Safety and Health Solution
Pharmacology in Resuscitation
Pediatric Advanced Life Support

Classification of Rx Modalities
Class I  Indicated. Beneficial
Class IIa  Indicated. Probably helpful
Class IIb  Indicated. Possibly helpful
Class III  Not indicated. May be harmful

Terms
Alpha=peripheral
Beta 1= Heart (1 heart)
Beta 2= Lung (2 lungs)
Chronotrope: time, alters rate of heartbeat
Inotrope: (In; think In, as in the muscle) Negative inotrope agents weaken the force of muscular contractions. Positive inotrope agents increase the strength of muscular contraction.
Parasympathomimetic (Rest and Digest) is a drug that acts by stimulating or mimicking the parasympathetic nervous system (PNS) which is sometimes called the rest and digest system. The PNS conserves energy as it slows the heart rate, increases intestinal and gland activity, and relaxes sphincter muscles in the gastrointestinal tract. These chemicals are also called cholinergics because acetylcholine (ACh) is the neurotransmitter used by the PNS.
Sympathomimetics (Fight or Flight) class of drugs whose effects mimic those of a stimulated sympathetic nervous system. As a result they increase cardiac output, dilate bronchioles, and usually produce constriction of blood vessels.

UNSTABLE (symptomatic): Chest pain, SOB, Change in mental status, hypotension, poor capillary refill, poor central pulses, CHF, pulmonary edema.

INTRAVENTOUS FLUIDS
Normal Saline (0.96% NaCl) is the IV of choice during resuscitation. IV’s with Dextrose may exacerbate a pre-existing hyperglycemia.
Dosage: 20ml/kg over 5-10 minutes for fluid resuscitation

PHARMACOLOGY LIST
Adenosine: Inhibits SA node discharge and slows conduction through the AV junction. Half-life is approximately 6 seconds.
Indications: PSVT, Junctional Tachycardia, Ectopic and Multifocal Atrial Tachycardia.
Dosage: 0.1 mg/kg. rapid IV push. If no conversion, give 0.2mg/kg rapid IV push. Flush each dose with 5-10ml NS.
Precautions: Theophylline and xanthine derivatives block action. Persantine and Tegretol potentiate action.
Amiodarone: Is an atrial and ventricular antiarrhythmic that blocks the sodium, potassium, and calcium channels. It also has alpha and beta adrenergic blocking properties. Amiodarone prolongs action potential and refractory period.

**Indications:** Used for a variety of supraventricular and ventricular tachyarrhythmia’s and for rate control of rapid atrial arrhythmias in patients with impaired LV function when digoxin has proven ineffective.

**Dosage for Perfusioning Tachys:** 5mg/kg IV infusion dilute in 50ml. and give over 20-60 minutes. Max dose 15mg/kg.

**Dosage VT/VF:** 5mg/kg IV/IO once, then consider additional 5mg/kg IV/IO to max 15mg/kg.

**Precautions:** Do not give with Procainamide. May cause risk of Polymorphic VT, Hypotension, and may worsen existing arrhythmias or promote new ones.

Atropine: Atropine increases the discharge rate of the sinus node and improves conduction via the AV junction; blocks the parasympathetic effects on the SA node and AV junction.

**Indications:** First drug for symptomatic sinus bradycardia that is caused by increased vagal tone or primary AV block.

**Dosage:**
- Asystole or PEA: No longer indicated.
- Bradycardia: 0.02mg/kg IV every 3-5 minutes not to exceed a total of 0.4mg/kg.

**Precautions:** Will not be effective for Mobitz Type II block. Use with caution in presence of myocardial ischemia and hypoxia due to increased myocardial oxygen demand.

Epinephrine: Epinephrine is a sympathomimetic. It is an Alpha, Beta 1, and Beta 2 receptor stimulator.

**Indications:** Use for Ventricular Fibrillation, Ventricular Tachycardia, Asystole, and PEA. Epi is a catecholamine, a sympathomimetic which increases peripheral vascular resistance

**Dose:**
- Cardiac Arrest or Bradycardia: 0.01 mg/kg of 1:10,000 solution IV/IO repeat every 3-5 minutes.
- Continuous Infusion: Add 1mg to 500ml NS or D5W. Initial infusion rate of 1 mcg/min titrated to effect. Typical dose 2-10 mcg/min.

**Precautions:** Raises blood pressure and increases heart rate. May cause myocardial ischemia, angina, and increased myocardial oxygen demand.

Oxygen: Medicinal Gas.

**Indications:** Used for chest pain, suspected hypoxia, and cardiac arrest.

**Dose:**
- **Nasal Cannula:** 1-6 L/min
- **Venturi Mask:** 4-12 L/min
- **Partial Rebreather:** 6-10 L/min
- **Nonrebreather mask with reservoir:** 6-15 L/min
- **Precautions:** Chronic CO2 retainers (rare).

Procainamide: Ventricular and Supraventricular antiarrhythmic.

**Indications:** Antiarhythmic used for recurrent VF/VT, and may be used for PSVT uncontrolled by adenosine and vagal maneuvers.

**Dose:**
- **Recurrent VF/VT:** 15mg/kg over 30-60 mins IV infusion.
- **Other Indications:** IV infusion until arrhythmia suppression, hypotension, QRS widens by >50%, or a total dose of 15mg/kg is given.
- **Maintenance Infusion:** 1-4 mg/min diluted in D5W or NS.

**Precautions:** In patients with renal dysfunction, reduce max total dose to 12 mg/kg and maintenance infusion to 1-2 mg/min.