension, Acidosis
- Toxins, Tension Pneumo, Pericardial Tamponade
- Hypoglycemia, Trauma
- Respiratory Failure
  -Foreign Body, Infectious, Epiglottitis



Pearls

REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

- If no IV Access in 3 attempts or 90sec (whichever comes first), move to IO
- Call early for ALS Intercept on neonates who are critically ill, and involve Medical Control so arrangements can be made at the receiving facility
- Transport rapidly to an OB Receiving Facility
- Consider hypoglycemia as etiology of neonatal arrest/peri-arrest situation. If not able to evaluate blood sugar, treat presumptively x 1
- The increased concentration of fetal hemoglobin (HbF) and its increased affinity for oxygen is a factor to consider in establishing target SpO2 values in the neonate. HbF will shift the oxygen dissociation curve to the left due to its high affinity for oxygen, which may result in high oxygen saturation (eg, 85 percent) at PaO2 levels below 40 mmHg

Legend	
	EMT
A	A-EMT
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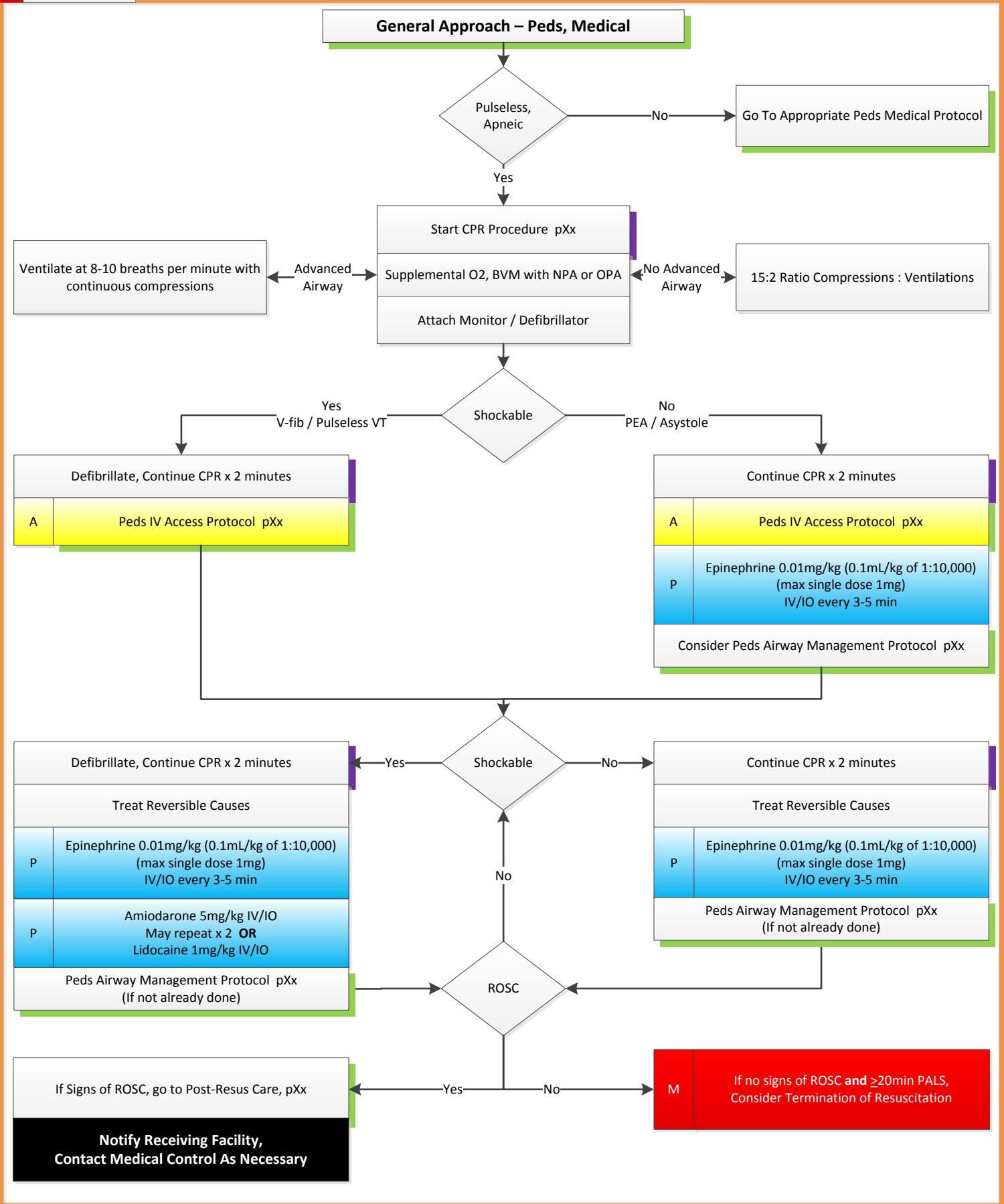
Cardiac Arrest, General - Peds



Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Cardiac Arrest, General - Peds

Pertinent Positives and Negatives

- Age (if known), Estimated Weight or Broselow
- Events Surrounding Arrest
- Estimated Time of Arrest
- Past Medical History (if known)
- Medications
- Concern for Foreign Body Aspiration
- Body Temperature
- History of Congenital Heart Defect

Differential

- Hypoxemia, Hypovolemia, Hypotension, Acidosis
- Toxins, Tension Pneumo, Pericardial Tamponade
- Hypoglycemia, Trauma
- Respiratory Failure
  -Foreign Body, Infectious, Epiglottitis

CPR Quality

- Push hard (>1/3 of anterior-posterior diameter of chest) and fast (at least 100/min) and allow for complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilations
- Rotate compressors every 2 minutes
- If no advanced airway, 15:2 compressions:ventilations ratio.
- If advanced airway, give 10 breaths per minute with continuous chest compression**

Shock Energy for Defibrillation

- First Shock 2 J/kg
- Second Shock 4 J/kg
- Subsequent Shocks >4 J/kg
  Maximum 10 J/kg **or** adult dose

Resuscitation Medications

Amiodarone IV/IO Dose

- 5mg/kg bolus in VF/pulseless V-Tach over 10 minutes, max 300mg
- May repeat up to 2 times if refractory VF/Pulseless VT

Atropine IM/IV/IO Dose

- 0.02 mg/kg IM/IV/IO, minimum dose 0.1mg; max 1mg

Calcium IV/IO

- 100mg/kg, max 1gm

Dextrose IV/IO

- 0.5 – 1mg/kg (5-10mL/kg of D10W or 2-4mL/kg of D25W)
- Use D10W if patient is <10kg or has peripheral IV only

Epinephrine IV/IO Dose:

- 0.01mg/kg (0.1mL/kg of 1:10,000 concentration), max 1mg.
- Repeat every 3-5 minutes.

Lidocaine IV/IO Dose

- 1mg/kg

Sodium Bicarbonate IV/IO Dose

- 1mEq/kg, max 50mEq

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen Ion (acidosis)
- **H**ypoglycemia
- **H**ypo- / **H**yperkalemia
- **H**ypothermia
- **T**ension Pneumothorax
- **T**amponade, Cardiac
- **T**oxins
- **T**hrombosis, Pulmonary
- **T**hrombosis, Coronary

Advanced Airway

- If no advanced airway is in place, ventilate with 1 breath every 3-5 seconds (12-20 breaths per minute)*
- When bag-mask ventilation is unsuccessful... the LMA is acceptable when used by experienced providers to provide a patent airway and support ventilation.
- Waveform capnography to confirm and monitor airway placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths per minute)**

Return of Spontaneous Circulation (ROSC)

- Pulse and Blood Pressure check and documentation
- Spontaneous arterial pressure waves in the intra-arterial monitoring

Pearls

RECOMMENDED EXAM: Mental Status

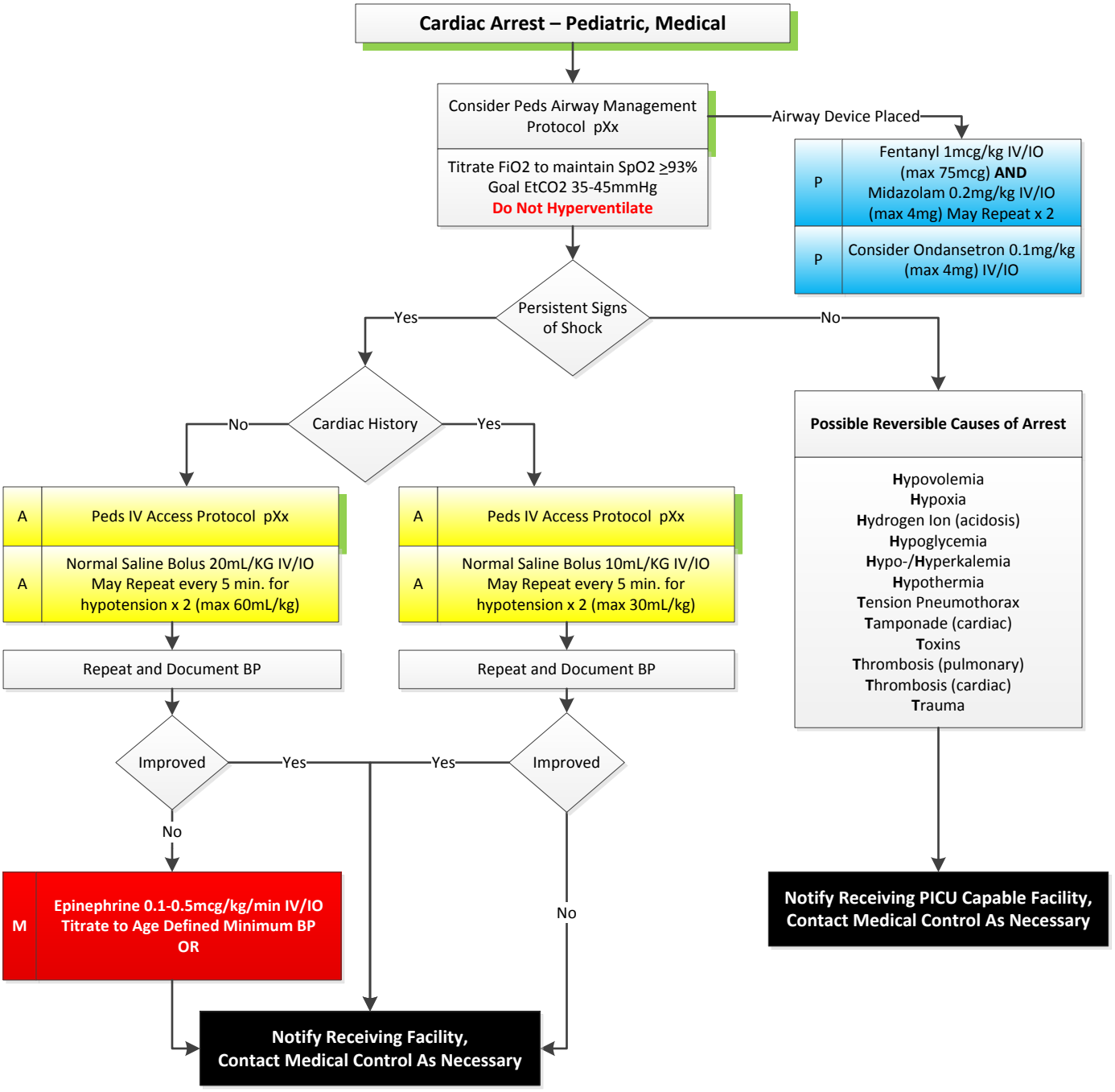
- In order to successfully resuscitate a Pediatric patient, a cause of arrest must be identified and corrected
- Airway is the most important intervention. This should be addressed immediately. Survival is often dependent on successful airway management
- Airway management with BVM is often sufficient in the Pediatric patient.
- If evidence of tension pneumothorax - unilateral decreased or absent breath sounds, tracheal deviation, JVD, tachycardia, hypotension – consider needle thoracostomy. Chest decompression may be attempted at the 2nd intercostal space, mid clavicular line
- For Neonatal Resuscitation, refer to Neonatal Resuscitation, p. 109
- *https://eccguidelines.heart.org/wp-content/themes/eccstaging/dompdf-master/pdffiles/part-11-pediatric-basic-life-support-and-cardiopulmonary-resuscitation-quality.pdf
- * *https://eccguidelines.heart.org/wp-content/uploads/2015/10/PALS-Cardiac-Arrest-Algorithm.png

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Post Resuscitation Care - Peds

Pertinent Positives and Negatives
- Age (if known), Estimated Weight or Broselow
- Events Surrounding Arrest
- Estimated Time of Arrest
- Past Medical History (if known)
- Medications
- Concern for Foreign Body Aspiration
- Body Temperature
- History of Congenital Heart Defect

Differential
- Hypoxemia, Hypovolemia, Hypotension, Acidosis
- Toxins, Tension Pneumo, Pericardial Tamponade
- Hypoglycemia, Trauma
- Respiratory Failure
  -Foreign Body, Infectious, Epiglottitis



Pearls

RECOMMENDED EXAM: Mental Status
- Monitor and treat for agitation and seizures
- Monitor and treat hypoglycemia
- If evidence of tension pneumothorax - unilateral decreased or absent breath sounds, tracheal deviation, JVD, tachycardia, hypotension – consider needle thoracostomy. Chest decompression may be attempted at the 2nd intercostal space, mid clavicular line
- Hyperventilation is a significant cause of hypotension / recurrent cardiac arrest in post resuscitation phase; **avoid at all costs**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

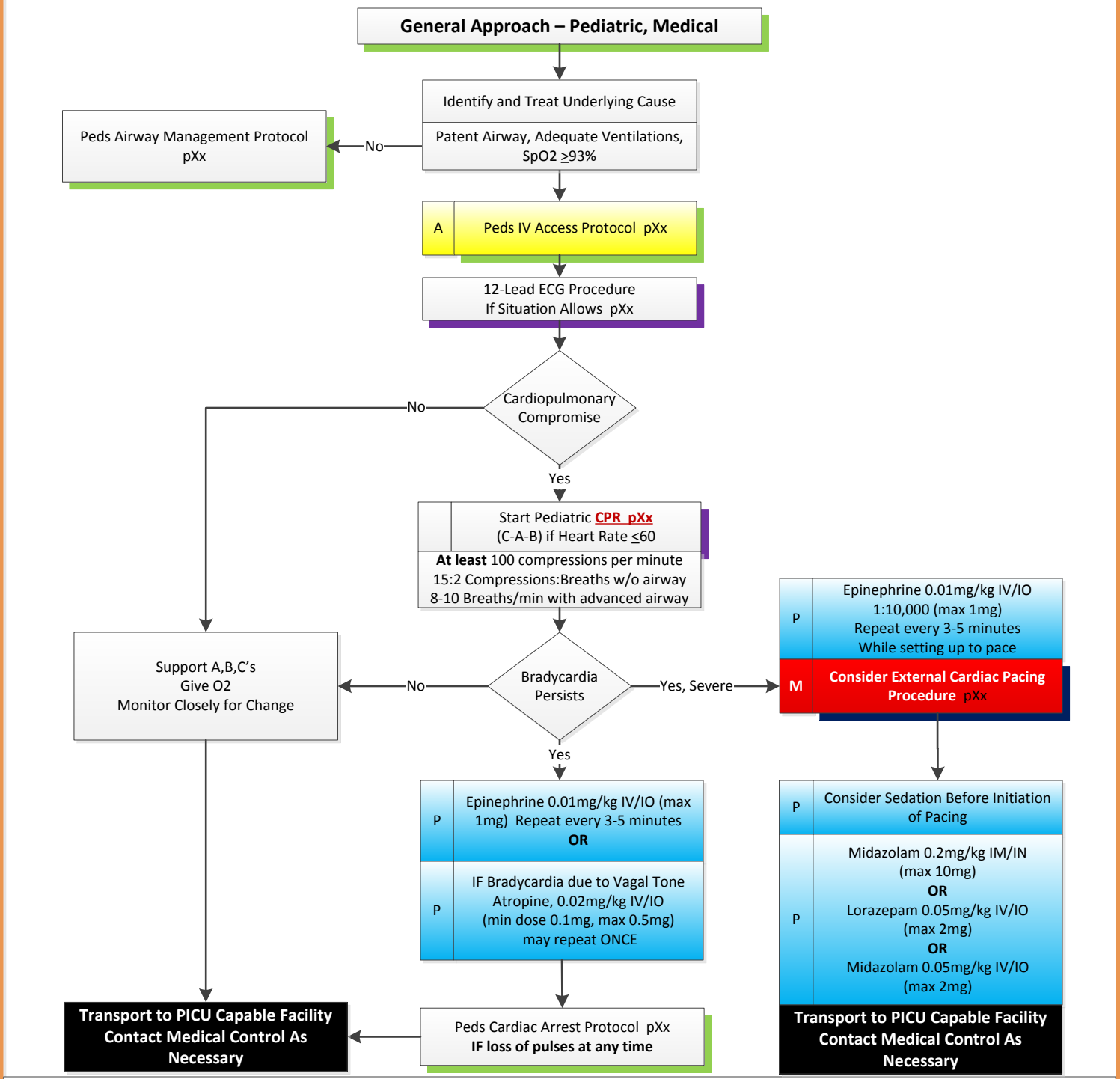
Bradycardia With A Pulse - Peds

Pertinent Positives and Negatives

- Age (if known), Estimated Weight or Broselow
- Events Surrounding Rhythm Change
- Estimated Time of Events
- Past Medical History (if known)

Differential

Hypoxemia, Hypovolemia, Hypotension, Acidosis
Toxins, Tension Pneumo, Pericardial Tamponade
Hypoglycemia, Sepsis
Increased Intracranial Pressure (trauma, shunt, NAT)



Pearls

RECOMMENDED EXAM: Mental Status

- Maintain patent airway throughout evaluation and treatment; assist breathing as necessary
- Cardiopulmonary Compromise – Hypotension, Acutely Altered Mental Status, Signs of Shock
- Don't delay treatment to get 12-lead ECG if patient is unstable
- Pediatric patients **ALWAYS** get CPR; *CCR is not appropriate for the pediatric patient*

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

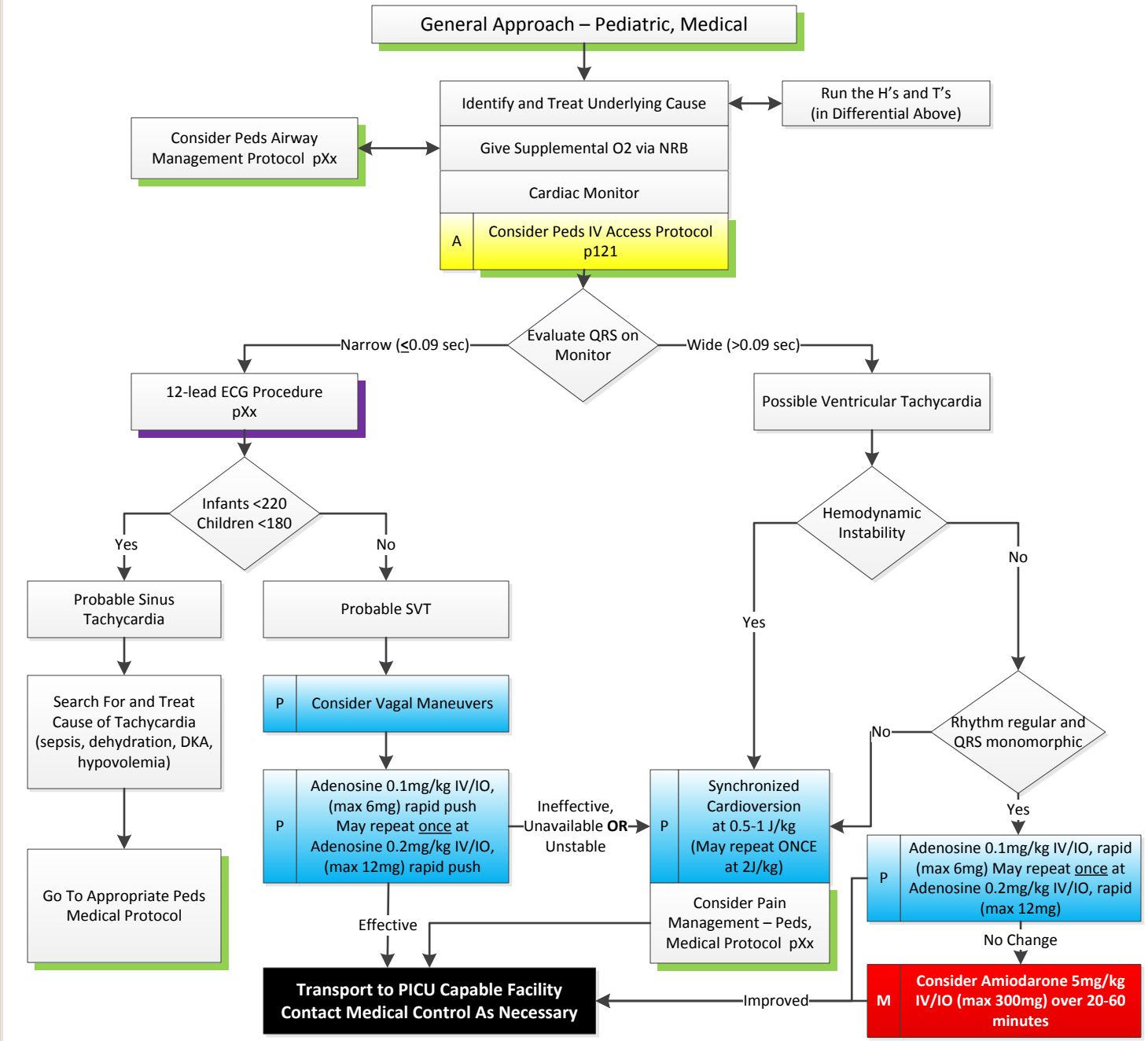
Tachycardia With A Pulse - Peds

Pertinent Positives and Negatives

- Age (if known), Estimated Weight or Broselow
- Events Surrounding Rhythm Change
- Estimated Time of Events
- Past Medical History (if known)

Differential

- Hypoxemia, Hypovolemia, Hypotension, Acidosis
- Toxins, Tension Pneumo, Pericardial Tamponade
- Hypoglycemia, Sepsis
- Respiratory Distress
  -Foreign Body, Infectious, Epiglottitis



Pearls

RECOMMENDED EXAM: Mental Status

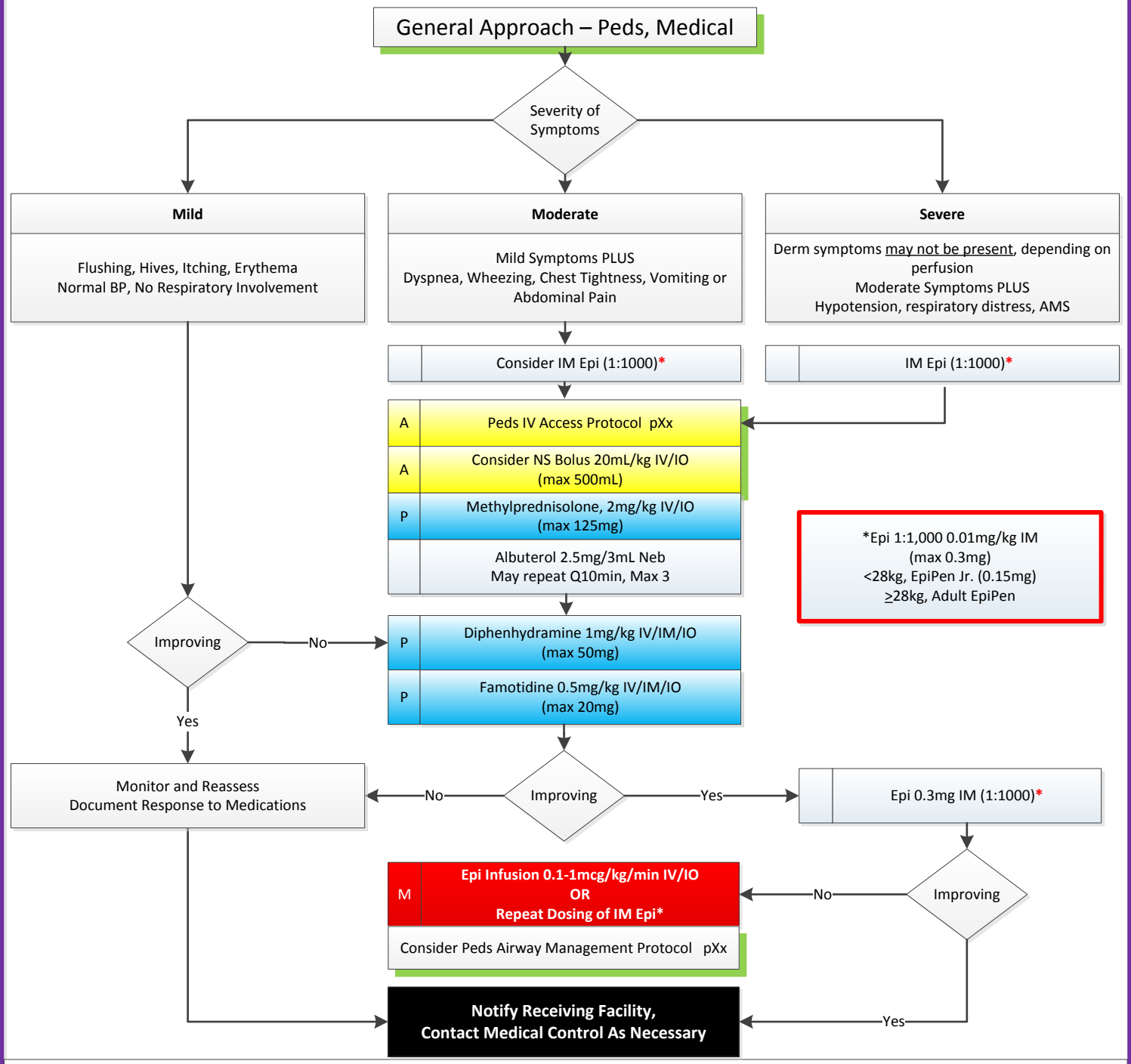
- Once Hemodynamically stable a 12-Lead ECG should be obtained
- Maintain patent airway throughout evaluation and treatment; assist breathing as necessary
- Probable Sinus tachycardia – P-waves present before every QRS, constant P-R interval. Infants usually <220/min, Children usually <180/min
- Probable SVT – history vague, nonspecific with abrupt rate change, P-waves absent / abnormal, HR *not* variable. Infants usually >220/min, Children >180/min
- Hemodynamic Instability – Hypotension, Acutely Altered Mental Status, Signs of Shock
- Don't delay treatment to get 12-lead ECG if patient is unstable
- H's & T's – Hypovolemia, Hypoxia, Hydrogen Ion (acidosis), Hypoglycemia, Hypo-/Hyperkalemia, Tension Pneumothorax, Tamponade (cardiac), Toxins, Thrombosis (pulmonary), Thrombosis (coronary), Trauma

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Allergic Reaction - Peds

Pertinent Positives and Negatives
- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Onset and Location of Symptoms
- Lung Sounds before *AND after* intervention
- Allergen Exposure
- Toxic / Environmental Exposure
- Subjective throat "tightness" OR "closing"

Differential
- Urticaria (Rash Only)
- Anaphylaxis (Systemic Effect)
- Shock (Vascular Effect)
- Angioedema
- Aspiration / Airway Obstruction
- Vasovagal Event
- Asthma / COPD
- CHF



Pearls

REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

- Epinephrine Infusion: Mix 2mg (1:1,000) in 250mL NS. If worsening or refractory anaphylaxis, contact Med Control first. Start at 2mcg/min, titrate up.
- Famotidine **dilution no longer reuired**. Infuse over 2 minutes.
- In general, the shorter the time from allergen contact to start of symptoms, the more severe the reaction
- Consider the Airway Management Protocol early in patients with Severe Allergic Reaction or subjective throat closing
- Imminent Cardiac Arrest should be considered in patients with severe bradycardia, unresponsiveness, no palpable radial or brachial pulse
- If parents have administered diphenhydramine (Benadryl) prior to EMS arrival, confirm medication given as well as dose

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

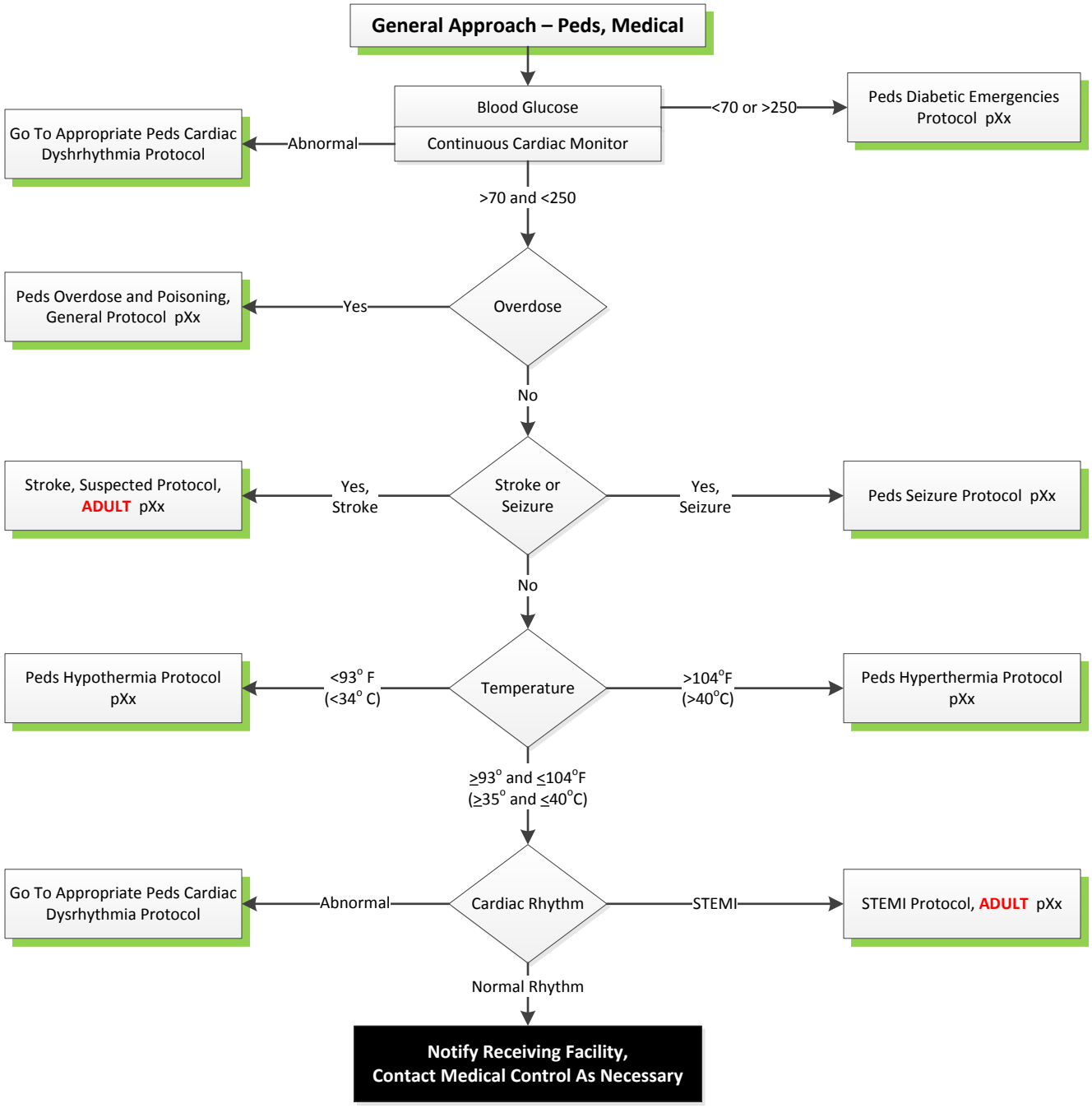
Altered Mental Status - Peds

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- History of DM, medic alert bracelet
- Drug paraphernalia or report of illicit drug use
- Evidence of environmental toxin / ingested toxin

Differential

- Head Injury
- Electrolyte Abnormality
- Psychiatric Disorder
- DM, CVA, Seizure, Tox
- Sepsis



Pearls

REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

- Pay special attention to head and neck exam for bruising or signs of injury
- Altered Mental Status may be the presenting sign of environmental hazards / toxins. Protect yourself and other providers / community if concern. Involve Hazmat early
- Safer to assume hypoglycemia if doubt exists. Recheck blood sugar after dextrose/glutose administration and reassess
- **Do not let EtOH fool you!!** Intoxicated patients frequently develop hypoglycemia, Alcoholic Ketoacidosis (AKA) and often hide traumatic injuries!

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Brief Resolved Unresponsive Episode (BRUE – Formerly "ALTE") - Peds

Pertinent Positives and Negatives

- Age, VS, SpO2, EtCO2, RR
- SAMPLE history
- OPQRST history
- Events Leading up to 9-1-1
- Pregnancy History
- Complications During Pregnancy/Delivery
- Mother's GBS Status at Delivery
- Color, Tone and Appearance During Event

Differential

- Hypoglycemia
- Hyponatremia
- Seizure
- Congenital Heart Defect
- Non-Accidental Trauma
- Inborn Error of Metabolism
- Periodic Apnea
- Reflux

Pearls

REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

- An Brief Resolved Unexplained Episode (BRUE) occurs in children **≤1 year of age** and may be referred to as an **"Apparent Life Threatening Episode (ALTE)"** or **"Near-miss SIDS";** it is an episode that is frightening to the observer/caregiver and involves some combination of the following: Apnea, Color Change, Marked Change In Muscle Tone, and Choking or Gagging
- The incidence of BRUE was found to be 7.5% in one studied out-of-hospital infant population
  - The overwhelming majority of BRUE patients (83%) **appeared to be in no apparent distress by EMS assessment**
  - Nearly half of the patients assessed by EMS to be in no apparent distress **(48%) were later found to have significant illness** upon ED evaluation
- This is why the history of a BRUE must always result in transport to an emergency department regardless of the infant's appearance at the time of EMS assessment
- **If the parent or guardian is refusing EMS transport, OLMC must be contacted prior to executing a refusal. Be supportive of parents as they may feel embarrassed for calling when the child now appears well.**
- ***Always* have a high index of suspicion for Non-Accidental Trauma (NAT). It affects all ethnicities, socioeconomic statuses and family types.**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

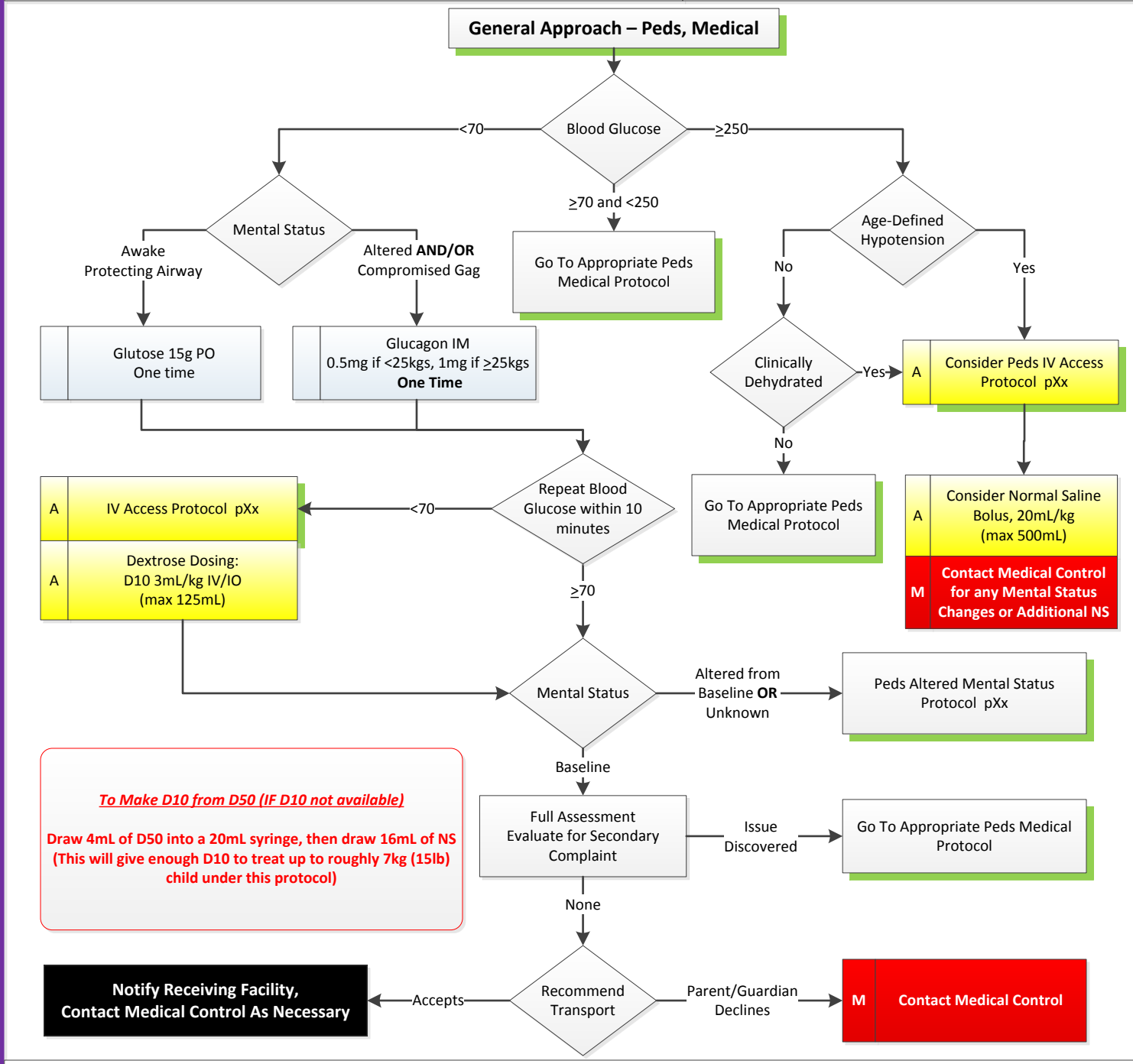
Diabetic Emergencies - Peds

Pertinent Positives/Negatives:

- Age, VS, Blood Glucose Reading
- SAMPLE History
- OPQRST History
- Last Meal, History of Skipped Meal
- Diaphoresis
- Siezures
- Abnormal Respiratory Rate
- History of DKA

Differential

- Toxic Ingestion
- Head Injury
- Sepsis
- Stroke/TIA
- Seizure
- EtOH Abuse/Withdrawal
- Drug Abuse/Withdrawal



Pearls

REQUIRED EXAM: VS, SpO2, Blood Glucose, Skin, Respiratory Rate and Effort, Neuro Exam

- Do NOT administer oral glucose to patients that can't swallow or adequately protect their airway
- Do NOT give Bicarb to patients with hyperglycemia suspected to be in DKA – This has been proven to result in WORSE outcomes for the patients
- Prolonged hypoglycemia may not respond to Glucagon; be prepared to start an IV and administer IV Dextrose
- Infants and patients with congenital liver diseases may not respond to Glucagon due to poor liver glycogen stores
- Patients on oral diabetes medications are at a very high risk of recurrent hypoglycemia and should be transported. Contact Medical Control for advice/patient counseling if patient is refusing. See Refusal after Hypoglycemia Treatment Protocol for additional information as necessary.
- Always consider intentional insulin overdose, and ask patients / family / friends / witnesses about suicidal ideation, comments or gestures

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

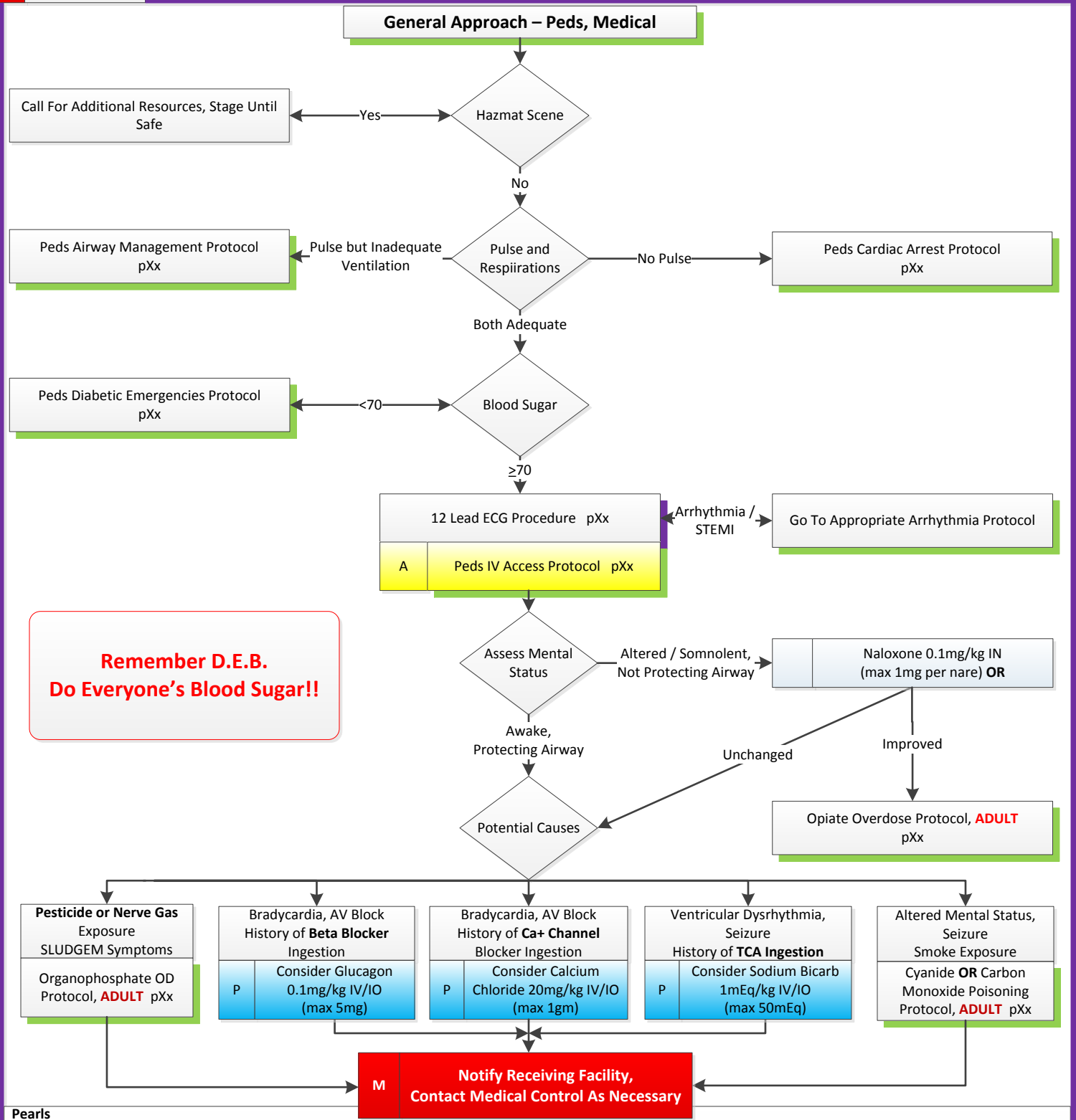
IV Access - Peds

Pearls

- In the setting of CARDIAC ARREST ONLY, any preexisting dialysis shunt or central line may be used by EMS for fluid and medication administration
- For patients who are hemodynamically unstable or in extremis, Medical Control MUST be contacted prior to accessing any preexisting catheters
- Upper extremity sites are preferred over Lower Extremity sites. Lower Extremity Ivs are discouraged in patients with peripheral vascular disease or diabetes.
- In patients with hemodialysis catheters, avoid IV attempts, blood draws, injections or blood pressures in the extremity *on the affected side.*
- Saline Locks are acceptable in cases where access may be necessary but the patient is not volume depleted; having an IV does not mandate IV Fluid infusion.
- The *preferred order* of IV Access is: Peripheral IV, Intraosseous IV, IN/IM access **UNLESS** medical acuity or situation dictate otherwise.
- *Remember*: Proximal Humerus IO is contraindicated in patients ≤18 years old.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Overdose and Poisoning, General - Peds



Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Skin, Blood Glucose

- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Critical Scene Information: Time of Ingestion, Number and Type of meds ingested, Seizure or mental status changes; Please consider bringing pill bottles, contents, emesis and reliable contact info to the ED; this will be important in patient evaluation and assessment
- Be careful of off-gassing in cases of inhalation of volatile agents
- Many intentional overdoses involve multiple substances, some with cardiac toxicity; a 12-Lead ECG should be obtained on all overdoses situation permitting
- Contact Poison Control for all non-opiate overdoses: **1-800-222-1222**
- **SLUDGEM** – **S**alivation, **L**acrimation, **U**rination, **D**efecation, **G**I Upset, **E**mesis, **M**iosis
- **DUMBBELLS** – **D**iarrhea, **U**rination, **M**iosis/Muscle Weakness, **B**ronchorrhea, **B**radycardia, **E**mesis, **L**acrimation, **L**ethargy, **S**alivation/Sweating

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

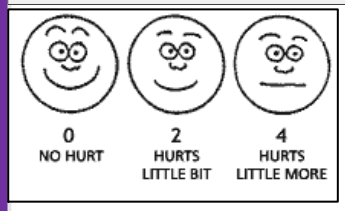
Pain Management - Peds

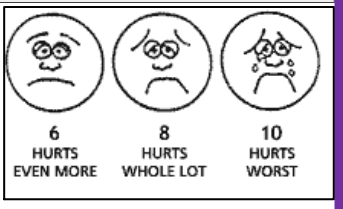
Pertinent Positives and Negatives

- Age, VS, GCS
- SAMPLE History
- OPQRST History
- History of chronic pain

Differential

- Head injury
- Spine Injury
- Compartment Syndrome
- Fracture, Sprain, Strain
- Pneumo/hemo-thorax
- Pericardial effusion
- Aortic Dissection
- Internal organ injury





General Approach – Adult Medical OR Trauma

Assess Pain
0-10 Pain Scale OR FACES Scale

None – Mild Pain (0-4)

- A: Consider Acetaminophen PO* 15mg/kg (max 650mg)
- A: Consider Ibuprofen PO* 10mg/kg (max 600mg)

Reassess Pain

- Worsening → **Moderate Pain (5-8)**
- Improved → Document response to meds, VS (HR, BP, SpO2, EtCO2)
  Continue with Peds Specific Protocol

Moderate Pain (5-8)

- Place patient on cardiac monitor, continuous SpO2 and EtCO2
- P: Consider IN Fentanyl 1.5mcg/kg (max 50mcg per naris)
- A: Consider Peds IV Access Protocol pXx
- Document response to meds, VS (HR, BP, SpO2, EtCO2)

Reassess Pain

- Improved → Document response to meds, VS (HR, BP, SpO2, EtCO2)
  Continue with Peds Specific Protocol
- Worsening → **Severe Pain (9-10)**

Severe Pain (9-10)

- Place patient on cardiac monitor, continuous SpO2 and EtCO2
- P: Consider IN Fentanyl 1.5mcg/kg (max 50mcg per naris)
- A: Peds IV Access Protocol pXx
- Document response to meds, VS (HR, BP, SpO2, EtCO2)
- P: Fentanyl 1mcg/kg IV/IO/IM (max 100mcg) May repeat x 1
- P: Consider Ondansetron 0.1mg/kg IV/IO/IM/ODT (max 4mg)
- Document response to meds, VS (HR, BP, SpO2, EtCO2)
- Continue with Peds Specific Protocol

Pearls

REQUIRED EXAM: Vital Signs, GCS, Neuro Exam, Lung Sounds, Abdominal Exam, Musculoskeletal Exam, Area of Pain

- Provider Discretion to be used for patients suffering from chronic pain related issues. Please note that history of chronic pain does not preclude the patient from treatment of acute pain related etiologies.
- Pain severity (0-10) is a vital sign to be recorded pre- and post-medication delivery and at disposition
- As with all medical interventions, assess and document change in patient condition pre- and post-treatment
- Opiate naive patients can have a much more dramatic response to medications than expected; start low and titrate up as appropriate
- Allow for position of maximum comfort as situation allows
- Acetaminophen and Ibuprofen are optional for Paramedic level services
- ***Oral medications are contraindicated in anyone who may need an emergent surgery or procedure; "if in doubt, don't give PO"**

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

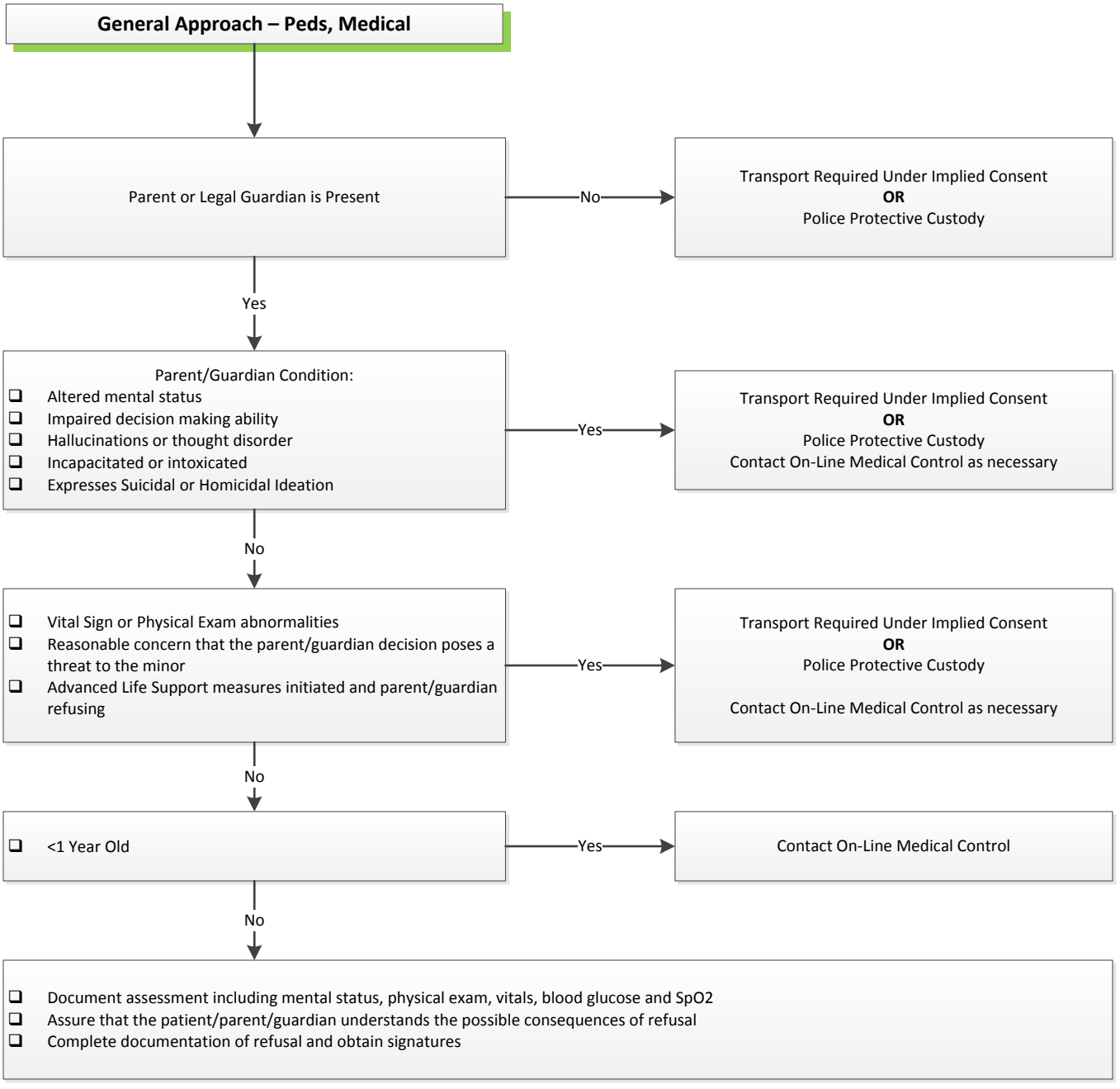
Refusal Protocol - Peds

Pertinent Positives and Negatives

- Age, VS, BP, RR, SpO2
- SAMPLE history
- OPQRST history
- Mental Status
- Pale, Cool Skin
- Delayed Cap Refill

Differential

- Cardiac Dysrhythmia
- Hypoglycemia
- Overdose
- Toxidrome
- Sepsis
- Occult Trauma
- Adrenal Insufficiency



Pearls

REQUIRED EXAM: VS, GCS, Nature of Complaint

- *Incapacitated definition: A person who, because of alcohol consumption or withdrawal, is unconscious or whose judgment is impaired such that they are incapable of making rational decisions as evidenced by extreme physical debilitation, physical harm or threats of harm to themselves, others or property. Evidence of incapacitation: inability to stand on one's own, staggering, falling, wobbling, vomit/urination/defecation on clothing, inability to understand and respond to questions, DTs, unconsciousness, walking or sleeping where subject to danger, hostile toward others.
- **Intoxicated definition: A person whose mental or physical functioning is substantially impaired as a result of the use of alcohol.
- If there is ANY question, do not hesitate to involve Law Enforcement to ensure the best decisions are being made on behalf of the patient.

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Seizure - Peds

Pertinent Positives and Negatives

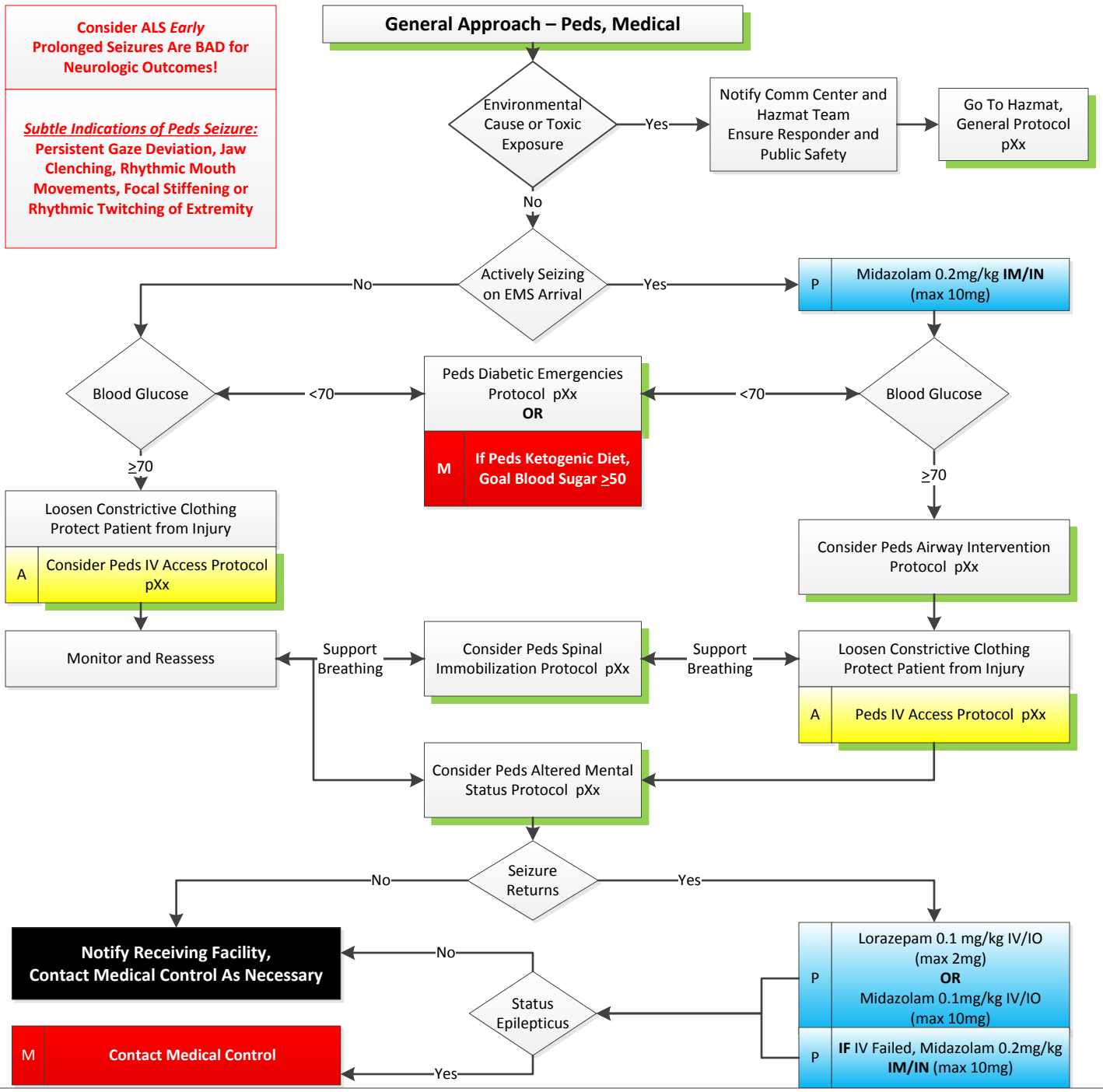
- Age, VS, GCS, SpO2, Blood Sugar
- SAMPLE History
- OPQRST History
- Seizure History, Med Compliance
- Bowel or Bladder Incontinence
- Tongue Biting
- Recent Fever History
- Evidence of Head Trauma
- Number of Seizures and Duration

Differential

- Hypoxia
- Hypoglycemia
- Electrolyte Imbalance
- Eclampsia
- Drugs, EtOH Abuse
- Drugs, EtOH Withdrawal
- Occult Head Injury
- Non-Accidental Trauma
- Syncope

Consider ALS *Early*
Prolonged Seizures Are BAD for Neurologic Outcomes!

Subtle Indications of Peds Seizure:
Persistent Gaze Deviation, Jaw Clenching, Rhythmic Mouth Movements, Focal Stiffening or Rhythmic Twitching of Extremity



Pearls

REQUIRED EXAM: Blood Sugar, SpO2, GCS, Neuro Exam

- Midazolam is effective in terminating seizures. Do not delay IM/IN administration to obtain IV access in an actively seizing patient. IN Midazolam is preferred to rectal Diazepam.
- Do not hesitate to treat recurrent, prolonged (>1 minute) seizure activity. Have a low threshold to give IN Midazolam rather than spend time on IV Access.
- Status epilepticus is a seizure lasting greater than 5 minutes OR ≥2 successive seizures without recovery of consciousness in between. This is a TRUE EMERGENCY requiring Airway Management and rapid transport to the most appropriate Pediatric ICU Capable facility
- Assess for possibility of occult trauma, substance abuse
- Active seizure in known or suspected pregnancy >20 weeks, give Magnesium 4gm IV/IO over 2-3 minutes

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

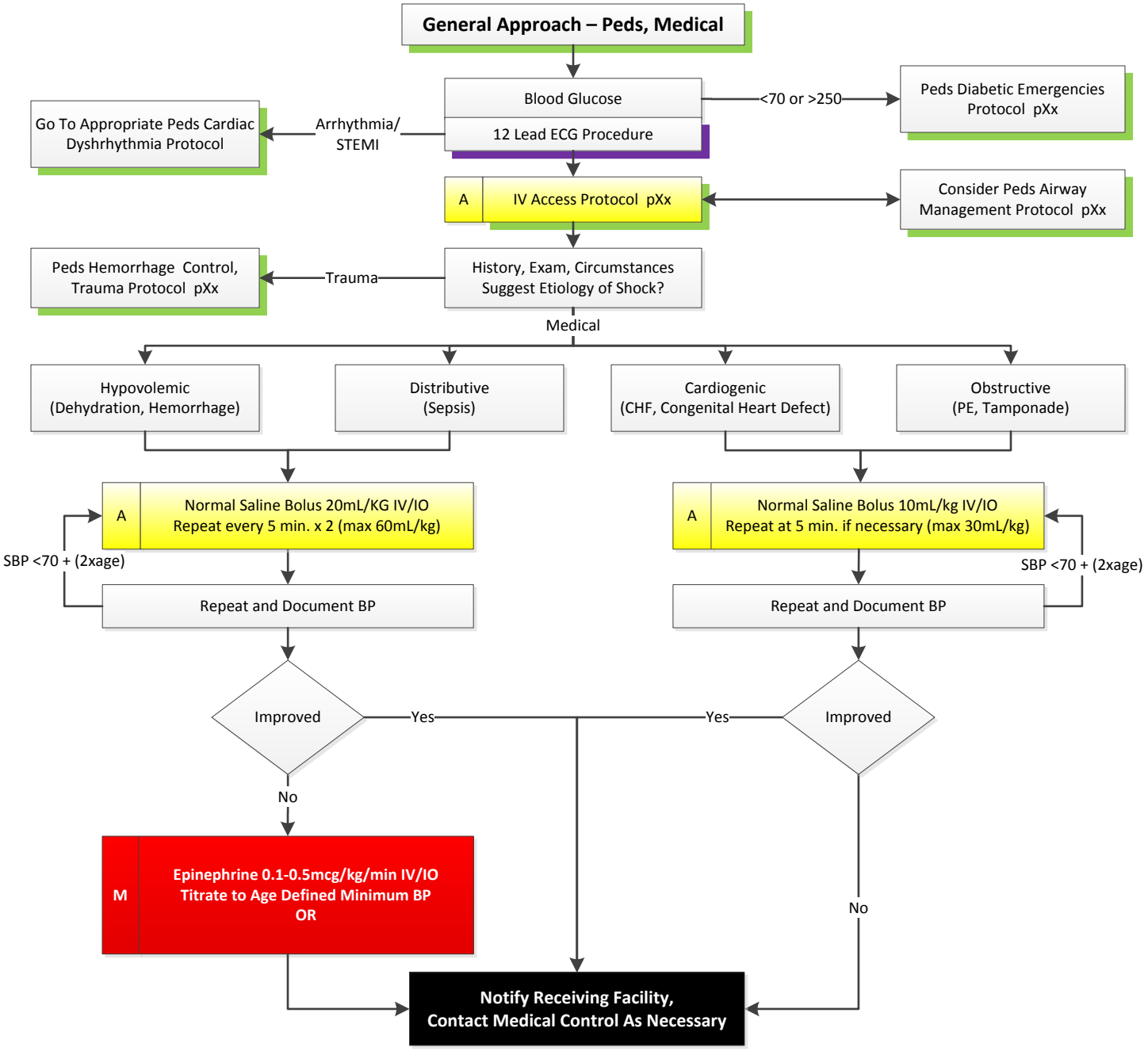
Hypotension / Shock (Non-Trauma) - Peds

Pertinent Positives and Negatives

- Age, VS, BP, RR, SpO2
- SAMPLE history
- OPQRST history
- Source of blood loss, if any (GI, vaginal, AAA, ectopic)
- Source of fluid loss, if any (vomiting, diarrhea, fever)
- Pregnancy history
- Mental Status
- Pale, Cool Skin
- Delayed Cap Refill
- Coffee Ground Emesis
- Tarry Stools
- Allergen Exposure

Differential

- Cardiac Dysrhythmia
- Hypoglycemia
- Ectopic Pregnancy
- AAA
- Sepsis
- Occult Trauma
- Adrenal Insufficiency



Pearls

REQUIRED EXAM: VS, GCS, RR, Lung sounds, JVD

- Shock may present with initially normal VS and progress insidiously; follow frequent blood pressures, particularly if the patient "looks sicker than Vital Signs"
- Tachycardia may be the first and only sign of shock in the pediatric population; remember – Peds patients compensate to a point, then crash quickly
- If evidence or suspicion of trauma (accidental OR non-accidental), move to Hypotension/Shock (Trauma) Protocol early
- **Acute Adrenal Insufficiency – State where the body cannot produce enough steroids. Primary adrenal disease vs. recent discontinuation of steroids (Prednisone) after long term use.**

**** If Adrenal Insufficiency suspected, contact Medical Control and review case. Medical Control may authorize Methylprednisone 2mg/kg IV/IO**

- Hypotension is a LATE finding in pediatric patients, and is an ominous sign that they are losing their ability to compensate

Legend	
	EMT
A	A-EMT
P	Paramedic
M	Medical Control

Sickle Cell Crisis - Peds

Pertinent Positives and Negatives

- Age, VS, GCS
- SAMPLE History
- OPQRST History
- History of chronic pain
- History of Sickle Cell Anemia
- Signs of Infection
- Hypoxia
- Dehydration
- Painful Joint(s)

Differential

- Dehydration
- Sepsis
- Pneumonia
- Fracture, Sprain, Strain
- Vaso-Occlusive Crisis
- Acute Chest Syndrome
- Splenic Sequestration
- Acute Stroke

Pearls

REQUIRED EXAM: Vital Signs, GCS, Neuro Exam, Lung Sounds, Abdominal Exam, Musculoskeletal Exam, Area of Pain

- Provider Discretion to be used for patients suffering from chronic pain related issues. Please note that history of chronic pain does not preclude the patient from treatment of acute pain related etiologies.
- Pain severity (0-10) is a vital sign to be recorded pre- and post-medication delivery and at disposition
- Sickle Cell Anemia is a chronic hemolytic anemia occurring almost exclusively in African Americans; pain crises result from the occlusion of blood vessels by masses of misshapen blood cells during times of crisis
- Sickle Pain Crises occur typically in the joints and back. Liver, Pulmonary and CNS involvement can present with RUQ pain, hypoxia or stroke
- Patients with sickle cell disease have a high incidence of life-threatening conditions at a very young age