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Pediatric Pulseless Arrest Asystole / Pulseless Electrical Activity

TREATMENT GUIDELINE 9701

9701.1 TREATMENT

- A. Confirm pulselessness. Immediately begin CPR per AHA recommendations utilizing BVM ventilation; minimize interruptions in compressions. Refer to Cardiopulmonary Resuscitation (CPR) Guideline # 7014.
- B. Utilize waveform capnography; refer to Waveform Capnography Monitoring Guideline # 9814.
- C. Establish IV/IO NS (fluid challenge) 10 cc/kg then TKO.
 1. Consider fluid bolus 20 cc/kg.
- D. Administer epinephrine (1:10,000) 0.01mg/kg (0.1ml/kg) IV/IO; simultaneously while performing CPR five (5) cycles or two (2) minutes.
 1. Max of 1mg per dose.
 2. Repeat every three to five (3–5) minutes, max cumulative dose 15mg.
 - 3.

9701.2 SPECIAL CONSIDERATIONS

- A. Use a length-based color-coded resuscitation tape.
- B. Place a high importance on good BLS skills.
- C. If patient is ≥ 15 years old and BLS airway is unsuccessful, use endotracheal intubation.
- D. Avoid Hyperventilation.
- E. Establishment of an airway, IV/IO, and medication administration should occur during five (5) cycles or two (2) minutes of CPR and should not interrupt the CPR cycles Upon ROSC, maintain an open airway and administer oxygen to maintain oxygen saturations $> 94\%$ and not above 97% . Utilize and document continuous waveform capnography throughout arrest.



Pediatric Pulseless Arrest Ventricular Fibrillation / Pulseless Ventricular Tachycardia

TREATMENT GUIDELINE 9702

9702.1 TREATMENT

- A. Confirm pulselessness. Immediately begin CPR per AHA recommendations then utilize BVM ventilation; minimize interruptions in compressions. Refer to Cardiopulmonary Resuscitation (CPR) Guideline # 7014.
- B. Utilize waveform capnography; refer to Waveform Capnography Monitoring Guideline # 9814.
- C. Evaluate rhythm.
- D. Defibrillate 2 J/kg. Resume CPR immediately. Administer CPR five (5) cycles or two (2) minutes (15:2).
- E. Establish IV/IO NS.
- F. Consider fluid bolus 20ml/kg.
- G. Perform rhythm / pulse check; for persistent V-Fib defibrillate 4 J/kg. Resume CPR immediately.
- H. Administer epinephrine (1:10,000) 0.01mg/kg (0.1 ml/kg) IV/IO, simultaneously while performing CPR five (5) cycles or two (2) minutes (15:2).
 1. Repeat every three to five (3-5) minutes.
 2. Do not exceed 1mg in a single dose.
- I. Perform rhythm / pulse check; for persistent V-fib defibrillate 6 J/kg.
 1. Amiodarone 5mg/kg IV/IO. Administer CPR five (5) cycles or two (2) minutes (15:2).
 2. Perform rhythm / pulse check; for persistent V-fib defibrillate 6 J/kg; Administer CPR five (5) cycles or two (2) minutes (15:2), perform rhythm / pulse check.

9702.2 SPECIAL CONSIDERATIONS

- A. Use length based color coded resuscitation tape.
- B. Place a high importance on good BLS skills.
- C. Establishment of an airway, IV/IO, and medication administration should occur during five (5) cycles or two (2) minutes of CPR and should not interrupt the CPR cycles.
- D. If < 10 kg, use pediatric pads / paddles for cardioversion if available; if unavailable, use adult pads / paddles in A-P position.
- E. If patient is ≥ 15 years old and BLS airway is unsuccessful, use endotracheal intubation. If available defibrillator will not dial down to appropriate level, use lowest possible setting.
- F. Upon ROSC, maintain an open airway and administer oxygen to maintain oxygen saturations > 94% and not above 97%.
- G. Utilize and document continuous waveform capnography throughout arrest.



Pediatric Bradycardia

TREATMENT GUIDELINE 9703

9703.1 TREATMENT

- A. Assure adequate oxygenation and ventilation, bradycardia in children is usually due to hypoxia and secondarily hypothermia.
- B. If signs of decreased perfusion and HR < 60 / min start CPR; (consider CPR if HR < 80 / min in infant).
- C. Check blood glucose level.
- D. Check temperature and warm if hypothermic.

9703.2 NORMAL PERFUSION

Establish IV NS TKO.

9703.3 DECREASED PERFUSION OR RESPIRATORY DISTRESS

- A. Establish IV/IO NS TKO.
 - 1. Consider fluid bolus 20 ccs/kg.
- B. Epinephrine (1:10,000) 0.01mg/kg (0.1 ml/kg) IV/IO. Administer CPR five (5) cycles or two (2) minutes (15:2), perform rhythm/pulse check.
 - 1. Max of 1mg per dose;
 - 2. Repeat every three to five (3-5) minutes, max cumulative dose 15mg.
- C. Consider atropine 0.02mg/kg IV/IO if bradycardia is suspected to be due to increased vagal tone or primary AV block.
 - 1. Minimal dose 0.1mg (<5 kg).
 - 2. Maximum total dose 1mg.
- D. Cardiac pacing is reserved for patients with profound symptomatic bradycardia refractory to drugs. Consult base physician prior to use.

9703.4 SPECIAL CONSIDERATIONS

Use length based color coded resuscitation tape whenever possible.



Pediatric Tachycardia

TREATMENT GUIDELINE 9704

9704.1 TREATMENT

- A. Provide appropriate airway management; refer to Airway Management Guideline # 9002.
- B. Establish IV or IO NS TKO.
- C. Consider fluid bolus 20 mL/kg.
- D. Evaluate rhythm.

9704.2 PROBABLE SINUS TACHYCARDIA

- A. P waves present / normal.
- B. Variable RR; constant PR.
- C. QRS \leq 0.08 seconds.
- D. Infants HR < 220; Children HR < 180.
- E. Assess for and treat cause.

9704.3 PROBABLE SUPRAVENTRICULAR TACHYCARDIA

- A. P waves absent / abnormal.
- B. HR not variable and regular.
- C. QRS \leq 0.08 seconds.
- D. Possible history of abrupt rate changes.
- E. Infants HR > 220; Children HR > 180.
- F. **If stable (with good pulses and perfusion):**
 1. Consider vagal maneuvers.
 2. Adenosine 0.1mg/kg rapid IV/IO to max of 6mg.
 - a. May repeat in three (3) minutes at 0.2mg/kg IV/IO to max of 12mg.
- G. **If unstable (with pulses but poor perfusion and/or decreasing responsiveness):**
 1. Synchronized cardioversion 0.5 J/kg. If no response, repeat 1 J/kg; if no response, 2 J/kg, repeat 4 J/kg if needed.
 2. Consider midazolam (Versed) before cardioversion if child is responsive. Refer to Sedation Guideline # 9005.

9704.4 PROBABLE VENTRICULAR TACHYCARDIA

- A. P waves absent / abnormal.
- B. HR not variable.
- C. QRS \leq 0.08 seconds.
- D. History of abrupt rate changes.
- E. Infants HR > 220; Children HR > 180.
- F. **If stable (with good pulses and perfusion):**

1. Adenosine is recommended as a safe and potentially effective medication for both treatment and diagnosis in the initial management of undifferentiated regular monomorphic wide complex tachycardia. If clinically indicated:
 - a. Adenosine 0.1mg/kg rapid IV/IO to max of 6mg. May repeat in three (3) minutes at 0.2mg/kg IV/IO to max of 12mg.
- G. If unsuccessful: Amiodarone 5mg/kg IV/IO with base physician order only.
- H. **If unstable (with pulses but poor perfusion and/or decreasing responsiveness):**
 1. Synchronized cardioversion 0.5 J/kg. If no response, repeat 1 J/kg; if no response, 2 J/kg, repeat 4 J/kg if needed.
 2. Consider midazolam (Versed) before cardioversion if child is responsive. Refer to Sedation Guideline # 9005.
 - a. If cardioversion not successful:
 1. Refer to Pediatric Pulseless Arrest Ventricular Fibrillation / Pulseless Ventricular Tachycardia Guideline # 9702.

9704.5 CONSIDERATIONS

- A. Use length based color coded resuscitation tape.
- B. If < 10 kg, use pediatric pads / paddles for cardioversion if available; if unavailable, use adult pads / paddles in A-P position.
- C. If available defibrillator will not dial to calculated energy dosage for subsequent escalating shocks; increase energy dosage to next highest setting (i.e. the monitor doesn't dial to eight (8) J – but it does dial to ten (10) J, use the higher setting).
- D. Use pulse oximeter and waveform capnography. Refer to Waveform Capnography Monitoring Guideline #9814.



Newborn Resuscitation

TREATMENT GUIDELINE 9705

9705.1 PURPOSE

It is the intent of the policy to provide optimal care to all newborn patients transported by the ALS provider.

9705.2 PROTOCOL

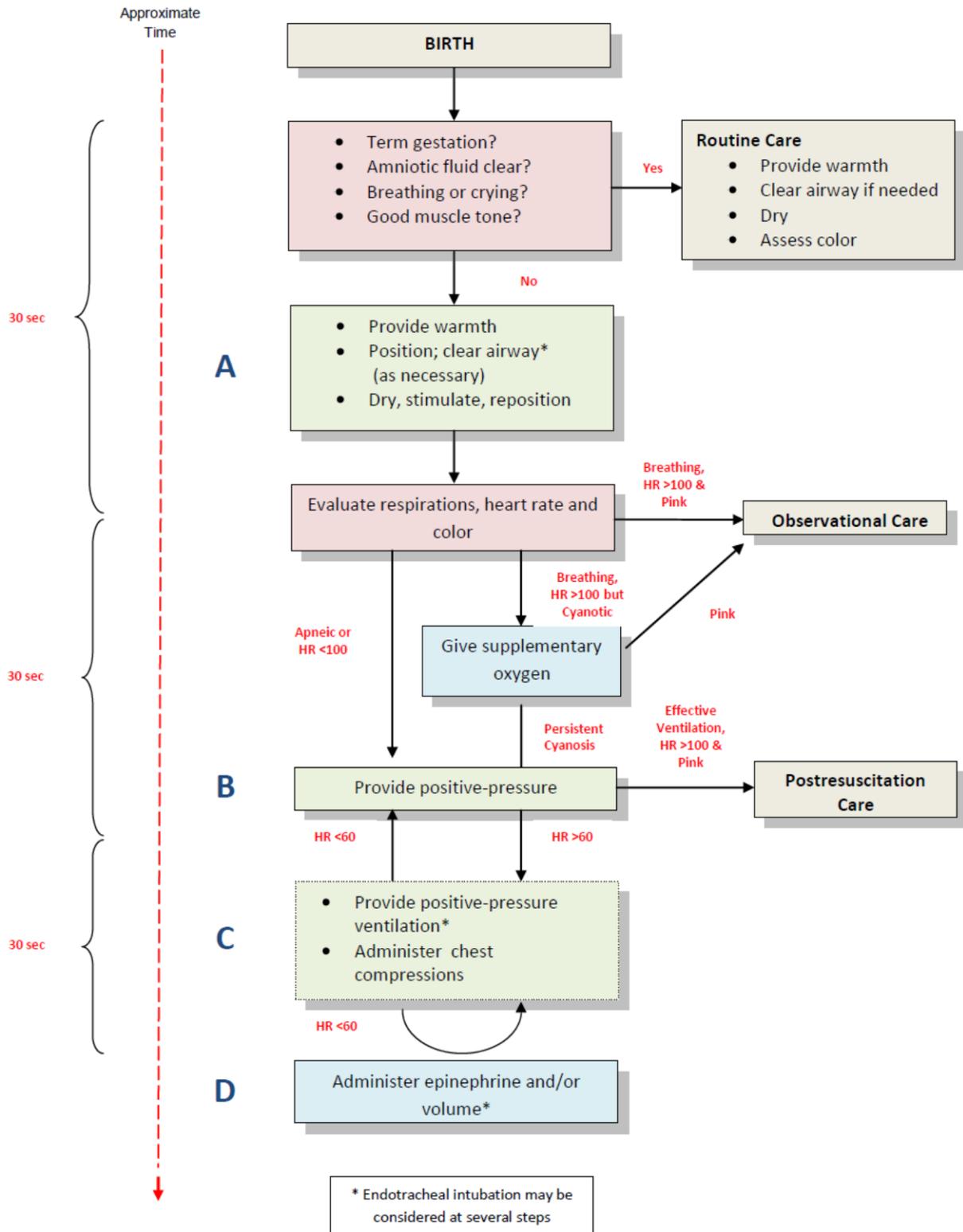
A majority of newborns respond to simple measures. This algorithm reflects relative frequencies of resuscitative efforts for a newborn that does not have meconium-stained amniotic fluid.

9705.3 TERM NEWBORN VITAL SIGNS

- A. Heart rate (awake): 100 to 180 bpm.
- B. Respiratory rate: 30 to 60 breaths / min.
- C. Systolic blood pressure: 55 to 90 mm Hg.
- D. Diastolic blood pressure: 26 to 55 mm Hg.

9705.4 INITIAL CARDIOPULMONARY RESUSCITATION

- A. Ventilation rate 40-60 / min when performed without compression.
- B. Compression rate: 120 events / min (90 compressions interspersed with 30 ventilations).
- C. Compression-ventilation ratio: 3:1 (pause compressions for ventilation).



9705.5 MEDICATIONS USED

Medications	Dose/Route	Concentration	Precautions
Epinephrine	0.01-0.03mg/kg IV 0.1mg/kg ETT	1:10,000	Give rapidly. Repeat every three to five (3-5) minutes. ETT route (class intermediate). Higher IV doses not recommended.
Volume expansion	10 ml/kg IV		Indicated for shock. Give over five to ten (5-10) minutes. Reassess after each bolus.
Dextrose	0.2 g/kg or 2mg/kg IV	10% solution (0.1g/ml)	Check bedside glucose. To make 10% dextrose add 50ml D50 to 200ml NS.
Naloxone (Class Intermediate)	0.1 mg/kg IV or IM	0.4mg/ml	Establish adequate ventilation first. Not recommended for initial resuscitation. Give rapidly. Repeat every two to three (2-3) minutes. Caution in opioid-addicted mothers.
Sodium bicarbonate	1-2 mEq/kg IV	4.2% solution (0.5 mEq/ml)	Establish adequate airway. Only for prolonged resuscitation. Give slow IV push.

9705.6 ENDOTRACHEAL TUBE SIZE & DEPTH

Weight (g)	Gestational Age	Laryngoscope Blade	ETT size / Suction cath	Depth of insertion from upper lip
Below 1000g	< 28 wks	0	2.5/5F	6.5-7 cm
1000 – 2000g	28–34 wks	0	3.0/6F	7-8 cm
2000 - 3000g	34-36 wks	0-1	3.5/8F	8-9 cm
>3000g	> 38 wks	1	3.5-40/8F	>9 cm

9705.7 SPECIAL CONSIDERATIONS

- A. Use length based color coded resuscitation tape whenever possible.
- B. If unable to establish IV **and** unable to intubate, begin transport. Continue efforts to establish IV/IO/ETT while transporting.
- C. No clinical data regarding IO route of administration of medications or volume expansion.



Pediatric Respiratory Distress Stridor / Croup

TREATMENT GUIDELINE 9706

9706.1 PROBABLE UPPER AIRWAY OBSTRUCTION

- A. Administer high-flow oxygen, allow parent to administer if appropriate.
- B. If allergic reaction suspected, go to Pediatric Allergic Reaction Guideline # 9709.
- C. If foreign body suspected, go to appropriate management.
- D. If patient deteriorates or becomes completely obstructed, attempt positive pressure ventilation via bag-mask.
 - 1. Endotracheal intubation should be performed **ONLY** if bag-mask ventilation is inadequate or impossible and the patient is ≥ 15 years-old.

9706.2 OTHER, NON-OBSTRUCTIVE CAUSES OF RESPIRATORY DISTRESS

- A. Consider IV access.
- B. If a suspected toxic exposure has been appropriately identified, treat according to Treatment Guideline 9712.

9706.3 SPECIAL CONSIDERATIONS

- A. Transport in a position of comfort.
- B. The goal is to not make the patient worse, avoid procedures that will cause the patient to become upset (i.e. if the patient will not tolerate a mask, try blow by, etc.).
- C. Allow the caregivers to assist where they can to keep the patient calm.



Pediatric Respiratory Distress Bronchospasm

TREATMENT GUIDELINE 9707

9707.1 DEFINITION

Pediatric Respiratory Distress Bronchospasm: Acute onset of respiratory difficulty, including toxic inhalation, asthma, COPD and other etiologies that may induce bronchospasm.

9707.2 TREATMENT

A. MILD:

1. Administer albuterol 5 mg in 6 mL NS
2. May repeat albuterol 5 mg in 6 mL NS.

B. MODERATE or SEVERE:

1. **If patient has spontaneous respirations with adequate tidal volume:**
 - a. Continuous albuterol 5 mg in 6 mL NS.
 - b. Ipratropium (Atrovent) 0.5 mg in 3 mL NS.
2. **If response inadequate:**
 - a. Epinephrine (1:1000) IM 0.01 mg/kg maximum dose 0.3 mg. If appropriate, may repeat once in 10 minutes.
 - b. Consider CPAP. Refer to CPAP Guideline # 9806
3. **If patient becomes apneic:**
 - a. Continuous albuterol 5 mg in 6 mL NS/ET tube, nebulizer / bag valve mask.



Pediatric Shock

TREATMENT GUIDELINE 9708

9708.1 TREATMENT

- A. Fluid bolus 20 mL/kg NS IV/IO as clinically indicated to maintain perfusion status.
 - 1. Administer boluses with 60ml syringe over five to ten (5-10) minutes.
 - 2. Note children may require several boluses, reassess after each bolus.



Pediatric Allergic Reaction

TREATMENT GUIDELINE 9709

9709.1 DEFINITION

Mild allergic reaction: Urticaria and/or mild wheezing only.

A. TREATMENT

1. Benadryl 1mg/kg IV/IO/IM (max dose 50mg).
2. Albuterol 5 mg in 6 mL NS (with associated wheezing).

9709.2 DEFINITION

Moderate allergic reaction / anaphylaxis (may have any or all of the following):

- A. Urticaria.
- B. Swelling of mucus membranes.
- C. Dyspnea.
- D. Wheezing.
- E. Chest or throat tightness.
- F. Abdominal cramps.

1. TREATMENT

- a. Albuterol 5mg in 6 mL NS (with associated wheezing).
- b. Epinephrine (1:1,000) 0.01mg/kg IM (max dose 0.3mg) may repeat one time (x 1) in ten (10) minutes.
- c. Diphenhydramine (Benadryl) 1mg/kg IV/IO/IM (max dose 50 mg).

9709.3 DEFINITION

Severe allergic reaction / anaphylaxis with signs of shock:

- A. Hypotension.
- B. Poor skin signs (cool, clammy mottled).
- C. ALOC.

1. TREATMENT

- a. Epinephrine (1:1,000) 0.01mg/kg IM (max dose 0.3mg) may repeat one time (x 1) in ten (10) minutes
- b. Large bore IV/IO NS fluid challenge, 20ml/kg.
- c. Assist ventilations as clinically indicated. 2. Albuterol 5mg in 6 mL NS if respiratory distress persists or develops.
- d. Diphenhydramine (Benadryl) 1mg/kg IV/IO/IM (max dose 50 mg).
- e. If inadequate or no response, contact the base hospital.



9710.1 DEFINITION

Pediatric Seizures: A sudden episode of transient neurologic symptoms such as involuntary muscle movements, sensory disturbances and altered consciousness. DO NOT administer midazolam unless patient is actively seizing.

9710.2 TREATMENT

Treat only if patient is actively seizing - three (3) or more seizures in ≤ 5 minutes, two (2) or more sequential seizures without full recovery of consciousness between seizures or any one (1) seizure lasting ≥ 5 min.

- A. Protect from injury, do not restrain, cooling measures if febrile.
- B. Maintain open airway and assist ventilations as needed.
- C. Establish IV or IO NS TKO.
 1. bG level determination.
 - a. If $< 60\text{mg/dl}$ (40mg/dl if neonate) or un-measurable:
 - b. Administer D10% **0.5 g/kg up to 25 g** (5mL/kg) IV/IO; **or**
 - c. If vascular access impossible, D10% IO.
 - d. For smaller children, draw up desired volume into syringe and administer slow IV/IO push. Observe patient for improvement while dose is given.
 - e. If signs and symptoms of hypoglycemia fully reverse, reassess bG. If $> 60\text{mg/dL}$; slow D10% to TKO to deliver remainder of calculated dose.
 - f. If no improvement after five (5) minutes from initial D10% dose and bG remains $< 60\text{mg/dL}$; give additional D10% IV **0.5 g/kg up to 25 g** (5mL/kg).
- D. For continued seizure activity:

Midazolam (Versed)

 1. IM/IN/IV/IO: 0.1mg/kg. May repeat once in 15 minutes. MAX total dose of 5 mg

*****BASE ORDER REQUIRED FOR ADDITIONAL DOSING*****

**9711.1 DEFINITION**

Low blood glucose (bG) < 60 with signs and symptoms of hypoglycemia, (e.g. altered level of consciousness, tachycardia and diaphoresis).

9711.2 DOSE / ROUTE

0.5 g/kg via IV/IO, a maximum of 25 g. Calculate appropriate dose of D10% based on patient age, size and bG level (25 g in 250 mL- see chart).

9711.3 SPECIAL CONSIDERATIONS

- A. GCS < 15 or inappropriate appearance for age with unclear etiology, consider AEIOU-TIPS.
- B. Consider indications for spinal immobilization precautions. Refer to Treatment Guideline # 9003 Spinal Immobilization.
- C. Consider Treatment Guideline # 9817 Carbon Monoxide (CO) and Cyanide Toxicity.
- D. If patient has heart failure (HF) or a history of HF and lungs are clear, administer D10% as below, but slow infusion rate to 50 mL increments followed by reassessment.
- E. If patient has rales, crackles or wheezes, contact the base hospital for orders.
- F. Consider D10% administration in case of unknown etiology.

9711.4 TREATMENT

- A. Provide appropriate airway management. Refer to Airway Management Guideline # 9002.
- B. Check blood glucose level.
 1. If <60mg/dl or un-measurable and patient is able to swallow glucose paste (i.e. patient is able to hold head upright, has a gag reflex, and can self-administer medication)
 - a. Administer glucose paste 15 mg PO.
 - b. Reassess bG after 15 minutes.
 - c. If hypoglycemia continues and patient is still able to swallow glucose paste, administer 1 additional dose.
 2. If <60 mg/dl or un-measurable and patient is **NOT** able to swallow glucose paste for any reason (e.g. decreased level of consciousness, clenched jaw, etc.)
 - a. Establish IV
 - b. Administer 0.5 g/kg (5 mL/kg) of D10% IV bolus.
 3. If <60 mg/dl or un-measurable and patient is **NOT** able to swallow glucose for any reason AND IV access cannot be achieved or patient is in extremis
 - a. Establish IO in proximal tibia or distal tibia – Refer to IO Infusion Guideline #9812.
 - b. For IO pain management in conscious patient, use 2% preservative free lidocaine.
 - c. Slowly administer lidocaine 0.5 mg/kg, not to exceed 40 mg, IO over 1-2 minutes.
 - d. Flush with 2-5 mL NS.
 - e. If needed, slowly infuse subsequent lidocaine (half the initial dose) IO over 1 minute.
 - f. Administer 25 g (entire 250 mL) of D10% bolus. A pressure-infuser bag may be used.

- g. If needed, administer an additional dose of lidocaine (half the initial dose) IO over 1 minute.
- C. Reassess bG after initial dose of D10% IV/IO or when signs and symptoms of hypoglycemia fully reverse. If bG >60 mg/dl; slow D10% to TKO to deliver remainder of calculated dose.
- D. If hypoglycemia continues, administer additional D10% in 5 g (50 mL) increments at 5-10 minute intervals. Reassess bG level and mental status every 5 minutes after each increment.

***Glucagon is no longer the first line treatment for hypoglycemia in cares in which IV access is not available. Glucagon is available upon request to supervisor or battalion chief only.*

***Glucagon ONLY works when liver has sufficient glycogen stores – the peak glucose level occurs in approximately 25 minutes.*

- E. If necessary, use glucagon as follows:

1. Administer glucagon 1 mg IM.
2. Reassess bG and mental status after 20-25 minutes.
3. If hypoglycemia continues after 25 minutes of glucagon administration, consider glucose paste or D10% IO infusion.

- F. Consider 12-lead ECG.

9711.5 Transport / Refusal

- A. If patient becomes alert and oriented and parent or legal guardian refuses transport after administration of glucose, glucagon, or dextrose 10%, fully assess the need for ED evaluation. Parent or legal guardian of the patient must be informed risks of recurrent hypoglycemia and its consequences when not treated.
- B. Base hospital contact required if patient with IO refuses transport.
- C. Patient with any one of the following histories should be strongly encouraged to be transported to ED:
 1. New onset of hypoglycemia with no history of diabetes;
 2. Complaints of other pre-existed nature of illness followed by hypoglycemia;
 3. Type II diabetes taking sulfonylureas including, but not limited to, Glucotrol, Micronase, Diabeta, and Diabinese (duration of action of sulfonylureas is 18-72 hours); or
 4. Hepatic or renal insufficiency.

Pediatric Dosing Dextrose 10% Dose: 0.5g/kg (5mL/kg)
 (0.1 g/1 mL in solution) ~ Max initial dose: 25 g

Weight	Dose g = mL	Weight	Dose g = mL	Weight	Dose g = mL
6.6 lbs. = 3 kg	1.5 g = 15 mL	41.8 lbs. = 19 kg	9.5 g = 95 mL	77.0 lbs. = 35 kg	17.5 g = 175 mL
8.8 lbs. = 4 kg	2.0 g = 20 mL	44.0 lbs. = 20 kg	10.0 g = 100 mL	79.2 lbs. = 36 kg	18.0 g = 180 mL
11.0 lbs. = 5 kg	2.5 g = 25 mL	46.2 lbs. = 21 kg	10.5 g = 105 mL	81.4 lbs. = 37 kg	18.5 g = 185 mL
13.2 lbs. = 6 kg	3.0 g = 30 mL	48.4 lbs. = 22 kg	11.0 g = 110 mL	83.6 lbs. = 38 kg	19.0 g = 190 mL
15.4 lbs. = 7 kg	3.5 g = 35 mL	50.6 lbs. = 23 kg	11.5 g = 115 mL	85.8 lbs. = 39 kg	19.5 g = 195 mL
17.6 lbs. = 8 kg	4.0 g = 40 mL	52.8 lbs. = 24 kg	12.0 g = 120 mL	88.0 lbs. = 40 kg	20.0 g = 200 mL
19.8 lbs. = 9 kg	4.5 g = 45 mL	55.0 lbs. = 25 kg	12.5 g = 125 mL	90.2 lbs. = 41 kg	20.5 g = 205 mL
22.0 lbs. = 10 kg	5.0 g = 50 mL	57.2 lbs. = 26 kg	13.0 g = 130 mL	92.4 lbs. = 42 kg	21.0 g = 210 mL
24.2 lbs. = 11 kg	5.5 g = 55 mL	59.4 lbs. = 27 kg	13.5 g = 135 mL	94.6 lbs. = 43 kg	21.5 g = 215 mL
26.4 lbs. = 12 kg	6.0 g = 60 mL	61.6 lbs. = 28 kg	14.0 g = 140 mL	96.8 lbs. = 44 kg	22.0 g = 220 mL
28.6 lbs. = 13 kg	6.5 g = 65 mL	63.8 lbs. = 29 kg	14.5 g = 145 mL	99.0 lbs. = 45 kg	22.5 g = 225 mL
30.8 lbs. = 14 kg	7.0 g = 70 mL	66.0 lbs. = 30 kg	15.0 g = 150 mL	101.2 lbs. = 46 kg	23.0 g = 230 mL
33.0 lbs. = 15 kg	7.5 g = 75 mL	68.2 lbs. = 31 kg	15.5 g = 155 mL	103.4 lbs. = 47 kg	23.5 g = 235 mL
35.2 lbs. = 16 kg	8.0 g = 80 mL	70.4 lbs. = 32 kg	16.0 g = 160 mL	105.6 lbs. = 48 kg	24.0 g = 240 mL
37.4 lbs. = 17 kg	8.5 g = 85 mL	72.6 lbs. = 33 kg	16.5 g = 165 mL	107.8 lbs. = 49 kg	24.5 g = 245 mL
39.6 lbs. = 18 kg	9.0 g = 90 mL	74.8 lbs. = 34 kg	17.0 g = 170 mL	110.0 lbs. = 50 kg	25.0 g = 250 mL



Pediatric Toxic Exposures

TREATMENT GUIDELINE 9712

9712.1 TREATMENT

- A. Provide appropriate airway management. Refer to Airway Management Guideline # 9002.
- B. Establish IV or IO.
- C. Bring identifying substance containers to hospital when possible / appropriate.
 1. **Hydrocarbons or petroleum distillates:**
 - a. Do not induce vomiting.
 - b. Transport immediately.
 2. **Caustics / Corrosives:**
 - a. Do not induce vomiting.
 - b. Consider dilution with no more than one to two (1-2) glasses of water or milk if **NO** respiratory compromise or change in mental status.
 3. **Insecticides:**
 - a. Decontaminate patient.
 - b. Consider Atropine 0.05mg/kg IV/IO slowly or IM, q five to ten (5-10) minutes to max of 2 mg or signs of atropinization (dilated pupils, mild tachycardia).
 - c. If seizures occur, administer Midazolam (Versed) 0.1 mg/kg IV/IO/IM/IN. Refer to Treatment Guideline 9710
 4. **Cyclic Antidepressant:**
 - a. Obtain 12-Lead ECG.
 - b. Anticipate rapid deterioration of condition.
 - c. At first signs of deterioration and widened QRS, hyperventilate and give sodium bicarbonate 1 mEq/kg IVP.
 - d. If seizures occur, administer midazolam (Versed)
 1. 0.1 mg/kg IV/IO/IM/IN. Refer to Treatment Guideline 9710 and pediatric drug card.
 5. **Phenothiazine Reactions:**
 - a. Benadryl 1mg/kg IM or slow IV to max 50mg.
 - b. Most pediatric poisonings are a direct result of family prescribed medications.
 6. **If mental status and respiratory effort are depressed** - Naloxone (Narcan)
 - a. 0.4 mg increments, IV/IO/IM/IN. Titrate to reverse respiratory depression. MAX total dose of 2 mg. **Base order required for dosing > 2 mg.**
 - b. Contact the base hospital for repeat doses if inadequate response.
 - c. Naloxone should ALWAYS be titrated to adequate respiration rate; it should not be administered in a patient with adequate respirations.



Pediatric Burns

TREATMENT GUIDELINE 9713

9713.1 PROCEDURE

A. Initial:

1. Extinguish burning or smoldering clothing.
2. Flush chemical burns with copious amounts of water.

B. Airway:

1. Assess airway for burns. Airway burns should be suspected when the patient:
 - a. Is burned or exposed to smoke.
 - b. Has been exposed to toxic fumes.
 - c. Has burns to the face and/or the upper airway.
 - d. Has redness/blisters/soot in the mouth or nose and/or singed nasal hair.

C. BLS Treatment:

1. Assess for other injuries and treat as indicated.
2. Maintain airway and administer high-flow oxygen. Refer to BLS Treatment Guideline # 8003 Airway / Oxygen.
3. Remove jewelry, but do not remove stuck clothing.
4. Use water or NS to stop the burning process and quickly dry the patient after the burning has stopped, as to not induce hypothermia.
5. Burns < 10% total body surface may be kept wet with saline moistened dressings (sterile preferred).
6. Burns > 10% total body surface area; use dry dressings – no exceptions, as to not induce hypothermia.
 - a. The patient should then be covered with a sterile burn sheet and blanket to prevent loss of body heat.
 - b. Do not use water or burn gels.
7. Elevate burned body parts thirty (30) degrees if possible.

D. ALS Treatment:

1. Consider early advanced airway if airway burn involved. Administer oxygen to maintain oxygen saturations above 96%.
2. IV NS 10 cc/kg. Recheck vital signs every 250 mL's. May repeat bolus if transport time is over thirty (30) minutes. Start two (2) large bore IV's (for major burns). Fluid resuscitation is particularly important.
3. For pain management, in absence of hypotension, significant other trauma, altered level of consciousness and narcotic allergy, administer fentanyl; refer to Treatment Guideline # 9714 Pediatric Pain Management.
4. Address psychological needs; be honest and compassionate, refer to Treatment Guideline # 9005 Sedation.

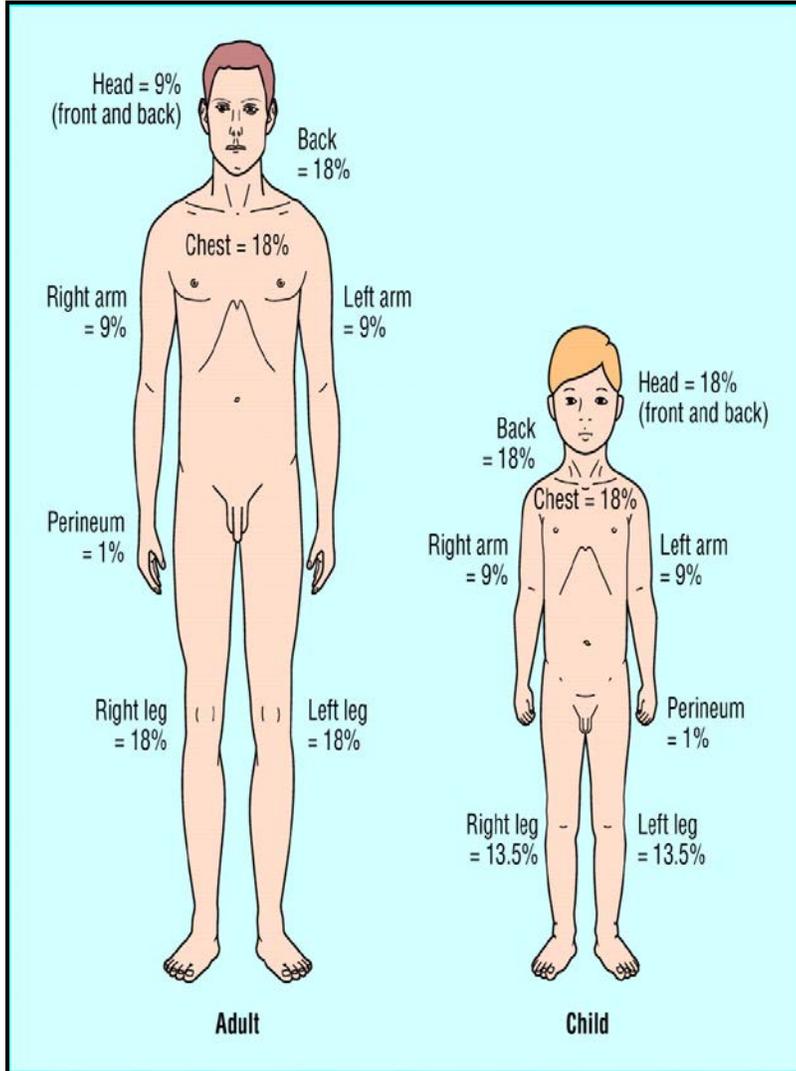
9713.2 SPECIAL CONSIDERATIONS

- A. Pulse oximeter if available, if smoke inhalation, reading may be artificially high.

- B. Notify receiving hospital ASAP.
- C. Consider direct transport to U.C. Davis (UCD) Medical Center for moderate or major burns. Base hospital prior to transport is required.

Estimate the severity of the burns:

“Rule of Nines”



ABA Classification

Minor:

- < 10% partial thickness (adult)
- < 5% < 10 y/o > 50 y/o
- < 2% full thickness

Moderate:

- 10-20% partial thickness (adult)
- 5-10% < 10 y/o > 50 y/o
- High voltage, suspected inhalation, circumferential or susceptibility to infection

Major:

- 20% partial thickness (adult)
- 10% < 10 y/o > 50 y/o
- 5% full thickness
- Partial or full thickness burns to face, eyes, ears, hands, feet, perineum, genitalia or major joints
- Significant electrical and caustic agent burns
- Circumferential burns to an extremity or trunk.
- Inhalation injury with evidence of significant burns.
- Burns in high risk patients, including those with significant underlying medical conditions.