



General
Approach to
Pediatrics

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Post- ROSC
Neonatal Resuscitation
Cardiac Arrest
Wide Complex Tachycardia
Regular Narrow Complex Tachycardia (SVT)
Bradycardia
Hyper/Hypoglycemia
Seizure
SIDS
Toxin-Overdose
Tracheostomy
Airway-Respiratory Failure
Allergic Reaction
Altered Mental Status
Behavioral Emergencies
BRUE
Drowning
Pain Management
Refusals
Respiratory Distress
Shock
Stroke
Suspected Abuse
Suspected Sepsis
Pediatric Transport
Unaccompanied Minor

Pediatric- General Approach

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Inclusions:

- Trauma 15 years and 364 days
- Medical Transport Destination & patient decision making <18 years old
- Medication dosing: pediatrics= less than 50 kg (exceeds length based tape)
- Once a child reaches puberty, use the indicated adult protocol (Puberty= breast development, underarm/chest/facial hair)

Scene Safety & Scene Survey

Utilize jumpSTART in MCI
Observe environment for signs of maltreatment (see NAT Protocol)

Obtain Parental or legal guardian consent

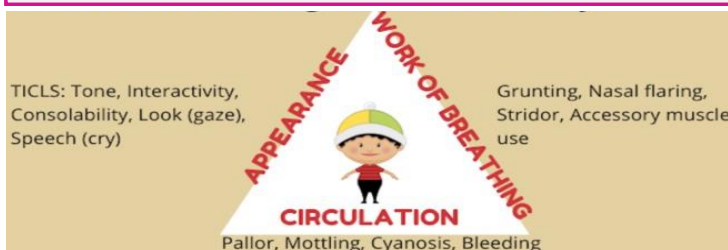
Full ALS Assessment & Treatment when condition warrants

- In the case of a life or limb threatening emergency, provide transport and treatment while obtaining consent (see Care of an Unaccompanied Minor Protocol)
- If parent or legal guardian refuses to provide consent, See Refusals Protocol

Identify if any special needs, involve caregiver and tailor approach as needed (see Care of Special needs protocol)

Identify age/developmentally appropriate behaviors to aid in assessment (see Pearls)

Observational Assessment



Physical Exam & Treatment (by ABCDE)

Obtain required Vital Signs: Required: HR, RR, BP, O2 Sat
As appropriate: Temperature, BGL & ETCO2
Pay close attention to age appropriate values (see chart)

Airway

Breathing

Circulation

Disability

Exposure

Considerations:

BVM as or more effective than intubation in kids

Most common cause of arrest is respiratory

Bradycardia= impending cardiac arrest

APGAR, AVPU, GCS

Prevent heat loss

Repeat Assessment

At least every 5 minutes for unstable patients and every 15 minutes for stable patients. Much of the assessment can be performed via observation (see Pediatric Triangle above)

Medial Consultation

A) shall be obtained when required by a specific protocol (i.e. BRUE, Refusals, Unaccompanied Minor)
B) Should be obtained when adequate treatment effects haven't been reached by the end of the protocol
C) Available at any time for any reason

Utilize appropriate restraint device
Ensure parent/caregiver appropriately restrained
View Transport Protocols for appropriate destination

Pediatric Emergencies

PEARLS

- Infant: avoid anything distressing until after assessment is complete. >6 months of age best examined in parents arms (if appropriate)
- Toddler: Approach slowly. Sit or squat next to them. Allow them to remain in parent's lap when possible. Give them limited choices. Speak slowly & use simple, age appropriate terms. Do not expect them to cooperate (be flexible).
- Preschooler: allow child to handle equipment. Do not lie to the child. Play games with immobilized preschoolers for distraction.
- School Age: allow them to be involved in care, however do not negotiate unless they really have a choice. Provide reassurance.
- Adolescent: Treat as an adult. Explain what you are doing and why. Show respect & speak to the adolescent directly.

Post-Resuscitation (ROSC)

Follow General Approach to Cardiac Arrest Protocol if re-arrest

*Follow HandTevy dosing (use actual weight if known)

ROSC

Transport to Pediatric Comprehensive Center

- Nemours Children's Health
- Arnold Palmer

Obtain vital signs

Maintain SpO₂ = 94-99%
Avoid hyperventilation (ETCO₂ 35-45)

Age-related ventilation rates (w/ a pulse)

- <1 y/o: every 1-2 seconds
- 1-5 y/o: every 3 seconds
- 5-12 y/o: every 4 seconds
- >13 adult rate

Age Specific BP indicating hypotension:

- 0-28 days: SBP < 60
- >1 month: SBP < 70
- 1-9: SBP < 70 + (2 x Age in years)
- >10: SBP < 90

Hypotension: 20cc/kg IV/IO NS bolus repeat x 2 (total 60cc/kg)
Reassess lung sounds
Proceed to vasopressor if fluid unresponsive or if signs of fluid overload

Epinephrine Spritzer 1mL q2 min. max 10mL
Transition to Vasopressor drip as needed

Perform 12 lead EKG

Address reversible causes

- Hypoglycemia
- Hypoxia
- Hypothermia
- Hypovolemia
- Hydrogen Ion (acidosis)
- Hyperkalemia
- Tamponade
- Tension Pneumothorax
- Temperature
- Thrombosis
- Toxins

Pediatric Emergencies

Continuous pulse checks, ETCO₂ monitoring, & rhythm monitoring due to increased chances of re-arrest

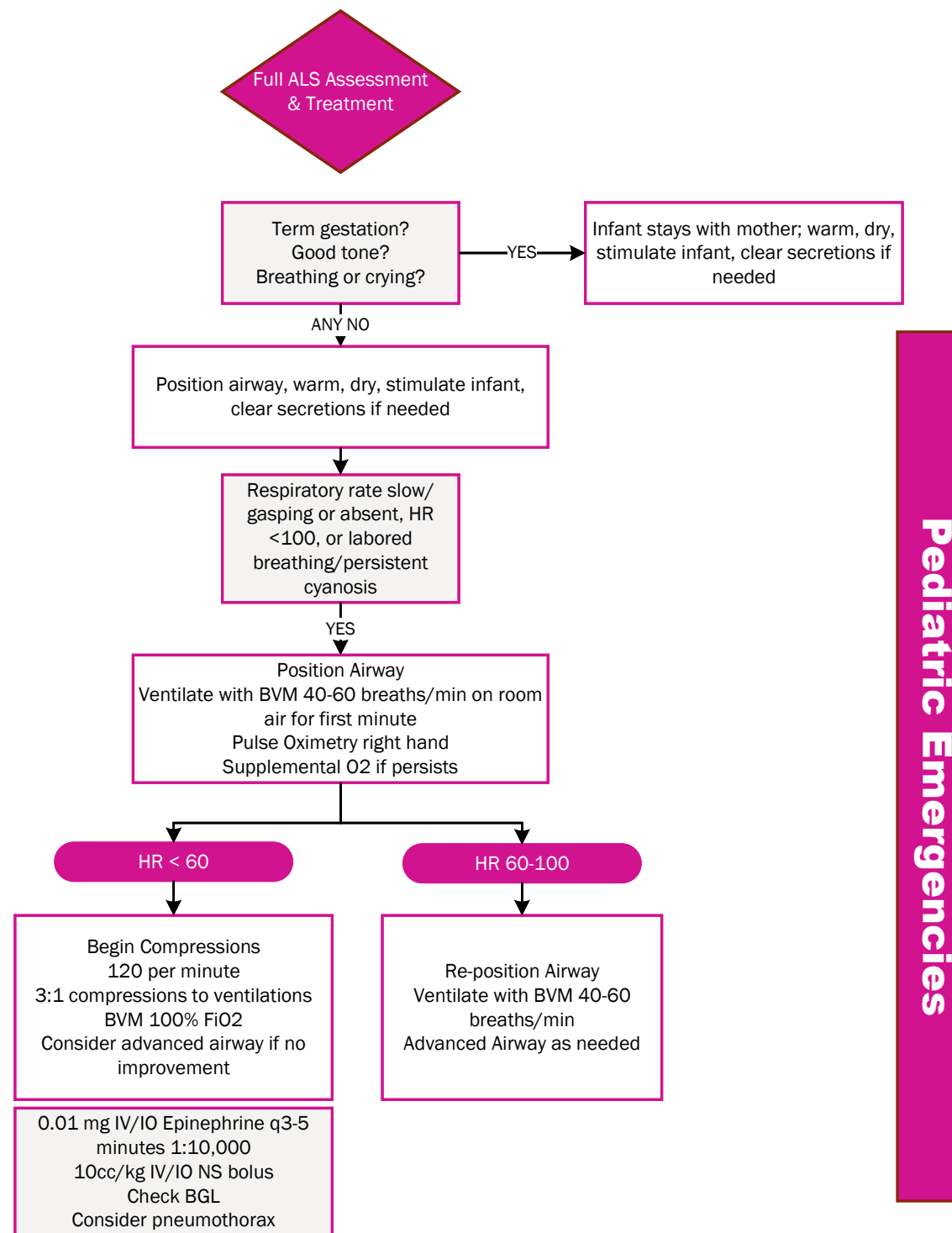
*dysrhythmias after cardiac arrest are common. If they persist, follow appropriate protocol

PEARLS

- Keep a finger on the pulse to quickly identify re-arrest.
- Preferred vasopressor in Pediatric cold shock (cool, clammy, cyanotic) = Epinephrine 0.05-5mcg/kg/min IV/IO; Preferred vasopressor in warm shock (warm, vasodilated) = Norepinephrine 0.1-2mcg/kg/min IV/IO



Follow HandTevy dosing guidelines



PEARLS

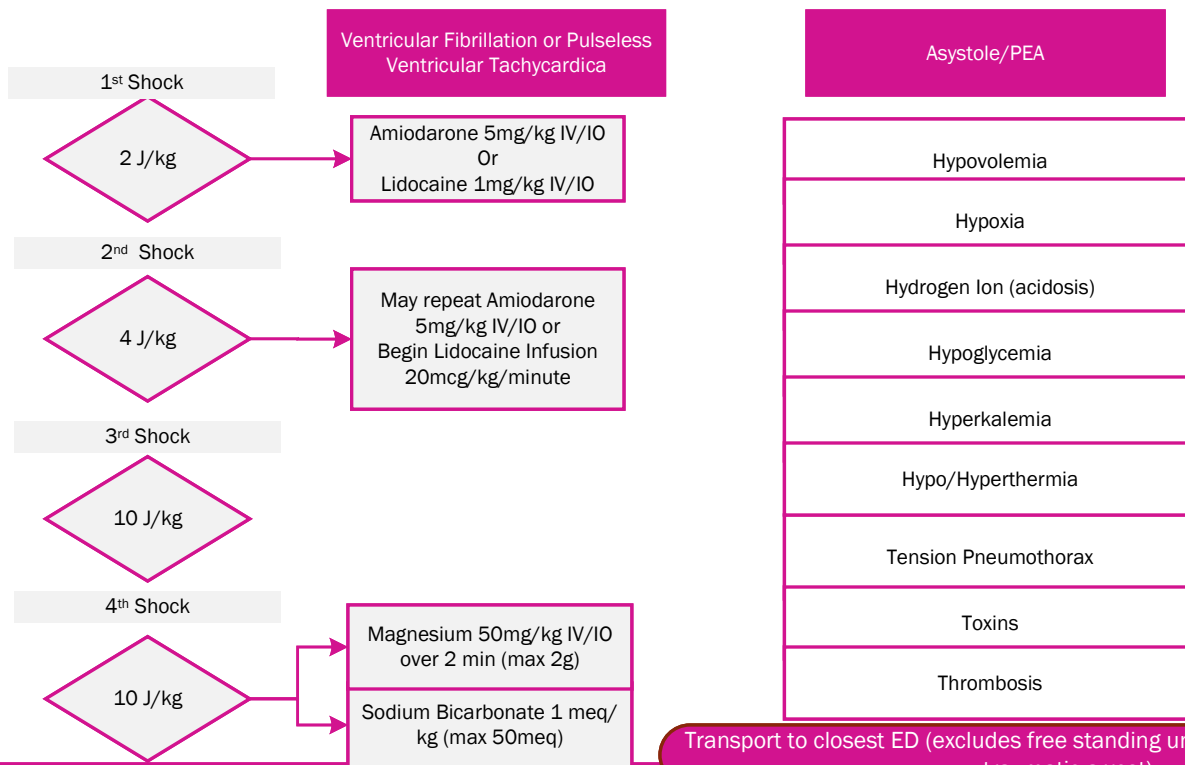
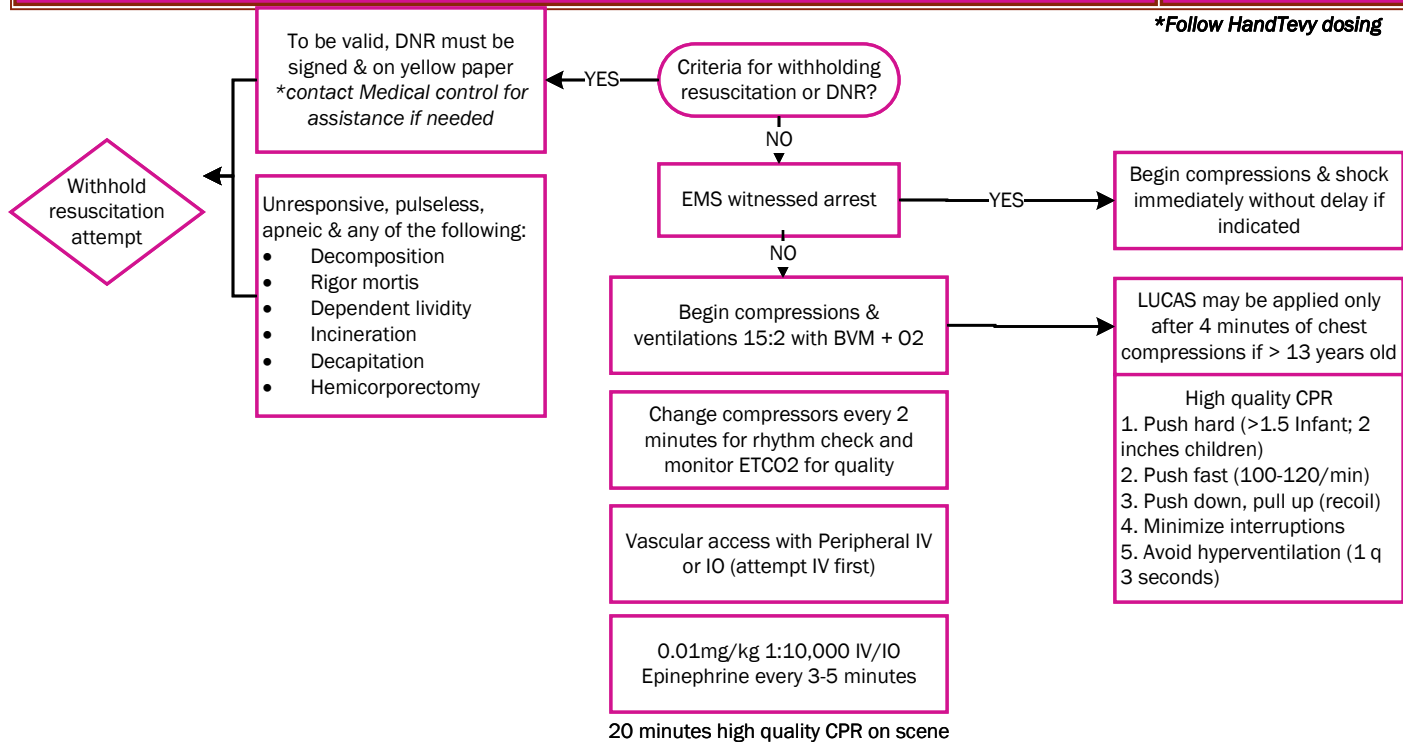
- BVM is the most important treatment with poor respirations or persistent bradycardia
- Compressions- 2 thumbs encircling the chest and back
- Document 1 and 5 minute APGAR however do not delay resuscitation to obtain APGAR score
- Use Brachial Artery for pulse check
- If labored breathing or persistent cyanosis with a normal heart rate, consider CPAP/ Bipap (i.e. 15 PIP/5 PEEP)
- Targeted SpO2 after Birth for infants requiring resuscitation (Apply Pulse oximetry to the right extremity)
 - 1 min 60%-65%
 - 2 min 65%-70%
 - 3 min 70%-75%
 - 4 min 75%-80%
 - 5 min 80%-85%
 - 10 min 85%-95%

Pediatric Cardiac Arrest <13 years old

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**Follow HandTevy dosing*



Transport to closest ED (excludes free standing unless inadequate airway or traumatic arrest)

PEARLS

- Utilize Newborn Resuscitation Protocol if <31 days old
- When the scene is safe, ALL cardiac arrest resuscitation attempts should be worked **on scene** for 20 minutes prior to transport unless refractory v-fib or v-tach.
- Distal Femur is the preferred IO site in children less than 10 years old**
- If pads overlap or within 1 inch of each other, use anterior and posterior placement
- Continue compressions while charging for defibrillation
- If ETCO₂ <10 improve chest compressions
- Special Considerations
 - Maternal arrest: >20 weeks gestation, manually displace the uterus to the left.
 - Renal Failure/Dialysis patient: consider hyperkalemia: Calcium Chloride 20mg/kg slow IV/IO max 1 gm, Sodium Bicarbonate
 - Toxins: TCA Overdose- Sodium Bicarbonate; Opiate/Clonidine- Narcan;
 - Beta Blocker- Glucagon, Calcium Chloride, Sodium Bicarbonate; Calcium Channel Blocker- Calcium Chloride



Full ALS Assessment and Treatment including 12 lead EKG

Do not delay emergent treatment for 12 lead. Rhythm can be identified using 3-lead

Polymorphic QRS (Torsades)

Stable: Normotensive, baseline mental status, no signs of shock

Magnesium 50mg/kg IV/IO over 10 minutes
(over 2 min in cardiac arrest)

Unstable: age related hypotension, altered mental status, signs of shock

Synchronized Cardioversion

Sedation:

Fentanyl 1 mcg IN/IM/IV/IO (max 100mcg) may be administered prior to cardioversion if normotensive

0.5 J/kg

1 J/kg

2 J/kg

Monomorphic QRS HR >180 child >220 infant

Stable but symptomatic: Normotensive, baseline mental status, no signs of shock **AND REGULAR RHYTHM**

Adenosine 0.1mg **rapid** IV over 1-3 seconds
(max 6 mg)
Follow with 10 ml NS

No improvement

Consult Medical Control to discuss additional anti-arrhythmic options such as Lidocaine 1mg/kg IV/IO or Amiodarone 5 mg IV/IO (max 150mg) over 20 minutes

Unstable: age related hypotension, altered mental status, signs of shock

Synchronized Cardioversion

Sedation:

Fentanyl 1 mcg IN/IM/IV/IO (max 100mcg) may be administered prior to cardioversion if normotensive

0.5 J/kg

1 J/kg

2 J/kg

PEARLS

- DDX: Arrhythmia, Dehydration, Sepsis, Fluid Overload, Pulmonary Embolism, Thyrotoxicosis, Toxin/Ingestion, Acute Coronary Syndrome, Electrolyte abnormality
- Wide Complex is usually SVT with Aberrancy in kids. Vtach is typically in patients with underlying heart disease. The choice of antiarrhythmics for stable V-tach is often made in coordination with Pediatric Cardiology. Adenosine is contraindicated in WPW.
- Sinus tachycardia can be a compensatory mechanism for an underlying illness. Removing this compensation by treating with medications or cardioversion may cause the patient to acutely decompensate. For this reason, it is important to analyze the rhythm carefully. If the rhythm is regular and there are no P-waves, it is safe to treat as Supraventricular Tachycardia.
- **Treat only if symptomatic, otherwise monitor and reassess**
- Unstable/Cardiopulmonary compromise= weak, thready or absent peripheral pulses, decreasing consciousness, tachypnea/respiratory difficulty, central cyanosis and coolness, hypotension



Full ALS Assessment and Treatment
including 12 lead EKG

Do not delay emergent
treatment for 12 lead.
Rhythm can be identified
using 3-lead

Sinus Tachyardia: Regular rhythm **with** P waves

20cc/kg IV/IO NS Bolus
*reassess lung sounds
Contraindicated in pulmonary edema

SVT: Regular rhythm **without** P waves
HR >180 child
>220 infant

Stable: Normotensive, baseline
mental status, no signs of shock

Vagal Maneuvers

Adenosine 0.1mg **rapid** IV over 1-3 seconds
(max 6 mg) Follow with 5-10 ml NS

If no improvement

Adenosine 0.2mg **rapid** IV over 1-3 seconds (max 12 mg)
Follow with 20 ml NS

Unstable: age related hypotension,
altered mental status, signs of shock

Synchronized Cardioversion 0.5 J/kg > 1 J/kg > 2 J/kg

Sedation:

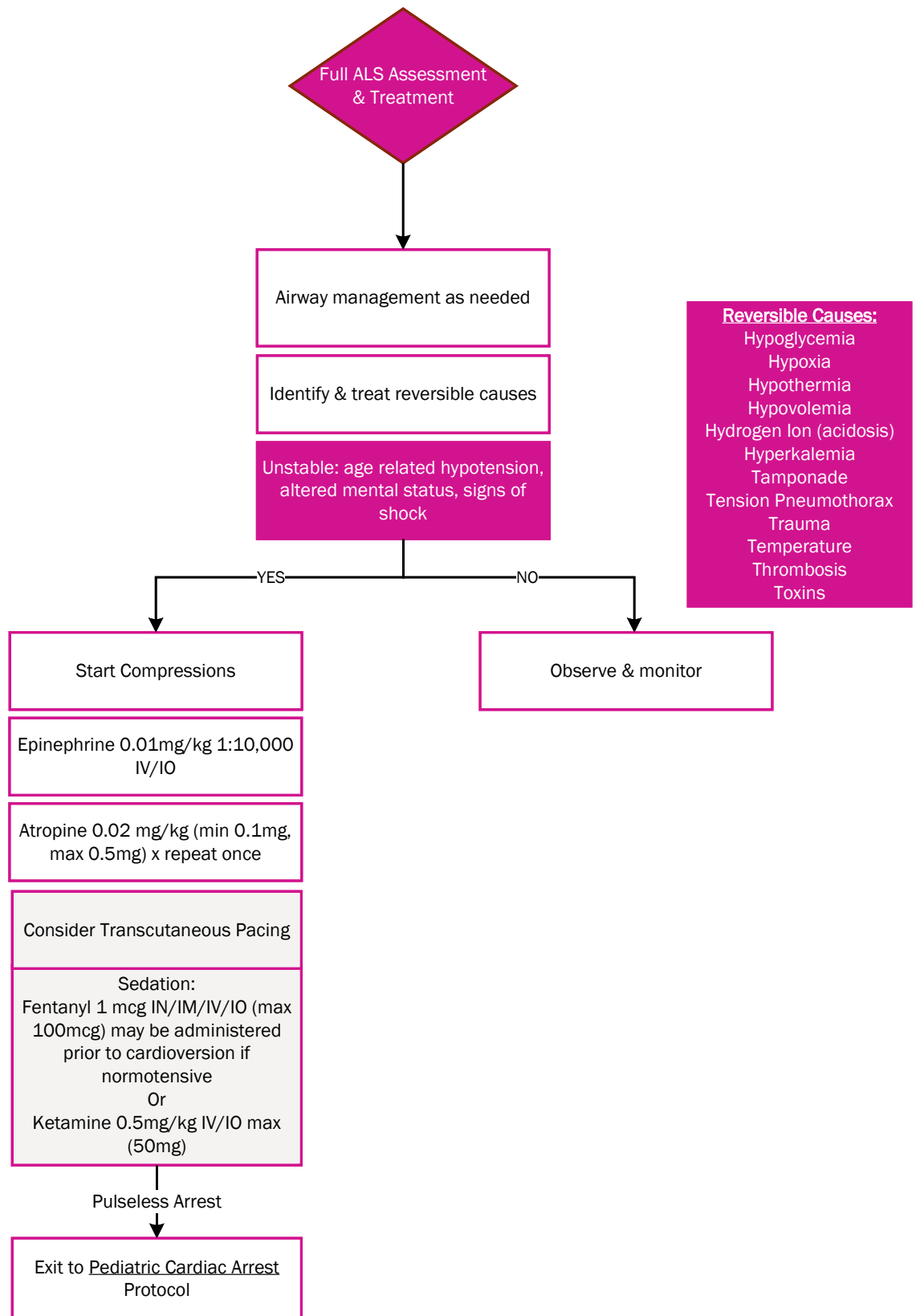
Fentanyl 1 mcg IN/IM/IV/IO (max 100mcg) may be administered prior to cardioversion if
normotensive

PEARLS

- DDx: Arrhythmia, Dehydration, Sepsis, Fluid Overload, Pulmonary Embolism, Thyrotoxicosis, Toxin/Ingestion, Acute Coronary Syndrome, Electrolyte abnormality
- Sinus tachycardia can be a compensatory mechanism for an underlying illness. Removing this compensation by treating with medications or cardioversion may cause the patient to acutely decompensate. For this reason, it is important to analyze the rhythm carefully. If the rhythm is regular and there are no P-waves, it is safe to treat as Supraventricular Tachycardia.
- **Treat only if symptomatic, otherwise monitor and reassess**
- Vagal Maneuvers:- Breath holding - Blowing a glove into a balloon - Have child blow out birthday candles or through an obstructed straw - Infants: bag of ice water over the upper half of the face
- Unstable/Cardiopulmonary compromise= weak, thready or absent peripheral pulses, decreasing consciousness, tachypnea/ respiratory difficulty, central cyanosis and coolness, hypotension



Follow **HandTevy** dosing guidelines



PEARLS

- Set pacemaker to age-appropriate heart rate:
- infant: 120 bpm
- Child: 100 bpm
- Adolescent (>13): 80 bpm



Full ALS Assessment & Treatment

Signs & Symptoms: Altered mental status, combative, diaphoresis, seizures, abdominal pain, nausea/vomiting, rapid breathing, weakness, dehydration

Hypoglycemia ≤ 69

Awake, alert, tolerates oral agent: give oral glucose solution

IV/IO established: Dextrose 10% (Follow HandTevy dosing)

Unable to obtain IV/IO Glucagon 0.5-1mg IM/IN (Follow HandTevy dosing)

Reassess q 5 minutes until BGL >80

Hyperglycemia ≥ 250

If ETCO₂ < 25 consider Diabetic Ketoacidosis

10ml/kg IV/IO NS Bolus if signs of hypoperfusion

Medical Control contact required for Refusal after ALS intervention for hypoglycemia unless:

- Patient with known hx of Diabetes & not taking any oral diabetic agents
- Baseline mental status and no new neurological deficits
- Adult caregiver must be with patient
- BGL >80 plus ability to eat & availability of food on scene
- Parent/caregiver has the capacity to make informed health decisions

PEARLS

- New onset DKA can present as flu like illness with normal lung sounds and tachypnea. Take precaution to check BGL in these patients if appropriate.
- DKA is usually precipitated by an acute illness (infection, dehydration)
- Patients on long-acting oral medications and long acting Insulin places the patient at risk for recurrent hypoglycemia even after normal BGL established. Metformin is not a long-acting oral medication.



Full ALS Assessment & Treatment

BGL <70 see [Hypoglycemia Protocol](#)

Head trauma see [Head Trauma Protocol](#)

Toxin suspected see appropriate protocol

Stroke suspected see [Stroke Protocol](#)

Pregnancy suspected see [OB Seizure Protocol](#)

Pediatric Emergencies

Active Seizure

Airway management as needed
(NPA, NRB, BVM)

May assist in patient's own Diazepam (Diastat) prescription if available

Versed IN/IM/IV/IO (Follow HandTevy dosing)
Begin with IM- Do not delay treatment to establish IV/IO

May repeat Versed x 1 after 5 minutes if still seizing

Contact Medical Control if still seizing after 2nd dose

PEARLS

- Ddx: Epilepsy (Hx of seizures), medication non-compliance, toxin, hypoxia, hypoglycemia, fever, head trauma, infection
- Febrile seizures: diagnosed in kids 6 months- 5 years old
- Status Epilepticus: two or more episodes of seizure activity between which the patient does not regain consciousness or a seizure lasting longer than 5 minutes
- Alert Medical Control if you have Keppra available. 60mg/kg is the dose of Status Epilepticus.
- Some patients with a diagnosed seizure disorder will have their own Diazepam rectal gel (Diastat). This can be given if no IV is available.



Full ALS Assessment

Scene Survey including environmental conditions & MOI

History elements

- Recent illnesses?
- Who found the child/where?
- What actions were taken?
- Has the child been moved?
- How did the child seem last?
- When was the last feeding?

Unresponsive, pulseless, apneic & Rigor mortis



Do not resuscitate



Provide supportive measures for parents & siblings

- Reassure parents that there was nothing they could have done to prevent death
- Allow the parents to see the child & say goodbye
- Maintain a supportive, professional attitude no matter how the parents react
- Whenever possible, be responsive to parental requests. Be sensitive to ethnic and religious needs or responses and make allowances for them

Consider CISM for prehospital personnel

PEARLS

- SIDS is the leading cause of infant mortality in the United States and the causes are unknown
- Refrain from asking judgmental or leading questions. Do not place blame or make accusations



***Follow HandTevy dosing**

Full ALS Assessment & Treatment

Consider need for
HAZMAT alert

Contact Poison Control
800-222-1222

Airway Protocol as indicated

See Seizure Protocol

If BGL < 70 see Hypoglycemia Protocol

If signs of shock see Shock Protocol

Beta Blocker/Calcium Channel Blocker

Glucagon 0.1 mg/kg IV/IO as available

Calcium Chloride 20 mg/kg IV/IO over 2 minutes
Contraindicated in Digoxin

See Bradycardia Protocol

Treat signs of Hyperkalemia

- Calcium Chloride 20 mg/kg IV/IO over 2 minutes
- Albuterol 2.5mg via nebulizer
- Signs of acidosis) Sodium Bicarbonate 1 meq/kg (max 50meq)

Organophosphate

Atropine 0.02 mg/kg IM/IV/IO repeat every 5 minutes until dry secretions & adequate oxygenation

Carbon Monoxide/Cyanide

High Flow Oxygen

Consider transport to Hyperbaric facility if available

- CO level > 25%
- CO level > 15% & pregnant
- CO level > 15% + AMS
- CO level > 15% + syncope or seizures

Consider Cyanokit for serious smoke inhalation victims (altered, hypotension, respiratory failure, dysrhythmias)

TCA's

Sodium Bicarbonate 1 meq/kg (max 50meq)
Repeat every 3-5 minutes until QRS narrows

Opiate

Narcan 0.1mg/kg IN/IM/IV/IO
Titrate to adequate ventilation & oxygenation (*not to restore consciousness*)

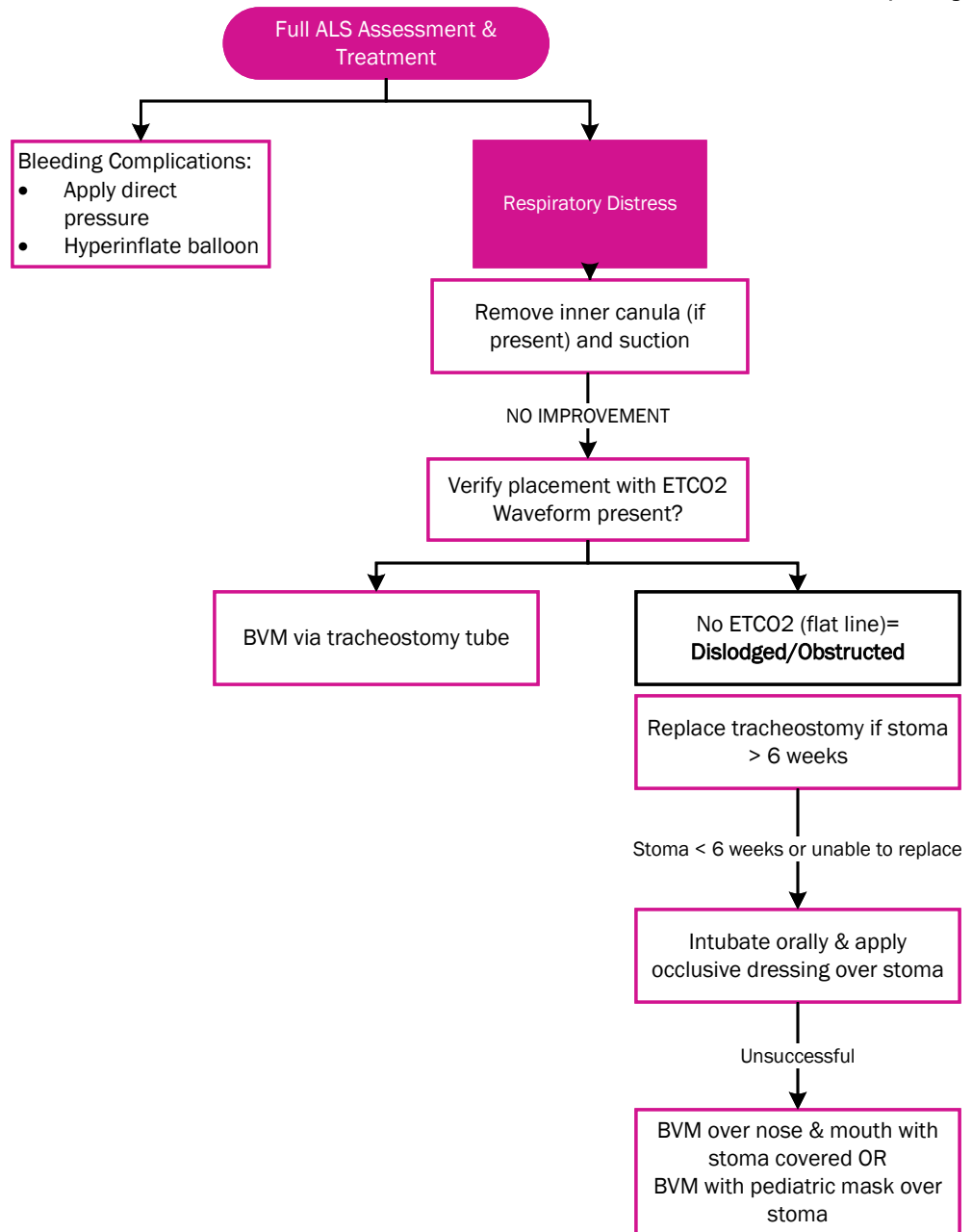
Pediatric Emergencies

PEARLS

- Always try to obtain TIME of ingestion
- Bring bottles/contents to the ED
- Beta Blockers (Atenolol, Timolol, Carvedilol, Metoprolol)- bradycardia, hypotension, altered mental status, seizure, hypoglycemia
- Calcium channel blocker (Amlodipine)- bradycardia, hypotension
- TCA (Amitriptyline): seizure, dysrhythmias, hypotension, altered mental status
- Stimulants: tachycardia, hypertension, hyperthermia, dilated pupils, seizures (Versed is the drug of choice for severe symptoms)
- Anticholinergic: tachycardia, hyperthermia, dilated pupils, altered mental status
- Opiates/Depressants: bradycardia, hypotension, hypothermia, respiratory depression
- Insecticides (Cholinergics/Organophosphates): increased secretions, nausea, vomiting, diarrhea, pinpoint pupils, bronchospasm, defecation
- Contraindications to Hyperbaric chamber: cardiac arrest, burns, trauma
- Odors: Almond=Cyanide, Fruit=Alcohol, Garlic=Arsenic, Parathion, Mothballs= Camphor, Rotten eggs= Hydrogen Sulfide, Wintergreen= Methyl Salicylate



**Follow HandTevy dosing*



PEARLS

- If laryngectomy patient, you will only be able to ventilate with BVM at the stoma site. Oral intubation is also not possible
- Many caregivers will have extra appropriately sized tracheostomy tubes
- If ventilatory dependent, first detach the ventilator and administer Bag Valve Mask ventilations

Pediatric Airway- Respiratory Failure

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Assess Respiratory Rate, Effort, Oxygenation

Supplemental O2 with a goal oxygen saturation $\geq 90\%$
Preferably $\geq 94\%$ (or baseline O2 saturation)

Spinal Motion Restriction if indicated

Pediatric Tracheostomy Protocol if indicated

Pediatric Respiratory Distress Protocol for Foreign Body Obstruction if indicated

Basic Maneuvers

- Open airway chin lift / jaw thrust
- Nasal or oral airway

Breathing / Oxygenation Support needed

Do not delay BVM in patient's with altered mental status, decreased respirations or elevated ETCO₂ (>45)

High flow oxygen at 1-2 L/kg via the nasal cannula added to the Non-rebreather

Consider CPAP or Bipap for patients with significant dyspnea or hypoxia if size allows

Contraindications:

- Decreased LOC
- Lack of spontaneous respirations

2 Rescuer BVM w/ OPA/NPA
Maintain Oxygen Saturation $\geq 90\%$

Unable to Ventilate and/or Oxygenate with above techniques?

Supraglottic Device Procedure

Unable to Ventilate and/or Oxygenate

Tracheal Intubation (no more than 2 attempts)

MANDATORY- If the alveolar waveform is not initially present or disappears after 3-5 breaths, the device **MUST** be removed

Can't Intubate AND Can't Ventilate

Cricothyrotomy Procedure
CONTACT MEDICAL CONTROL

If unstable airway and/or clinical instability will not allow for safe transport to a Pediatric Comprehensive Center, proceed to the closest appropriate ED. See Transport Destinations Protocol.

PEARLS

- In Pediatric patients, BVM is an acceptable end point of airway management if successful
- If strong suspicion for tension pneumothorax, consider: Chest Decompression Procedure if indicated
- Notify the medical director within 24 hours of the Cricothyrotomy procedure (follow agency contact procedures)
- HOPs Killers- Hypotension, Oxygenation (hypoxia), Ph (Acidosis)- if not addressed, increases the chances of cardiac arrest during intubation
- If first intubation attempt fails, make an adjustment and then try again: Different laryngoscope blade; Gum Elastic Bougie; Different ETT size; Change cricoid pressure; Apply BURP; Change head positioning
- During intubation attempts use External Laryngeal Manipulation to improve view of glottis.
- If an effective airway is being maintained by BVM with continuous pulse oximetry values of $\geq 90\%$ or stable/improving values consistent with clinical condition (e.g. pulse oximetry in the mid 80s post-drowning), it is acceptable to continue with basic airway measures instead of using a SGA or Intubation
- Continuous Waveform capnography is mandatory with all methods of airway management.
- Surgical cricothyrotomy is only used in patients >12 years of age. Needle cricothyrotomy is utilized under this age
- It is important to secure the endotracheal tube well and utilize tube holder to better maintain ETT placement. **Manual stabilization of endotracheal tube should be used during all patient moves / transfers.**
- Many patients who cannot be intubated easily may be sustained by basic airway techniques and BVM, with stable if not optimal Oxygen Saturation, i.e. stable (not dropping) SpO₂ values as expected based on pathophysiologic condition with otherwise reassuring vital signs (e.g. consistent pulse oximetry of 85% with otherwise normal or near-normal vitals in a post-drowning patient)

Pediatric Emergencies



Follow **HandTevy** dosing
guidelines

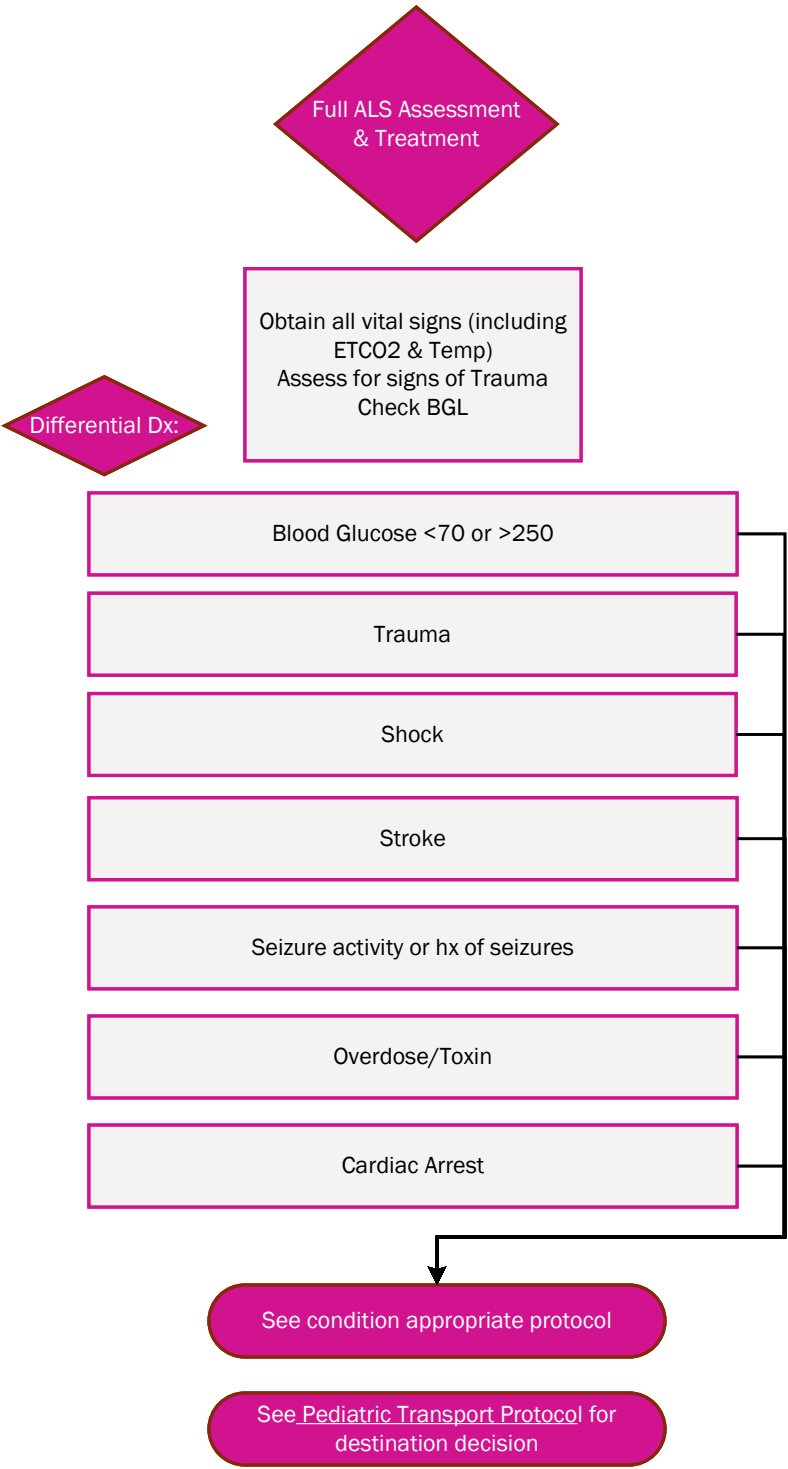
Full ALS Assessment
& Treatment

*If history of life-threatening allergic reaction to the same allergen, administer Epinephrine 1:1000 (1mg/ml) solution 0.01mg/kg **IM** (max dose 0.5mg)

Mild	
Localized swelling/itching at the site	
1 mg/kg IV/IO/IM Diphenhydramine (Benadryl) max of 50mg	
Moderate	
Only 1 system affected: Mild wheezing or hives	
1 mg/kg IV/IO/IM Diphenhydramine (Benadryl) max of 50mg	
Albuterol 2.5mg/3ml via nebulizer Repeat x 2 for continued wheezing	
Severe	Anaphylaxis
Acute onset after exposure w/ 2 or more or hypotension alone: Hives or mucosal swelling Respiratory symptoms Hypotension GI symptoms	
Administer FIRST w/o delay	Epinephrine 1:1000 solution 0.01mg/kg IM (max dose 0.5mg) Repeat q 3 min. x 2 if needed
	1 mg/kg IV/IO/IM Diphenhydramine (Benadryl) max of 50mg
	Albuterol 2.5mg/3ml via nebulizer Repeat x 2 for continued wheezing
	Methylprednisolone (Solumedrol) 2mg/kg IV/IM (max 125mg)
	Anaphylactic Shock= Refractory to above and signs of hypoperfusion
20ml/kg NS IV/IO Repeat as needed (total 60cc/kg)	
Epinephrine Spritzer	

PEARLS

- EMT may assist in administering patient's own autoinjector
- If history of life-threatening allergic reaction to the same allergen, administer Epinephrine IM
- Epinephrine 1:1000 is appropriate for the IM route ONLY
- Recheck dosing and concentration prior to administration of Epinephrine.
- Maintain SBP >70 + (age in years x 2)mmHg
- Anaphylaxis may occur with only respiratory + GI symptoms and not have a rash/skin involvement
- Push Dose Epinephrine in Pediatrics is not the same dosing as Adults, since it is weight based. Example: take the Pediatric cardiac arrest dose up to 1ml (0.01mg/kg of the 1:10,000 Epi) and dilute in 9ml NS syringe. Administer 1 ml q 2minute= 0.5mcg/kg/min Epinephrine.





Full ALS Assessment & Treatment

Identify underlying causes (i.e hypoxia, post-ictal, hypoglycemia) & refer to appropriate protocol

Consider multi-disciplinary coordination with LEO to attempt verbal de-escalation techniques

Apply physical restraints if needed to ensure patient/crew safety

Ensure "P-SNORES"

Position (NEVER PRONE or "hog tied")	SpO2 Monitoring	Nasal Capnography (ETCO2)	Oxygen (6L)	RASS	EKG	Sugar (BGL)
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For severe agitation compromising patient care or patient/crew safety or continued struggle against physical restraints:

Medications

Chart vitals before and after administration of medications when feasible
All patients must have a RASS level documented after administration

Moderate
RASS +2/+3

Versed
0.1 mg/kg IV
0.2 mg/kg IM
2.5 mg max initial dose, 5mg max total dose

OR

Droperidol
> 13 y/o
2.5mg IV or 5mg IM

If an inadequate response after 5 minutes (i.e. patient remains with a RASS of +3), administer the alternative medication

Severe
RASS +4

Versed
0.1 mg/kg IV
0.2 mg/kg IM
2.5 mg max initial dose, 5mg max total dose

PLUS

Droperidol
> 13 y/o
2.5mg IV or 5mg IM

If an inadequate response after 5 minutes (i.e. patient remains with a RASS of +4), administer an additional dose of Versed (adhere to max)

RASS +4/ AND EXTREMELY
VIOLENT= chemical takedown

Versed
0.1 mg/kg IV
0.2 mg/kg IM
5 mg max initial dose, 10 mg max total dose

OR

Ketamine >13 y/o
4 mg/kg IM
0.5 mg/kg IV (50mg max)

**Airway equipment must be readily available*

If an inadequate response after one of the medications above, administer Versed 2.5mg IM/IV or Droperidol 2.5mg IV or 5mg IM

**Any patient who is handcuffed by LEO & transported by EMS must be accompanied by LEO*

Pediatric Emergencies

PEARLS

- Limit stimuli, genuine respect for feelings/circumstances, use your body language to convey listening, ask open-ended questions
- Antipsychotics are best for history of psychiatric emergencies or acute alcohol intoxication
- Versed is best for sedation when drug use is suspected
- Droperidol is contraindicated in pregnancy
- RASS +4** Combative | **+3** Very Agitated | **+2** Agitated | **+1** Restless | **0** Alert & Calm
- RASS -5** Unarousable | **-4** Deep Sedation (movement to stimulation) | **-3** Moderate Sedation (eye opening to voice w/o eye contact) | **-2** Light Sedation (brief eye contact to voice) | **-1** Drowsy (eye opening & contact >10 seconds)



Full ALS Assessment & Treatment

BGL <70 see [Hypoglycemia Protocol](#)

Head trauma see [Head Trauma Protocol](#)

Toxin suspected see appropriate protocol

Stroke suspected see [Stroke Protocol](#)

Pregnancy suspected see [OB Seizure Protocol](#)

Abuse suspected see [Abuse Protocol](#)

Obtain Full Birth History + Event History

A sudden, brief, and now resolved episode of one or more of the following in an infant <12 months of age:

Increased or decreased tone
Change of color
Pallor or cyanosis
Period of apnea
Altered responsiveness
Choking not associated with feeding

Yes to any

Meets BRUE criteria

Patient requires transport

Contact Medical Control if parent/caregiver refuses transport for patients <12 months of age

Pediatric Emergencies

PEARLS

- History: Prematurity, complications at birth, circumstances surrounding event, length of episode, any parental intervention required, previous episodes, family hx of sudden infant death syndrome (SIDS), vaccine history, position of sleeping, recent infections, GERD, recent trauma, inappropriate mixture of formula
- Patients with BRUE criteria will have at least 1-2 hours of continuous pulse ox & cardiac monitoring in the ED. Higher risk infants are likely to be admitted.
- BRUE can be caused by many different entities; many of which can be life threatening. These include undiagnosed congenital heart disease, respiratory disease, seizures, infection, and many more. This is why it is paramount that these children be evaluated.



Age Specific BP indicating possible shock:

0-28 days: SBP < 60
 >1 month: SBP < 70
 1-9: SBP < 70 + (2 x Age in years)
 >10: SBP < 90

Full ALS Assessment and Treatment

C-spine immobilization as needed

Consider CPAP or Bipap for patients with significant dyspnea or hypoxia if size allows

Contraindications:

- decreased LOC
- Lack of spontaneous respirations

Airway & Breathing

See Airway Management Protocol

Consider high flow oxygen at 1-2 L/kg via the nasal cannula added to the Non-rebreather for dyspnea or hypoxia

Do not delay BVM in patient's with altered mental status, decreased respirations or elevated ETCO₂ (>45)

Circulation

Cardiac monitor due to increased frequency of arrhythmias

If hypoperfusion & lungs are clear 20cc/kg NS bolus IV/IO
 (repeat as needed up to 60cc/kg total)
**Reassess lung sounds*

Exposure

Vasopressors for shock

Prevent hypothermia

Transport to Trauma Center for diving injury
 Transport to Comprehensive Center for possible admit
 Transport to Pediatric ED for minor submersion with a likely discharge

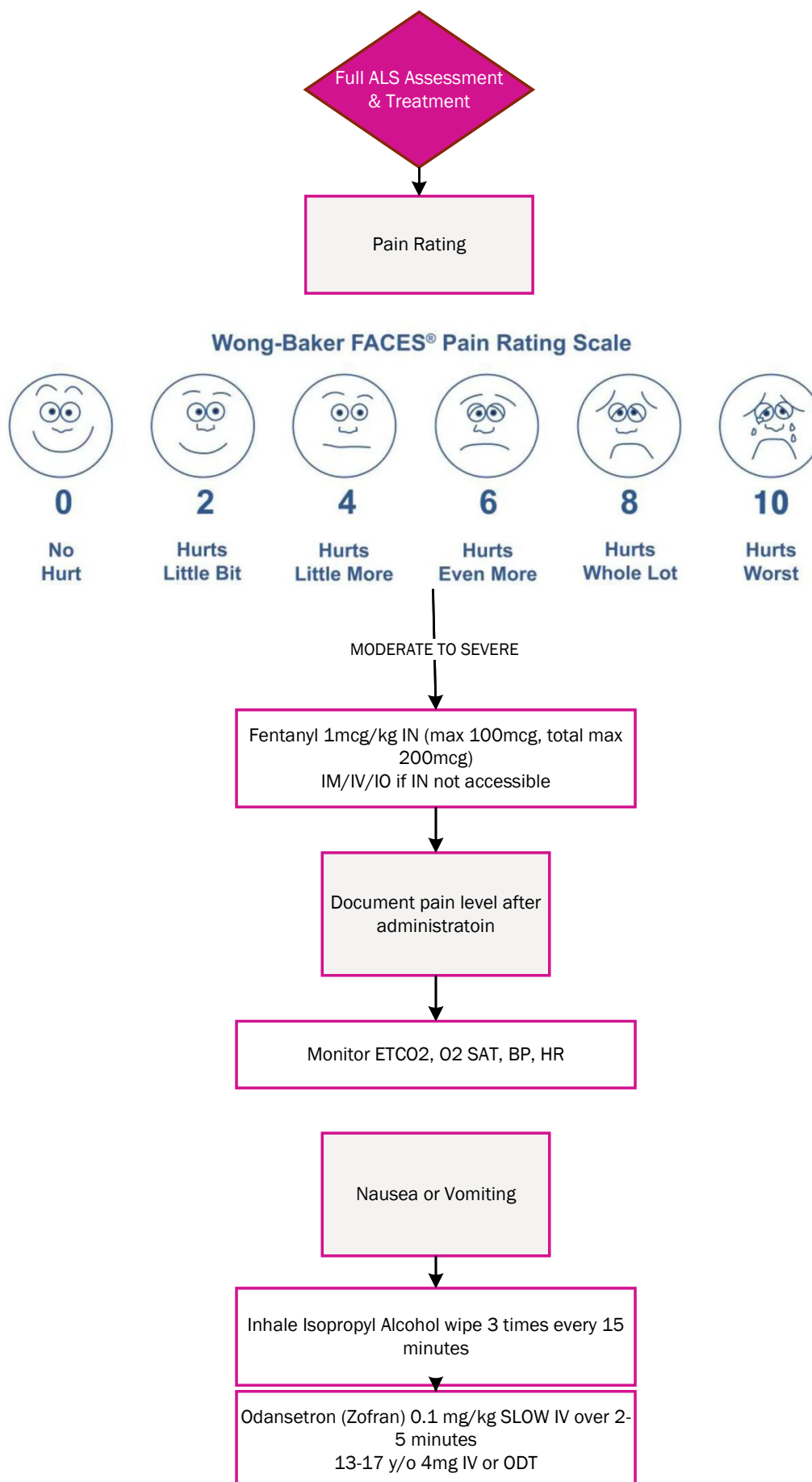
Medical Control contact required if parental refusal

PEARLS

- Even if the patient looks well they should be transported. There is a delayed risk of pulmonary edema
- Pediatric Drownings are not considered trauma alerts unless they meet the specific Trauma Alert criteria
- When feasible, transporting the patient to the definitive care destination is best
- Push Dose Epinephrine in Pediatrics ("Epinephrine Spritzer") is not the same dosing as Adults, since it is weight based. Example: take the Pediatric cardiac arrest dose (0.01mg/kg of the 1:10,000 Epi) and dilute in 9ml NS syringe. Administer 1 ml q 2minute= 0.5mcg/kg/min Epinephrine
- Norepinephrine IV/IO 0.1-2 mcg/kg/min. Titrate to age appropriate BP



Follow HandTevy dosing
guidelines





CAPACITY ASSESSMENT & MEDICAL CONTROL CALL GUIDE FOR

HIGH RISK REFUSALS

VERBALIZE EACH POINT DURING YOUR MEDICAL CONTROL CALL WHEN ASSESSING FOR A PATIENT'S CAPACITY TO REFUSE TRANSPORT.

CAN THIS PATIENT REFUSE TRANSPORT?

Reason for the med control call?

1

- Unsure of the patient's capacity
- Sure of capacity but wants physician input
- Required by protocol to call

2

Who called 911?

Reason for 911 call?

3

4

Patient's Reason for refusal?

AAO x 4?

5

6

Speaking clearly?

Ambulates normally?

7

8

Understands their condition?

Absence of Psychiatric crisis?

9

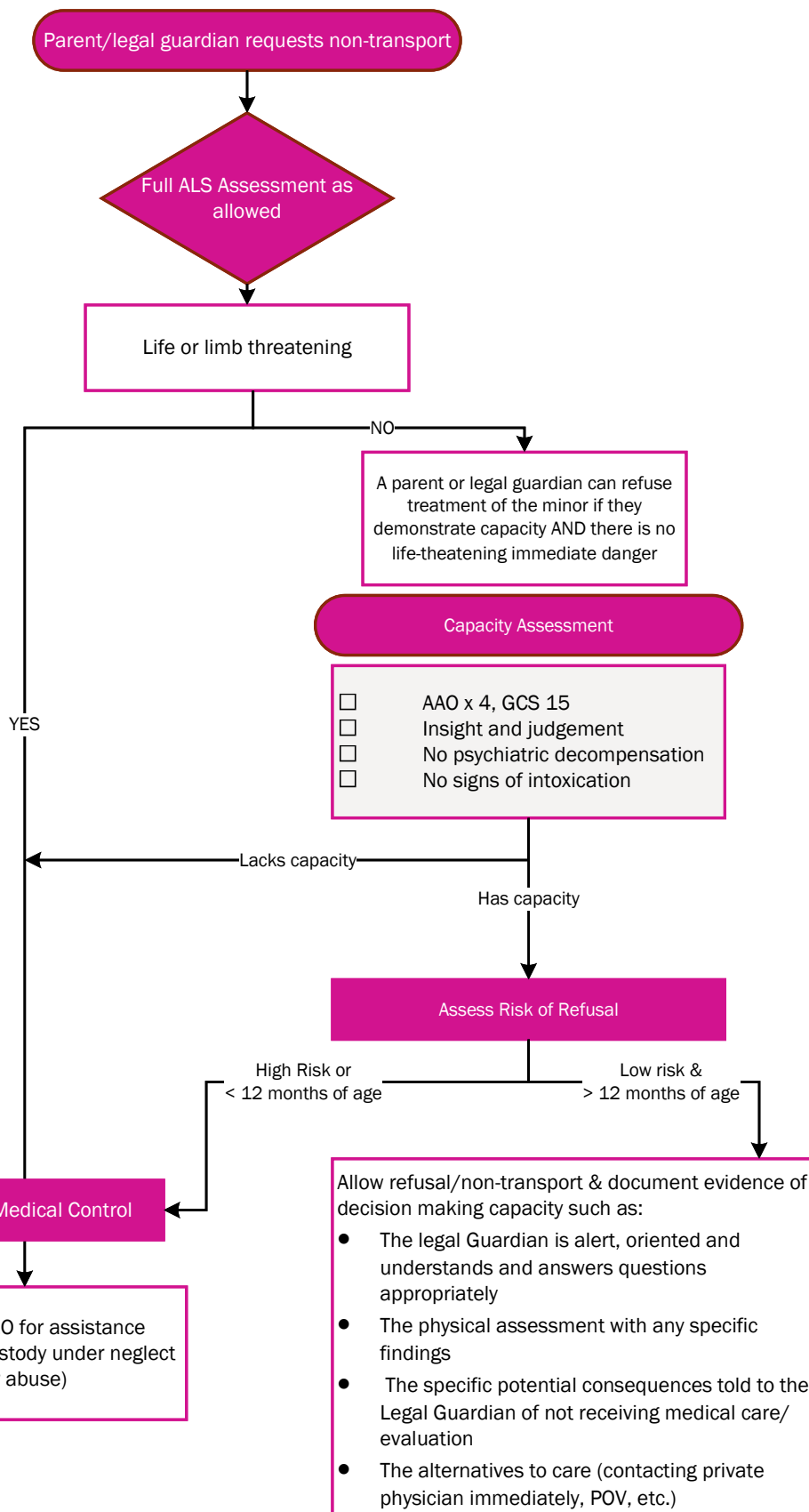
- Hypoxia
- Tachycardia
- Hypotension
- Fever
- Low End Tidal

10

Absence of abnormal vitals that could affect insight & judgement?

PATIENTS MAY STILL HAVE THE CAPACITY TO REFUSE WITH ABNORMAL VITALS, HOWEVER A MORE CAREFUL ASSESSMENT SHOULD BE COMPLETED TO ENSURE CAPACITY.

MEETS ALL ABOVE CRITERIA & MEDICAL CONTROL CONTACTED FOR HIGH RISK PATIENTS--> REFUSAL CAN BE GRANTED ONLY AT PATIENT'S REQUEST



PEARLS

- See Care of Unaccompanied Minor Protocol as needed
- Laws regarding informed consent are state specific. It is important to be familiar with your state's regulations.
- See infographic above for important elements to include in medical control consultation
- Medical control contact not required for a minor MVC in <12 months of age where 911 was activated by an outside party and there are no complaints or injuries in any of the passengers and the infant has a normal assessment and is without injury.



Follow **HandTevy** dosing guidelines

Full ALS Assessment & Treatment

Pediatric Airway Protocol(s) as indicated
Oxygen as indicated
(high flow via Non-rebreather, CPAP, Bipap, or BVM)

Pediatric Allergic Reaction Protocol as indicated

Differential Diagnosis based on assessment:

WHEEZING / Asthma

Albuterol Nebulizer
2.5 mg
+/- Ipratropium 0.5 mg
Repeat as needed x 2

Methylprednisolone
(Solumedrol) 2mg/kg IV/IM
(max 125mg)

Persistent & severe

Magnesium 50 mg/kg IV / IO in NS (max 2g) over 10 minutes

Imminent respiratory arrest

Epinephrine 1:1000 solution 0.01mg/kg IM (max dose 0.5mg)
Repeat q 15 min. x 2 additional if needed

STRIDOR / Croup

Albuterol Nebulizer
2.5 mg
+/- Ipratropium 0.5 mg
Repeat as needed x 2

Methylprednisolone
(Solumedrol) 2mg/kg IV/IM
(max 125mg)

STRIDOR at rest

Epinephrine **Nebulizer**
1 mg (1:1000) in 2 mL NS
May repeat x 3
Or Racemic Epinephrine
2.25%/0.5ml if available

Imminent respiratory arrest

Epinephrine 1:1000 solution 0.01mg/kg IM (max dose 0.5mg)
Repeat q 15 min. x 2 additional if needed

Fluid Overload

Oxygen as indicated
(high flow via Non-rebreather, CPAP/Bipap or BVM) see Pediatric Airway Protocol

Complete

Foreign Body Obstruction

Conscious

- <1 y/o: 5 back blows & 5 chest compressions
- >1 y/o: abdominal thrusts

Unconscious

Start Compressions
(round of 30)

Attempt removal w/ Magill forceps

Unable to ventilate w/ BVM

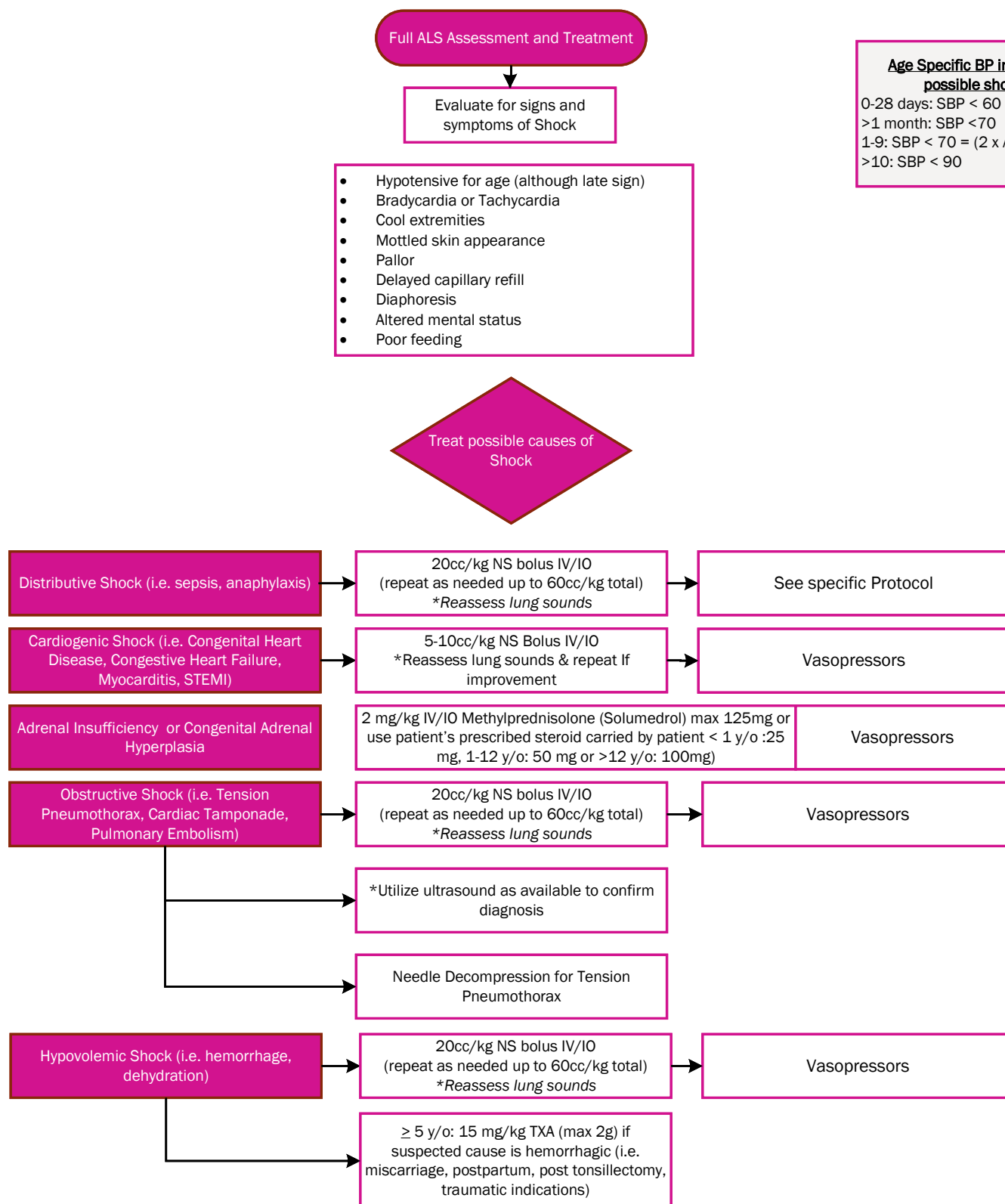
Exit to Pediatric Airway Protocol

Pediatric Emergencies

If clinical instability will not allow for safe transport to a Pediatric Comprehensive Center, proceed to the closest appropriate ED

PEARLS

- Important Hx: Time of onset, possibility of foreign body, fever/illness, sick contacts, hx of trauma, possibility of choking, Ingestion/OD, congenital heart disease
- Exam findings of respiratory distress: Nasal Flaring / Retractions / Grunting
- Do not attempt foreign body removal in partial obstruction**
- CPAP/Bipap contraindications: altered mental status & lack of spontaneous respirations
- If epiglottitis is suspected (i.e. drooling with respiratory, contact medical control for guidance)
- If button battery ingestion suspected and child 12 months of age and older: give 2 teaspoons every 10 minutes.** Leads to life-threatening esophageal burns and perforation.



PEARLS

- Shock may be present with normal blood pressure
- Tachycardia may be the first and only sign of Pediatric shock
- Push Dose Epinephrine in Pediatrics ("Epinephrine Spritzer") is not the same dosing as Adults, since it is weight based. Example: take the Pediatric cardiac arrest dose up to 1ml (0.01mg/kg of the 1:10,000 Epi) and dilute in 9ml NS syringe. Administer 1 ml q 2minute= 0.5mcg/kg/min Epinephrine.



Full ALS Assessment & Treatment

BGL <70 see [Hypoglycemia Protocol](#)

Head trauma see [Head Trauma Protocol](#)

Actively seizing see [Seizure Protocol](#)

Proactively Avoid Hypotension, Hypoxia, & Hypocapnia/Hypercapnia

Airway management as indicated
(BVM is an acceptable end point in Pediatric airway management)

20ml/kg of NS if hypotensive (based on age).
May repeat at 20ml/kg bolus to a total max of 60ml/kg

Refractory Hypotension-
Utilize HandTevy for Vasopressor dosing

Complete Stroke Assessment for any of the following:

“Worst headache of their life”, unilateral weakness or numbness, difficulty speaking or walking, vision loss, seizures, vertigo

Stroke Screen Positive when:
Absence of trauma
+
Facial Asymmetry
Arm Drift
Abnormal Speech
And/or
Abnormal Finger to Nose/gait

Obtain “Last Known Well”

Obtain family contact information & med list if available

Acute Signs of Herniation?

Elevate stretcher to 30 degrees

- Unilateral or bilateral dilation of pupils
- Posturing
- Cushing’s Triad: Hypertension, Bradycardia, abnormal breathing pattern

Temporarily increase ventilations with an ETCO2 goal of 30-35 mm Hg

Transport to Pediatric Comprehensive Center

Pediatric Emergencies

PEARLS

- Ddx/Causes: Subarachnoid Hemorrhage, Intraparenchymal Hemorrhage, TIA, Seizure, Todd’s Paralysis, Hypoglycemia, Tumor, Trauma, Sick Cell Anemia, other causes of altered mental status (toxin, infection, hypoxia, shock)
- “Last Known Well” or “Time of Onset” (report an actual time, i.e. 16:45)
- Attempts at establishing a “last known well” is important on scene, as family may arrive to the hospital later. Without this information, patients may not be able to receive htrombolytics or intervention.
- “Wake Up Stroke”: time starts when patient was last awake or symptom free



All health care clinicians are obliged by law to report cases of suspected child or vulnerable adult abuse and/or neglect to local police or adult/child protective service agencies.
Please call DCFS (1-800-25-ABUSE) (1-800-252-2873) and also report suspicions to the ED physician & ED charge nurse

Full ALS Assessment and Treatment

Treat obvious injuries & refer to condition specific protocol

Document:

Environmental surroundings
Child's interaction with parents
Caretakers description of event
Physical assessment findings
Discrepancies in history and injuries

Physical

- Unexplained bruises
- Numerous bruises
- Cigarette burns
- Bleeding, irritation or pain of the genitals
- Child with repeated injuries/multiple calls to the same address
- Flat/bald spots on head (infants)
- Unexplained wet clothing

Behavioral

- 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

Sexual Abuse

- 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

Parent/caregiver requests refusal:

If possible, remain at the scene
Call police to request protective custody
Do not confront caregivers
Call Medical Control

Pediatric Emergencies

PEARLS

- The following are some common forms of neglect:
- Environment is dangerous to the child (e.g. weapons within reach, playing near open windows without screen/guards, perilously unsanitary conditions, etc.).
- Caretaker has not provided, or refuses to permit medical treatment of child's acute or chronic life-threatening illness, or of chronic illness, or fails to seek necessary and timely medical care for child.
- Caretaker appears to be incapacitated (e.g. extreme drug/alcohol intoxication, disabling psychiatric symptoms, prostrating illness) and cannot meet child's care requirements.
- Child appears inadequately fed (e.g. seriously underweight, emaciated, or dehydrated) inadequately clothed, or inadequately sheltered.
- Child is found to be intoxicated or under the influence of an illicit substance(s).



Follow **HandTevy** dosing guidelines



Age Specific BP indicating hypotension:
 0-28 days: SBP < 60
 >1 month: SBP <70
 1-9: SBP < 70 = (2 x Age in years)
 >10: SBP < 90

Identify risk factors

Complete sepsis screen

Suspected Infection PLUS 1 of the following:

- Hypotension (age-based)
- Altered Mental Status
- Tachypnea and/or ETCO2 <25 mmHg
- SpO2 <90%
- High risk medical history

SEPSIS SCREEN +

20 ml/kg IV/IO NS Bolus
 (10 ml/kg IV/IO NS Bolus for volume sensitive children)

Repeat bolus if hypotensive. Max 60 ml/kg
Reassess lung sounds

Epinephrine Spritzer 1mL q2 minute. Max 10mL
 Transition to Vasopressor drip as needed

Pediatric Emergencies

PEARLS

- High risk medical history: altered mental status, asplenia, organ transplant, cancer, cerebral palsy, sickle cell, indwelling catheters, immunodeficient, bed bound, mental delay, organ transplant, indwelling catheter
- Volume-sensitive children: neonates, congenital heart disease, chronic lung disease, chronic renal failure
- Norepinephrine IV/IO 0.1-2 mcg/kg/min. Titrate to age appropriate BP
- Push Dose Epinephrine in Pediatrics ("Epinephrine Spritzer") is not the same dosing as Adults, since it is weight based. Example: take the Pediatric cardiac arrest dose (0.01mg/kg of the 1:10,000 Epi) and dilute in 9ml NS syringe. Administer 1 ml q 2minute= 0.5mcg/kg/min Epinephrine



Safe Transport

Any child who fits on a length-based resuscitation tape must be properly restrained in a safety seat or harness

Child where spinal immobilization is not required:
Size appropriate child restraint system (CRS) that complies with FMVSS 213 for passenger vehicles, cot mounted devices, commercial immobilization devices and long board/harness immobilizer systems.

Condition where Spinal Immobilization and/or lying flat is required:
Secure board w patient to the stretcher head first with three horizontal restraints across torso & vertical restraint across each shoulder.

Multi-patient scenario:
When possible transport each as a single patient according to the above. For mother & newborn, transport newborn in appropriate CRS device in rear-facing provider seat w/ forward facing belt path that prevents forward & lateral movement, leaving stretcher for mother.

It is unacceptable to transport a Pediatric patient in the arms of an adult.

Destination

Closest ED/Freestanding ED

- Traumatic Cardiac arrest
- Medical Cardiac Arrest (excludes Freestanding ED's)
- Minor injuries, stable vitals, no O2 requirement, not likely to be admitted
- Unstable where additional transport time to Specialty center could negatively impact care (excludes Freestanding ED's except involving airway)
- Unstable/Non-patent airway
 - Unable to successfully oxygenate/ventilate with airway adjuncts & BVM techniques by most experienced & using 2 person technique
 - Advanced airway immediately required to prevent death

Pediatric Comprehensive Center

- Post-ROSC
- Stroke
- Likely to be admitted (see examples)
- Emergency related to a known condition previously treated at their medical home

Pediatric Trauma Center

- Meets Trauma Alert Criteria
- Meets any 1 red criteria
- Meets any 2 blue criteria alone
- Meets any 1 local criteria
- Meets Trauma Gray criteria
- Meets any 1 blue criteria with a high risk mechanism
- Multisystem injury
- Pelvic or Femur Fracture
- Complex hand or wrist fractures
- Chest wall instability
- Blunt abdominal injury (seatbelt sign or firm or distended abdomen)
- Death in the same vehicle
- Any crash > 35mph with pregnancy
- Fall from 10 foot height or more
- Ejected from vehicle
- Pedestrian/Bicyclist thrown, crushed, run over, or with significant impact (with complaints)
- Paramedic Judgement

Pediatric Emergency Departments:

- Advent Celebration

Pediatric Comprehensive Centers:

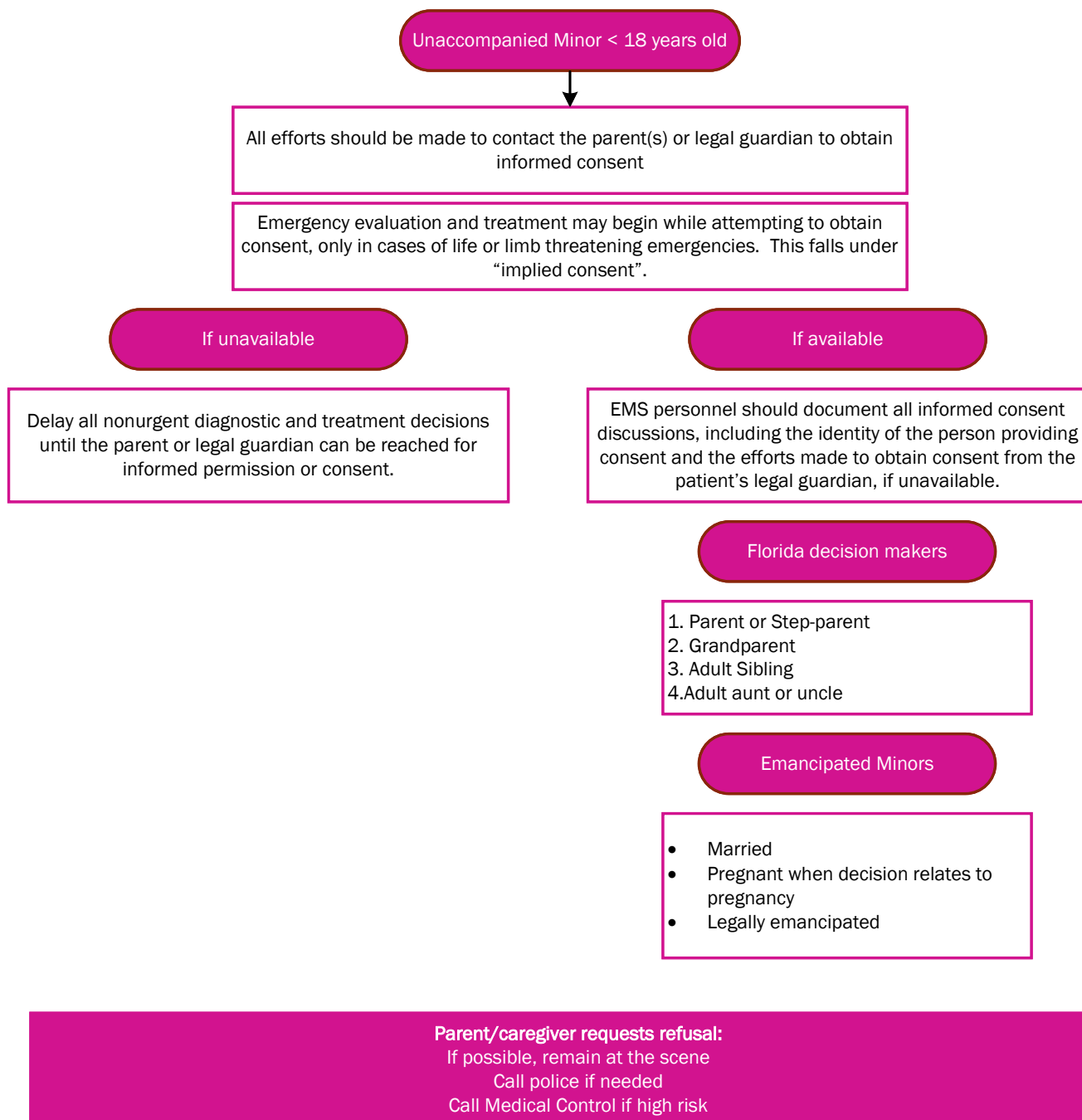
- Nemours Children's
- Arnold Palmer

Pediatric Trauma/Burn Center:

- Arnold Palmer

Example of Admits

- altered mental status
- more than 2 seizures w/o known hx
- respiratory distress
- BRUE
- fever less than 60 days old
- shock with abnormal Pediatric Assessment Triangle
- prolonged or unstable submersion



PEARLS

- Treat emergently if delay in medical care would endanger the health or well-being of the minor
- Although unemancipated minors are unable to provide consent, it is important to include them in the plan of care, as appropriate for the patient's age, stage of development, and level of understanding.

