

## Cardiac Medications: Antiarrhythmics

### Adenosine IV/IO

**Indication:** Supraventricular tachycardia (stable)

Dose: 0.1 mg/kg rapid IV push, then 5 mL saline flush

Repeat q2min x 2 doses: 0.2 mg/kg, 0.3 mg/kg (max 12 mg)

### Amiodarone IV/IO

**Indication:** Pulseless VT/Vfib, stable ventricular tachycardia, SdcVT

Dose: 5 mg/kg rapid IV push, or over 20–60 min (stable tachycardia) up to 15 mg/kg (max 300 mg/dose)

### Lidocaine IV/IO:

**Indication:** 2nd line for pulseless VT/Vfib

Dose: 1 mg/kg IV slowly, repeat 0.5 mg/kg q5–10min up to 3 mg/kg total dose

### Magnesium Sulfate IV/IO

**Indication:** Torsades des Pointes

Dose: 25–50 mg/kg (max 2g) slow IV push, or over 15 min if stable

## Cardiac Medications: Vasoactive and Inotropic

### Dopamine IV/IO (inotropic and vasoconstrictor):

5–20 mcg/kg/min (inotropic effects start at >5 mcg/kg/min)

*Note: More vasoconstriction with higher doses*

### Epinephrine IV/IO (potent inotropic, vasoconstrictor):

0.01–1mcg/kg/min

### Norepinephrine IV/IO (potent vasoconstrictor, inotrope):

0.05–1mcg/kg/min  
*If considering milrinone, dobutamine, phenylephrine, or nitroprusside, please call referral line for PICU consultation*

## Cardiac Medications: Other

### Prostaglandin E (Alprostadil)

0.05–0.1 mcg/kg/min (monitor for apnea)

**Indication:** Ductal dependent lesion in neonate (e.g. hypoplastic left heart, critical coarctation, etc.).

### ▶ Consult OHSU Pediatric Cardiology

**ETT tube sizing table and Vital Signs: 50th percentile except BP**  
3 x tube size = cm @ lip  
**Use cuffed tubes when available.**

AGE	WT (KG)	ETT ID (MM)	DL BLADE (STRAIGHT OR CURVED)	GLIDESCOPE AVL: GVL(BATON)	LENGTH (CM) TIP TO TIP	NG TUBE	LMA	RR (AVG/MIN)	HR	MINIMUM SYS BP
Neonate	< 1 kg	2.5	0	GVL 0 (VB 1–2)	7	5	1	< 60	145	52
Neonate	1–2 kg	3.0	0	GVL 0 (VB 1–2)	8	5	1	< 60	145	52
Neonate	2–3 kg	3.5	0–1	GVL 1(VB 1–2)	9	5	1	< 60	125	60
Neonate	> 3 kg	3.5–4.0	0–1	GVL 1(VB 1–2)	10	8	1	< 60	125	60
1–6mo	4–6 kg	3.5–4.0	1	GVL 2 (VB 1–2)	12	8	1–1.5	24–30	120	70
6mo–1yr	6–10 kg	4.0	1	GVL 2 (VB 1–2)	13	8	1.5	24–30	130	70
1–2yr	10–12 kg	4.5	1	GVL 2.5 (VB 1–2)	14	10	2	20–24	130	72–74
2–3yr	12–14 kg	5.0	1–2	GVL 2.5 (VB 1–2)	15	10	2	20–24	120	74–76
4–5yr	16–20 kg	5.0	2	GVL 2.5 (VB 1–2)	16	12	2	20–24	100	78–82
6–7yr	23–28 kg	5.0–5.5	2s 2c	GVL 2.5 (VB 1–2)	16	12	2.5	12–20	100	82–84
8–9yr	31–34 kg	5.5–6.0	2–3s (3c)	GVL3 (VB 3–4)	17	12	3	12–20	85	86–88
10–11yr	37–40 kg	6.5–7.0	2–3s or 3c	GVL3 (VB 3–4)	18	14	3	12–20	75	>90
12–13yr	43–46 kg	7.0–7.5	2–3s (3c)	GVL3 (VB 3–4)	18	14	3	12–20	75	>90
> 14yr	> 50 kg	7.5–8.0	2–3s (3c)	GVL3 (VB 3–4)	20–22	18	4	10–14	70	>90



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Every effort has been made to ensure that this information is accurate and in accordance with good medical practice. It is the responsibility of the attending physician to evaluate the appropriateness of a particular option in the context of the clinical situation with due consideration of your knowledge, skills, new developments and FDA regulations.

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# Pediatric Emergency Management Guide

2018, 6th edition

For transfers, consultation, or to admit a patient, call **800-648-6478**

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## Cardiac Arrest Medications

- C-A-B: Compression(Ratio 15:2 for 2 rescuer CPR), Airway, Breathing
- Oxygen 100%
- Place IO

### Medications:

**Epinephrine** – 0.1mg/mL (1:10,000): 0.1ml/kg (max 10ml), IV/IO push q3–5 min  
**Indication:** Bradycardia, asystole, hypotension

**Calcium Gluconate** – 100 mg/kg (max 3 g) IV/IO over 5-10 min  
**Adult Dose:** 1–3 g dose  
**Indication:** Hypocalcemia, hyperkalemia

**Atropine** – 0.02 mg/kg IV/IM/IO (minimum dose 0.1mg), max dose 1 mg and repeat doses 0.04 mg/kg up to 3 mg. **Indication:** Bradycardia

**Crystalloid (Normal Saline or Lactated Ringers)** – 20 mL/kg IV/IO. **Indication:** Volume expansion

**Colloid (5% Albumin, pRBC)** – 10 mL/kg IV  
**Indication:** Volume expansion

### Glucose IV/IO –

NEONATES:	INFANTS AND CHILDREN:	ADULTS:
D10W: 5-10ml/kg, <b>Indication:</b> CBG < 40 mg/dL	D10W: 5-10ml/kg or D25W: 2-4ml/kg, <b>Indication:</b> CBG < 60mg/dL	D50W: 25-50ml, <b>Indication:</b> CBG < 60mg/dL

**Sodium Bicarbonate** – 1-2 mEq/kg IV/IO, **Indication:** pH <7.1



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## Asthma

**Albuterol Nebs** 2.5–5 mg (0.15 mg/kg) inhaled q20 min x 3 doses, then q1 hr as needed

**Albuterol/Ipratropium (Duoneb)** 3 mL inhaled q20 min x 3 doses for moderate to severe asthma

**Continuous Albuterol Nebs** 5–15 mg/hr continuous nebulization

**Dexamethasone (Decadron)** 0.6 mg/kg/dose IV/IM/PO, max 16 mg

**Epinephrine** 1mg/ml (1:1000): 0.01ml/kg (max 0.3ml) IM in thigh q5min

**Magnesium Sulfate** 25–75 mg/kg (max 2 g) over 15 min (dilute to 40 mg/mL in NS)

**Methylprednisolone (Solumedrol):** 2 mg/kg IV/IO x 1 dose,

## Allergic Reactions

**Epinephrine:** 1mg/ml (1:1000): 0.01ml/kg (max 0.5ml) IM in thigh q5min

**Diphenhydramine:** 1 mg/kg (max 50 mg) IV/IM/PO

**Dexamethasone (Decadron):** 0.5mg/kg IV/IM/PO, max 10mg

## Cardiac Electricity

**Defibrillation:** INITIAL DOSE: 2J/kg; 2ND DOSE: 4J/kg; 3RD DOSE: 4–10J/kg

**Cardioversion (Synchronized):** INITIAL ENERGY: 0.5 J/kg; 2ND DOSE: 1 J/kg

Indication: Unstable SVT, VT (with pulse), a. fibrillation, a. flutter

## Croup

**Racemic Epinephrine (nebulized):** 0.25 mL x 2 doses as needed for stridor For racemic epi at rest

**Dexamethasone (Decadron):** 0.6mg/kg/dose IV/IM/PO, max 16 mg

## Diabetic Ketoacidosis

► **Contact pediatric endocrinologist early**

**Do not bolus Insulin or Bicarb**

Draw labs: Na, K, Phos, Mg, VBG, UA

### Fluid

Avoid excessive fluid — use isotonic fluid

Bolus NS 10–20 ml/kg

Maintenance at 1.5 times normal rate: CBG>300: NS  
CBG200–300: D5NS  
CBG<200: D10NS

**Insulin** drip 0.05–0.1 units/kg/hr

Watch for signs of cerebral edema (see “Increased ICP”)

## Fluids (IV/IO)

**Bolus:** 20 mL/kg of dextrose free, isotonic fluid (NS/LR)

**Maintenance Fluid Requirement:** Hourly rate use 4-2-1 rule  
D5 ½ NS or NS (NS if hyponatremia or neurologic injury)  
4 mL/kg for the 1st 10 kg +  
2 mL/kg for the 2nd 10 kg +  
1 mL/kg over 20 kg

## Hyperkalemia — peaked T-waves on 12-lead

❶ **First, stabilize myocardium:**

**Calcium Gluconate:** 30 mg/kg IV (or Calcium Chloride 10mg/kg if central line available)

❷ **Second, treat hyperkalemia. Consider:**

**Sodium Bicarbonate:** 1 m Eq/kg (max 50 mEq) IV

**Albuterol Nebulization:** 5–20 mg/hr

**Glucose:** 0.5 g/kg IV (max 25 g) **with Insulin:** Regular 0.1 units/kg IV (max 10 units)

**Furosemide:** 1 mg/kg IV may repeat for effect

(Only if intact renal function and urine output)

**Kayexalate:** 1–2 g/kg (max 30 g) PO/PR

► **If no urine output, arrange for urgent dialysis**

## Hypertensive Emergencies

**Investigate etiology of hypertension**  
*(treating may be harmful in case of increased ICP)*

**BOLUS:**

**Labetalol;** (β and α blocker) 0.2–0.5 mg/kg/dose IV, up to 1 mg/kg/dose, max 20mg; **ADULTS** initial 20 mg, may give 40–80 mg q10 min up to 300 mg total dose

**Hydralazine:** 0.1–0.2 mg/kg IV initially; **ADULTS** 10–20 mg, up to 40 mg q4–6 hrs

**INFUSION:** Esmolol (β blocker) 50–250 mcg/kg/min IV

## Increased Intracranial Pressure

► **Consult Neurosurgery early**

**Prevent hypoxia or hypotension; allow permissive hypertension**

**Treat ICP**

- **Positioning:** HOB 30 deg, Head midline

- **Minimize brain metabolic rate:** aggressively treat fevers, seizures; consider sedation

- **Hyperosmolar therapy:** 1st line Hypertonic Saline 3–6 ml/kg bolus over 10 min; 2nd line (if normotensive) Mannitol 0.25–1 g/kg bolus over 10 min

- **Maintain normoventilation** (EtCO<sub>2</sub> 30–35)

**If...**

- Signs of active herniation, consider acute hyperventilation (EtCO<sub>2</sub> 28–32) while making operative arrangements

- Brain tumor, consider decadron 1mg/kg

## Ingestions/Toxicity

► **Poison Control Center: 1-800-222-1222**

**Activated Charcoal:** 0.5–1 g/kg/dose PO/NG (without sorbitol)

**Flumazenil (Romazicon):** 0.01 mg/kg (max 0.2 mg) IV q1 min until max 0.05 mg/kg (or 1 mg) total dose

*Contraindicated in chronic benzodiazepine use or acute seizure*

**Naloxone (Narcan)**

FULL REVERSAL DOSE: 0.1 mg/kg IV (or 10–40 mcg) q1 min until reversal for unknown ingestion of possible narcotics

*Dilute 0.4 mg naloxone in 9 mL = 40 mcg/mL*

## Pain Management and Anxiolysis

**Analgesics:**

**Fentanyl:** 1–2 mcg/kg/dose (max 50 mcg) IV (monitor for rigid chest symptoms in neonates) Intranasal: 1–3 mcg/kg/dose (max 50mcg per nostril)

**Morphine:** 0.1–0.2 mg/kg/dose (max 8 mg per dose) IV/IM

**Midazolam:** 0.05–0.1 mg/kg/dose (5 mg per dose) IV/IM, or 0.25–1 mg/kg/dose PO

Intranasal: 0.3–0.4 mg/kg/dose (max 10mg, 5mg per nostril)

**Sweetease:** Use as needed in infants

## Rapid Sequence Intubation

Indication: Urgent need to control airway, unknown NPO status, or recent meal.

- 1 **Pre-oxygenate:** nasal cannula for apneic oxygenation
- 2 **Prepare atropine** 0.02mg/kg IV/IM/IO (min–max 0.1–1mg) for <6 months, Administer for reflex bradycardia
- 3 **Sedation:**  
**Etomidate** (avoid in sepsis) 0.3 mg/kg IV  
**Ketamine** 1–2 mg/kg/dose IV (or 3–5 mg/kg IM)  
**Midazolam (Versed)** 0.2–0.3 mg/kg IV/IM
- 4 Paralytic  
**Rocuronium** 1 mg/kg IV  
**Succinylcholine** 1–2 mg/kg IV/IO or 2–4 mg/kg IM
- 5 **Post-intubation medications:**  
**Midazolam** 0.05–0.1mg/kg/dose IV, max 6–10mg, q30 minutes prn  
**Fentanyl** 0.5–2 mcg/kg/dose IV, max 50 mcg, q30 minutes prn  
**Propofol** 25–100 mcg/kg/minute OR bolus 0.5–2 mg/kg q5 minutes prn

## Seizures

❶ **First, attend to A,B,Cs. Second, treat seizures.**

**FOR INFANTS AND CHILDREN:**

FIRST LINE: **Benzodiazepines: Administer x 2 doses prn**

- **Lorazepam** 0.05–0.1mg/kg/dose (max 4mg) IV/IM

- **Midazolam** 0.2mg/kg/dose (max 10mg) IV/IM  
Intranasal: 0.4mg/kg (max 10mg)

- **Diazepam** 0.1–0.2mg/kg/dose (max 10mg) IV

SECOND LINE: **For benzodiazepine refractory seizures**

- **Fosphenytoin** 15–20 mg PE/kg IV loading dose over 10 minutes. May administer IM undiluted if no access.

- **Valproic acid** 20–40 mg/kg IV/IO over 10–20 min

- **Levetiracetam (Keppra):** 20–50mg/kg (max 1000–3000mg) IV loading dose

**FOR NEONATES:**

**Phenobarbital:** 15–20mg/kg IV loading dose (max rate 1mg/kg/min), then 5mg/kg q15 min prn seizures

## Sepsis

**Golden Hour = Early recognition; Early vascular access; Early antibiotics**

- Obtain rapid access (IO if IV access not successful with 2 attempts);

- Secure airway as indicated

- Fluid Resus: 10 ml/kg neonates, 20 ml/kg infants/children NS or LR over 5–10 min, reassess after each bolus

**Begin broad spectrum antibiotics**

*(ideally following blood cultures):*

**NEONATE:**

**Ampicillin** 50mg/kg + **Gentamycin** 4–5mg/kg, +/- **acyclovir** 20 mg/kg

**INFANT:**

**Vancomycin** 15 mg/kg + **Ceftriaxone** 50mg/kg

**HEALTHY CHILD:**

**Vancomycin** 15 mg/kg + **Ceftriaxone** 50mg/kg

**CHRONICALLY-ILL /IMMUNOSUPPR:**

**Vanco** 15 mg/kg + **Cefepime** 50 mg/kg  
OR **Meropenem** 30 mg/kg; +/- **acyclovir** 20mg/kg

**Vasoactives:** indicated if non-responsive to fluid at 60ml/kg, or patient develops rales/gallop/hepatomegaly

- **FIRST LINE:** Epi 0.05–0.15 mcg/kg/min (cold shock) or Norepi 0.01–1 mcg/kg/min (warm shock)

- **SECOND LINE:** Dopamine 5–12 mg/kg/min- If fluid and vasoactive-refractory: hydrocortisone 2 mg/kg IV x 1

**Goals for first 60 min of therapy:**

- Restore normal airway, oxygenation, and ventilation

- Restore circulation (CRT < 2 sec, HR nl for age, BP > 70 + 2xage years (<10yrs), etc.