Common Cardiac Medications

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Before we get started, here is today's most important take-away...

SAFETY over SPEED



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1

Hormone Analog

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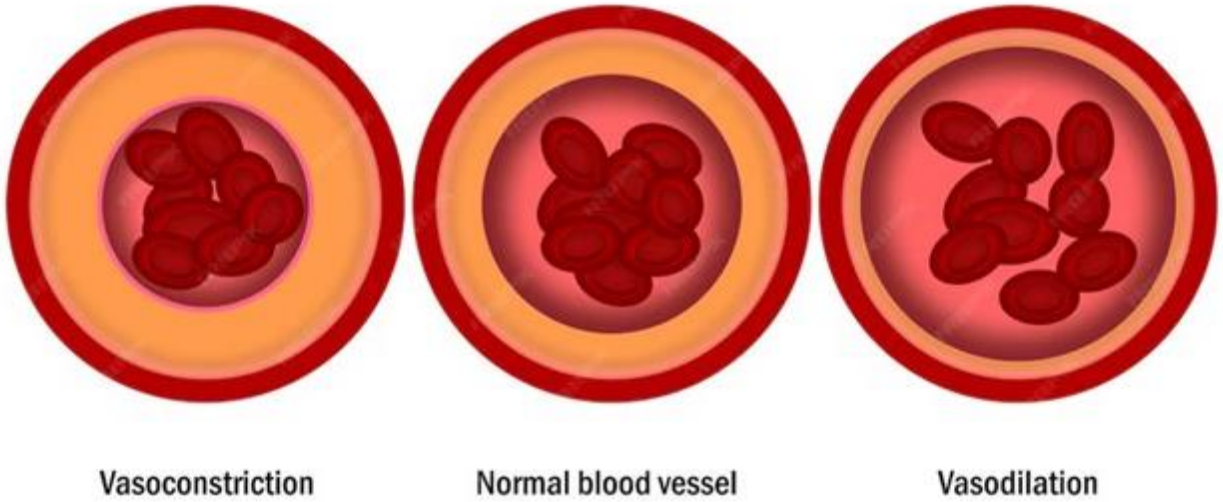
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Prostaglandin

What is it used to treat?	• Maintain patency of ductus arteriosus in neonates with ductal-dependent congenital heart disease as a bridge to surgical palliation
How does it work?	• Vasodilation of ductus arteriosus smooth muscle to prevent closure
Standard Dosing	• Continuous infusion- 0.05-0.1 mcg/kg/min; may increase higher to achieve desired effects
Side Effects	• Apnea, tachycardia, flushing, hypotension
General Information	• Side effects are dose dependent, lowest effective dose should be used • Maintain permanent central access for administration or two PIVs at all times

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Vasopressors

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Adrenaline

What is it used to treat?	• Hypotension – monitor BP frequently especially if titrating a continuous infusion • Ventricular dysfunction
How does it work?	• **Systemic vasoconstrictor** • Initial onset and half life are within minutes. Very quick
Standard Dosing	• 0.01-0.1mcg/kg/min but can be seen at higher doses in extreme cardiogenic shock • 0.02-0.03mcg/kg/min is typical dose for ventricular dysfunction • Code dose: 0.01mg/kg IV push
Side Effects	• Hypertension • Tachycardia • Arrhythmias
General Information	• Central IV access • Syringe/bag CANNOT run dry – have a backup ready to switch before it's empty • Double check medication/dose - high risk for error • May need to decrease dose if the listed side effects are causing more harm than good

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Noradrenaline

What is it used to treat?	• Hypotension
How does it work?	• Increases myocardial contraction and systemic vasoconstriction • Onset and half life are within minutes
Standard Dosing	• 0.01-0.1mcg/kg/min but can be seen at higher doses in extreme cardiogenic shock • Not used during codes
Side Effects	• Hypertension • Tachycardia • Arrhythmias
General Information	• Central IV access • Syringe/bag CANNOT run dry – have a backup ready to switch before it's empty • Double check medication/dose - high risk for error • May need to decrease dose if the listed side effects are causing more harm than good

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Dopamine

What is it used to treat?	• Hypotension or shock that persists after adequate volume resuscitation
How does it work?	• Stimulates adrenergic and dopaminergic receptors to produce cardiac stimulation and renal vasodilation
Standard Dosing	• 2-20 mcg/kg/min; titrate gradually by 5-10 mcg/kg/min until desired response is achieved
Side Effects	• Chest pain, ectopic beats, hypertension, tachycardia
General Information	• Frequently used in decompensated heart failure and cardiogenic shock

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Dobutamine

What is it used to treat?	• Short-term management of cardiac decompensation due to decreased contractility
How does it work?	• Stimulates beta1 adrenergic receptors resulting in increased contractility and heart rate
Standard Dosing	• 0.5-1 mcg/kg/min; titrate gradually every few minutes to achieve desired response
Side Effects	• Chest pain, tachycardia, hypertension, ventricular arrhythmias
General Information	• Used frequently in adults with heart failure

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Phenylephrine

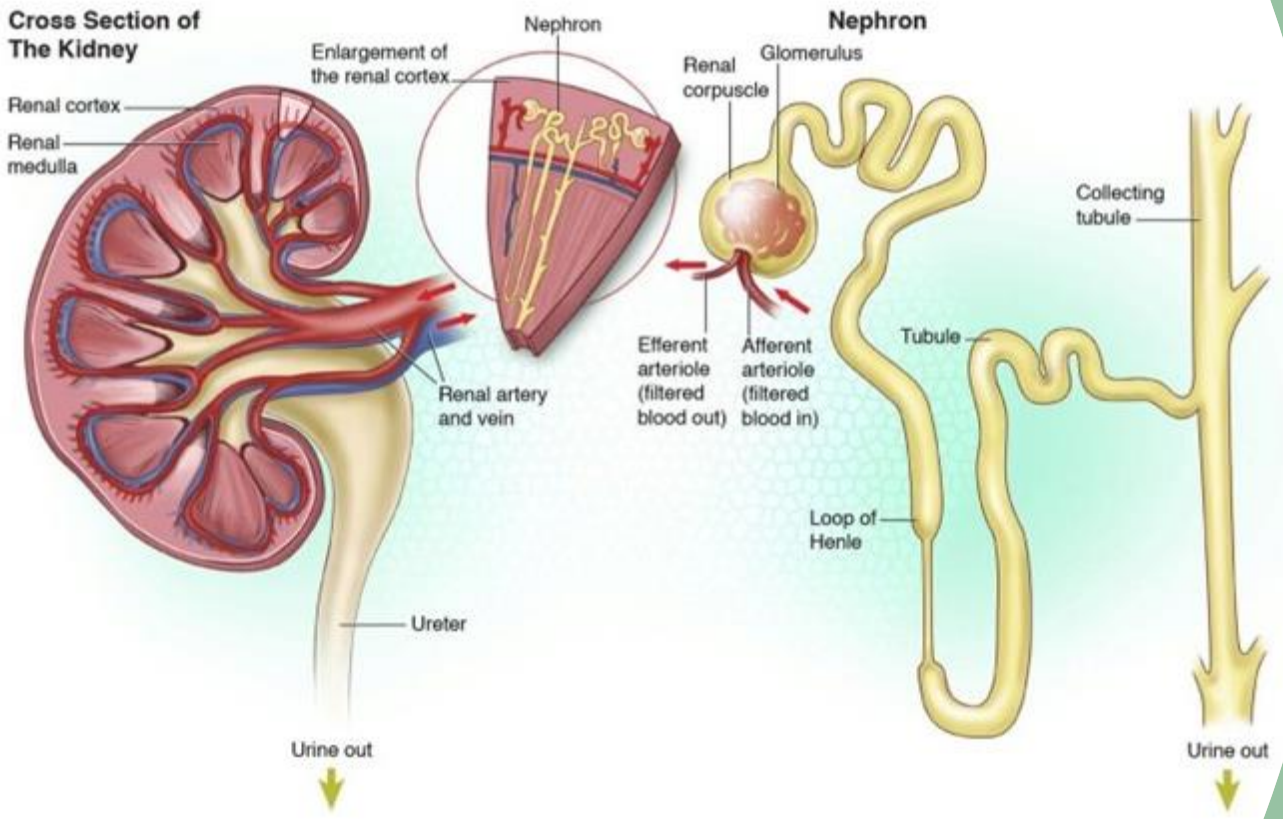
What is it used to treat?	• Profound hypotension or during hypercyanotic spells to increase pulmonary blood flow
How does it work?	• Potent alpha-adrenergic agonist with no beta activity; produces systemic arterial vasoconstriction
Standard Dosing	• IV bolus- 5-20 mcg/kg/dose every 10-15 minutes as needed • Continuous infusion- 0.1-0.5 mcg/kg/min; titrate to desired response
Side Effects	• Hypertensive crisis, pulmonary edema, ischemia
General Information	• Be sure to have prepared ahead of time as it requires a complicated dilution process

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Milrinone

What is it used to treat?	• Decreased LV function • Low cardiac output after bypass surgery
How does it work?	• Causes decreased systemic vascular resistance and lower afterload • Some inotropic effect allowing the heart to pump more effectively
Standard Dosing	• Normal starting dose 0.25mcg/kg/min • Range : 0.125mcg/kg/min - 0.75mcg/kg/min
Side Effects	• Hypotension when initating and changing the dose
General Information	• Half life is 4-6 hours • Onset of action is 5-15 minutes • Monitor blood pressure closely • NOT compatible with furosemide

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Diuretics

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Furosemide

What is it used to treat?	• Edema • Effusions
How does it work?	• **Loop diuretic** that works in the ascending loop of Henle • Blocks salt reabsorption → increases salt excretion → water follows salt → water excretion
Standard Dosing	• PO: 1 - 2 mg/kg/dose Q6 to 24hrs; max 6 mg/kg/dose (acute) or day (chronic) • Intermittent IV: 0.5 - 2mg/kg/dose Q6 to 12hrs, max 6 mg/kg/dose • Continuous IV: 0.05 - 0.4mg/kg/hr, up to usual adult dosing range 10 - 40mg/hr
Side Effects	• Electrolyte loss: hypokalemia, hypomagnesemia, & hypocalcemia • Tinnitus up to hearing loss • Acute kidney injury due to fluid loss • Hypersensitivity reactions
General Information	• Monitor and replete electrolytes

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Torsemide

What is it used to treat?	• Edema • Effusions
How does it work?	• **Loop diuretic** that works in the ascending loop of Henle • Blocks salt reabsorption → increases salt excretion → water follows salt → water excretion
Standard Dosing	• Adult: Initial: 10 to 20 mg once daily; double the dose as needed (rather than administer the same dose more frequently) until diuresis occurs • Max effective single dose: 50 to 100 mg; max recommended total daily dose: 200 mg in 2 divided doses to minimize risk of ototoxicity
Side Effects	• Electrolyte loss: hypokalemia, hypomagnesemia, & hypocalcemia • Tinnitus up to hearing loss • Acute kidney injury due to fluid loss (less risk of AKI as compared with furosemide) • Hypersensitivity reactions
General Information	• Approximate oral dose equivalency (normal renal function): Torsemide 10 to 20 mg = bumetanide 1 mg = furosemide 40 mg • Better absorption than furosemide with decreased cardiac output

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Hydrochlorothiazide

What is it used to treat?	• Edema • Effusions
How does it work?	• **Thiazide diuretic**: works in the distal tubules • Blocks sodium and chloride reabsorption → increases sodium and chloride excretion → water follows salt → water excretion
Standard Dosing (PO)	• Infants & Children < 2 yrs: 1 to 2 mg/kg/day in 1 to 2 divided doses; max daily dose 37.5mg/day • Children ≥ 2 yrs: 1 to 2 mg/kg/day in 1 to 2 divided doses; max daily dose 100 mg/day • Adolescents: 1 to 2 mg/kg/day in 1 to 2 divided doses; max daily dose 200 mg/day
Side Effects	• Electrolyte disturbances: hypokalemia, hypomagnesemia, hypercalcemia, & hyponatremia • Hyperuricemia and precipitate gout or gouty arthritis if susceptible • Acute transient myopia & acute angle-closure glaucoma
General Information	• Don’t use in patients with severe kidney disease or liver disease

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Spironolactone

What is it used to treat?	• Edema • Heart failure
How does it work?	• Potassium sparing diuretic • Block the hormone aldosterone (normally promotes sodium reabsorption and potassium excretion) → reduces sodium loss in the urine and increases potassium retention
Standard Dosing (PO)	• Initial: 1 to 3 mg/kg/day divided Q6 to 24 hours; titrate as needed • Max daily dose range: 4 to 6 mg/kg/day in divided doses Q6 to 12 hours not to exceed 400 mg/day
Side Effects	• Can cause hyperkalemia • Gynecomastia
General Information	• Monitor electrolytes and replace or make adjustments to dose as needed

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4

Antihypertensives

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Metoprolol

What is it used to treat?

- Hypertension
- Heart Failure (prevention of syncope)
- Postural Orthostatic Tachycardia Syndrome (POTS)

How does it work?

- Selectively inhibits beta$_1$-adrenergic receptors (primarily found in the heart) with little to no effect on beta$_2$-receptors (mostly located in lungs & other parts of the body)

Standard Dosing (PO)

- **Heart failure**: 0.1 to 0.2 mg/kg/dose BID, increase slowly PRN (usually Q2 weeks), usual daily dose: 1 mg/kg/day
- **Hypertension**: Initial: 0.5 to 1 mg/kg/dose (max: 25 mg/dose) BID; adjust dose based on patient response; max daily dose: 6 mg/kg/day not to exceed 200 mg/day
- **POTS**: ≥5 years & Adolescents: Initial: 0.5 to 1 mg/kg/day in two divided doses; titrate gradually to achieve clinical goal; max: 2 mg/kg/day

Side Effects

- Bradycardia including sinus pauses, hypotension, 1st degree HB (> 10% of the time)
- Hypoglycemia
- Bronchospasm (selective beta-blockers like metoprolol have lower risk than non-cardioselective beta-blockers)
- Fatigue, sleep disturbances, insomnia

General Information

- Don't give in incidence of severe sinus bradycardia, significant 1st degree HB (PR ≥ 0.24sec)
- Should be gradually tapered off to avoid acute tachycardia, hypertension, &/or ischemia

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Captopril

What is it used to treat?	• Hypertension • Heart Failure • Left ventricular dysfunction after myocardial infarction • Diabetic nephropathy
How does it work?	• ACE inhibitors prevent the conversion of angiotensin I to angiotensin II, a potent vasoconstrictor. By inhibiting angiotensin II, ACE inhibitors: lower blood pressure, reduce fluid retention, and protect the kidneys
Standard Dosing (PO)	• Start slow and increase based on clinical effect • Infants: Initial: 0.05 to 0.2 mg/kg/dose Q6 to 24hrs; max daily dose: 6 mg/kg/day • Children: Initial: 0.3 to 0.5 mg/kg/dose Q8hrs; max daily dose: 6 mg/kg/day • Adolescents: Initial: 12.5 to 25 mg/dose Q8-12hrs; increase by 25 mg/dose weekly; Usual dose 150 mg/day
Side Effects	• Acute kidney injury • Dry cough • Hyperkalemia • Skin rash • Rare, but serious: Angioedema or bone marrow suppression
General Information	• Hypotension is most often observed in volume-depleted patients • Use with extreme caution in patients with aortic stenosis

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Nitroprusside

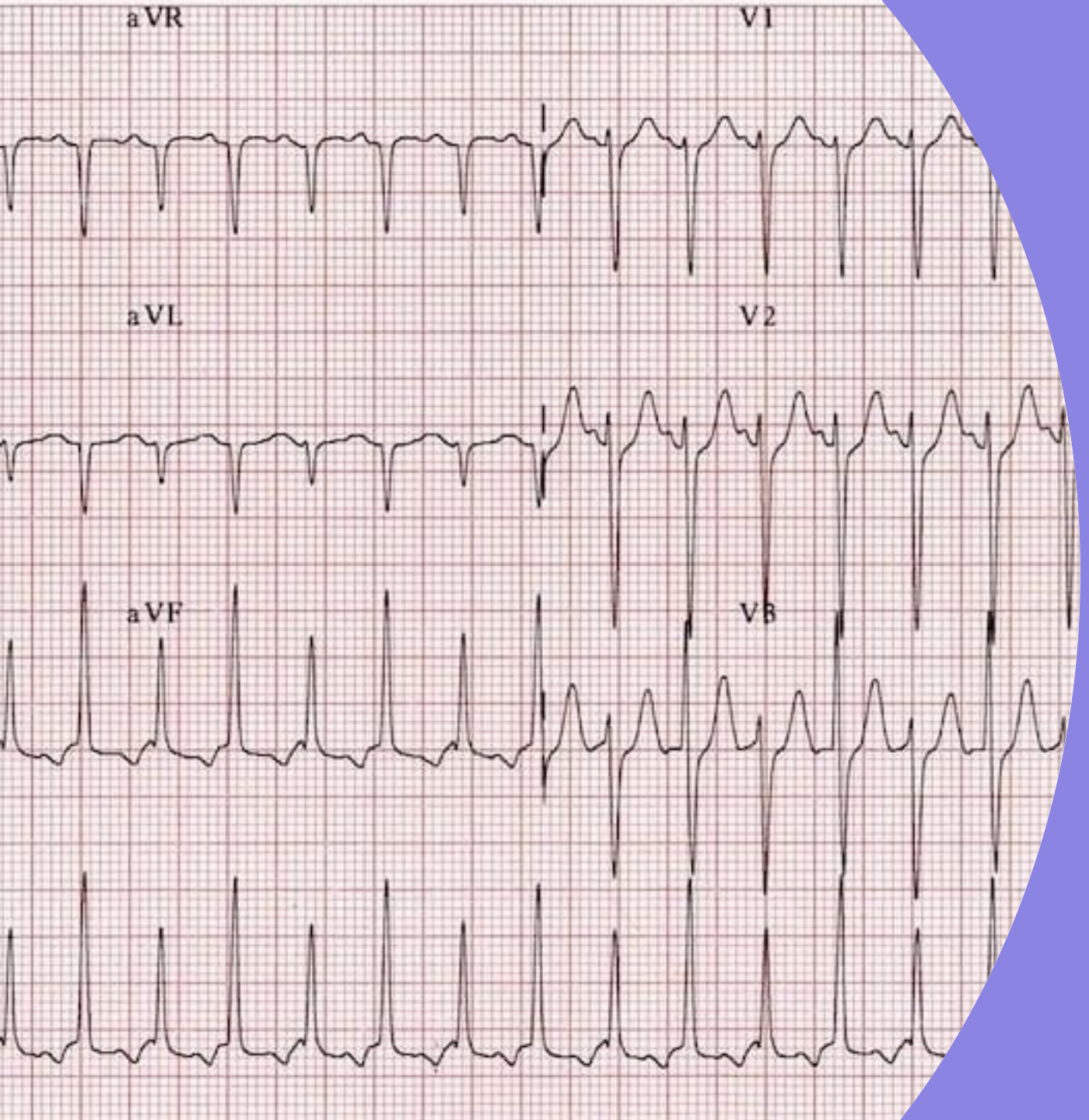
What is it used to treat?	• Hypertension
How does it work?	• **Onset and half life 2-5 minutes** • Decreases systemic vascular resistance (vasodilation) • Increases cardiac output by decreasing afterload
Standard Dosing	• Starting dose: 0.3-0.5 mcg/kg/min • Titrate by: 0.3-0.5 mcg/kg/min q 5-15min • Max dose: 3-5 mcg/kg/min
Side Effects	• Toxicity causes increase cyanide levels with neurologic changes • Acute hypotension especially when initiating infusion
General Information	• Keep infusion syringe/bag away from light (wrap in aluminum foil or dark bag) - can cause discoloration and decomposition

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Nitroglycerine

What is it used to treat?	• Myocardial ischemia d/t poor coronary perfusion
How does it work?	• Peripheral vasodilation of veins and arteries • Vasodilation of coronary arteries
Standard Dosing	• Starting dose: 0.25-0.5 mcg/kg/min • Range: 1-5 mcg/kg/min • Titrate every 15-20 minutes by 0.5-1mcg/kg/min
Side Effects	• Acute hypotension, EKG changes, tachycardia • Headache, dizziness, blurred vision
General Information	• Onset and half life are immediate • Caution administration with other antihypertensives • Often utilized in OR but rarely used in pediatric post op recovery unless surgery was done on coronaries and there is remaining concern for stenosis/injury

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Antiarrhythmics

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Amiodarone

What is it used to treat?	• Life-threatening arrhythmias, such as ventricular fibrillation and hemodynamically unstable ventricular tachycardia
How does it work?	• Inhibits adrenergic stimulation by working on sodium, potassium and calcium channels by prolonging the action potential and refractory period in myocardial tissue; also decreases AV conduction and sinus node function
Standard Dosing	• Can be continuous infusion, bolus infusion or oral • Loading dose- 5 mg/kg over 20-60 minutes; 10-20 mg/kg/d continuous infusion; PO 10-20 mg/kg/d divided BID, then reduced to 5-7 mg/kg/d daily after 2 weeks
Side Effects	• Bradycardia, hypotension, hepatotoxicity, proarrhythmic effects, pulmonary toxicity, thyroid effects
General Information	• Obtain baseline TFTs and check regularly, long half-life

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Adenosine

What is it used to treat?	• SVT that is unstable or unresponsive to vagal maneuvers
How does it work?	• Slows conduction time through the A-V node and disrupts conduction pathways to restore normal sinus rhythm
Standard Dosing	• Initial dose: 0.1 mg/kg for pediatrics or 6mg for adults • Repeat dose: 0.2 mg/kg for pediatrics or 12mg for adults
Side Effects	• ASYSTOLE! Or extreme bradycardia
General Information	• Administer via RAPID IV PUSH followed immediately with a flush (Stopcock method) • Have emergency equipment available before administration (code cart, defib pads, code meds, airway)

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Lidocaine

What is it used to treat?	• Treatment of ventricular arrhythmias
How does it work?	• Suppresses automaticity of conduction tissue by increasing electrical stimulation threshold of the ventricle; blocks initiation and conduction of nerve impulses
Standard Dosing	• 1 mg/kg/dose bolus • 20-50 mcg/kg/min continuous infusion
Side Effects	• Bradycardia, circulatory shock, hypotension, respiratory depression
General Information	• Can also be used as a local anesthetic, be mindful of dosing difference

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Digoxin

What is it used to treat?

- Treat mild to moderate heart failure
- Slow ventricular rate in supraventricular tachyarrhythmias (ex: SVT)
- Rate control in chronic atrial fibrillation

How does it work?

- Arrhythmias: *Suppresses AV node conduction* → increases refractory period & decreases conduction → positive inotropic effect
- Heart Failure: Inhibits Na/K ATPase pump → increases intracellular Na → promotes calcium influx → *increases contractility*

Standard Dosing

- Maintenance Dose:
  - 1mo – 10 years = 10 mcg/kg/day divided BID PO
  - > 10 years = 5 mcg/kg/day once daily PO

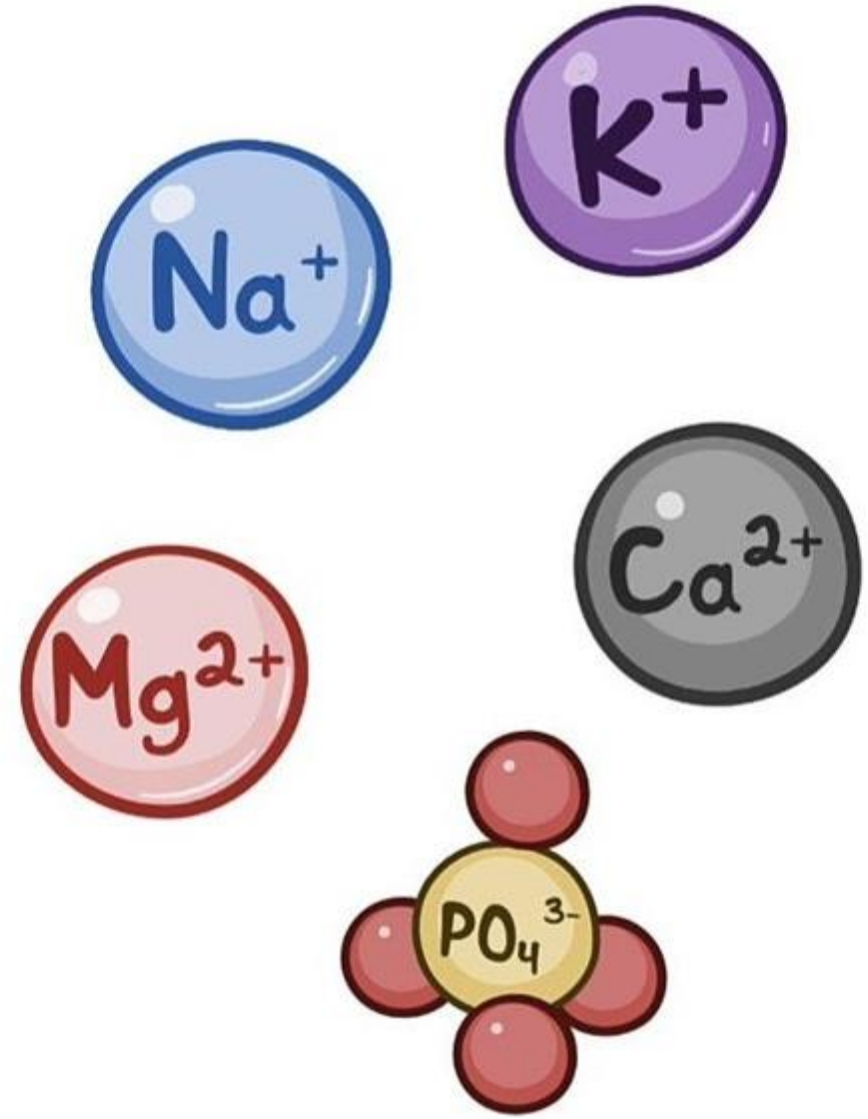
Side Effects

- Nausea/vomiting
- Visual disturbances (“halos,” yellow or blurred vision)
- Lethargy
- Arrhythmias (all types of AV block, PVCs) – children are more likely to experience cardiac arrhythmias r/t toxicity

General Information

- Never redose!
- Monitor & correct electrolytes – most concerned with hypokalemia, hypomagnesemia, & hypercalcemia (d/t toxicity)
- Do not give if bradycardic
- Vesicant when given IV
- Trough serum concentrations can be drawn – after 3-5 days of therapy prior to next PO/IV dose

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Electrolytes

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Potassium

What is it used to treat?	• Low potassium levels • Also given to stop the heart completely when on cardiopulmonary bypass
How does it work?	• Supplemental potassium chloride • 1mEq = 1mmol
Standard Dosing	• 0.5-1mEq/kg max 20mEq per dose • Please always check dose/volume/programming with a second nurse. **VERY HIGH-RISK DRUG**
Side Effects	• Hyperkalemia • Blood vessel irritation if not given via central line • Cardiac Arrest!
General Information	• Goal potassium 3.5-4 mEq/L • Administer over 1.5-2 hours • Monitor ECG for signs of hyperkalemia (peaked T waves) • Be cautious in patients with AKI/renal dysfunction since the kidneys filter potassium

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Calcium Gluconate

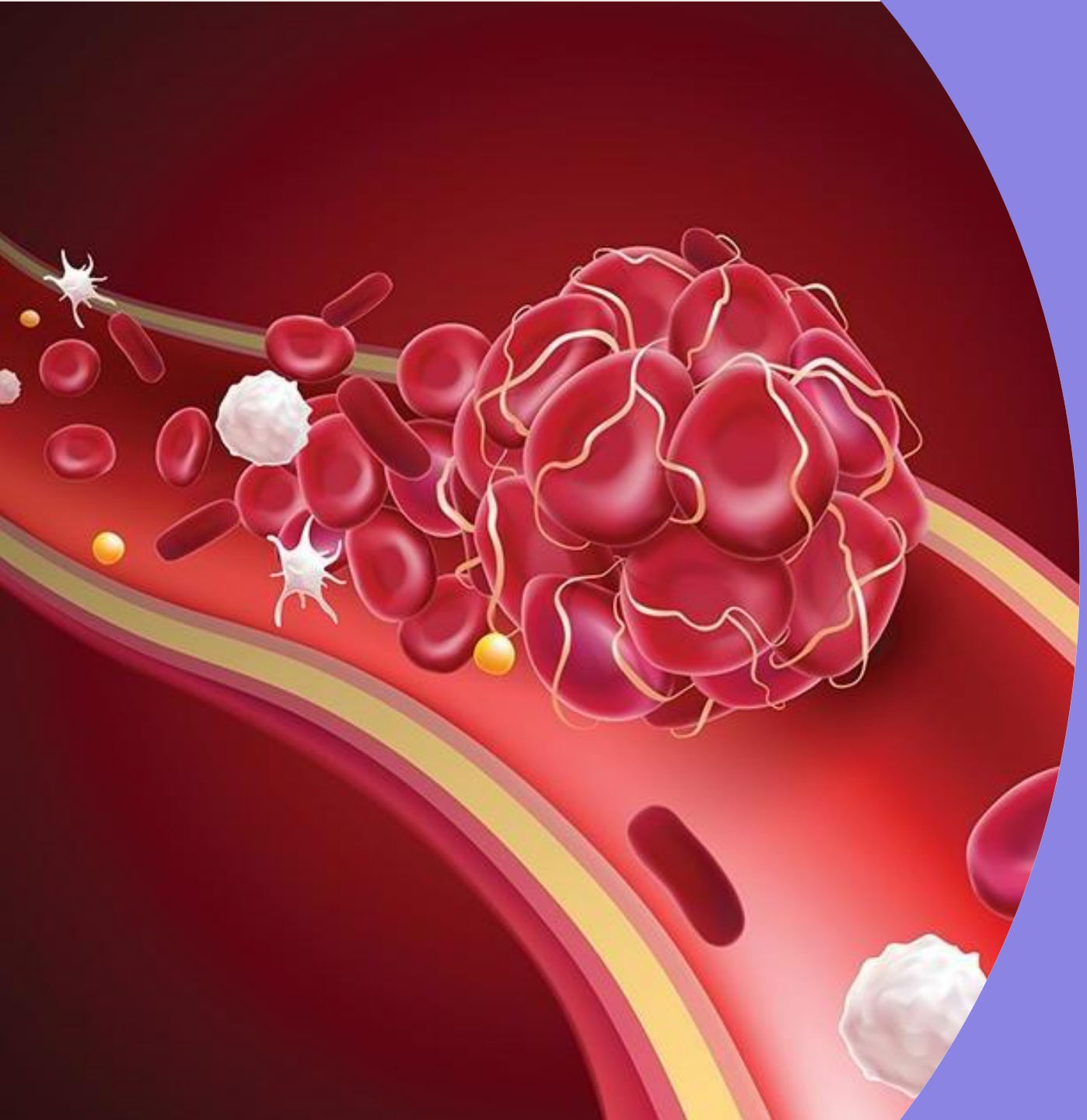
What is it used to treat?	• Low ionized calcium levels • Acute hypotension
How does it work?	• Supplemental Calcium • Increases myocardial contractility
Standard Dosing	• Pediatrics: 30-60mg/kg • Adults: 1-2g
Side Effects	• Hypercalcemia • Hypertension • Warm flushed feeling
General Information	• Normal iCa levels 1.1-1.2 • Administer over 30min - 1hr • Monitor IV site for irritation and give via central line if possible • Can cause tissue necrosis if the medication infiltrates the extravascular space

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Magnesium

What is it used to treat?	• Low magnesium levels • Torsade de pointes
How does it work?	• Supplemental magnesium
Standard Dosing	• Pediatrics: 25-50mg/kg • Adults: 2-4g
Side Effects	• Hypermagnesemia • Vasodilation
General Information	• Given via central line • Administer over 1hr for low magnesium • Give IV push for Torsade de pointes • Caution in patients with AKI/renal dysfunction

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Anticoagulation

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Heparin

What is it used to treat?	• Prevention of blood clot formation on artificial valves
How does it work?	• Inactivates thrombin and prevents fibrinogen conversion to fibrin
Standard Dosing	• Starting dose: 20-28units/kg/hr • Increase by 10-20% for goal coagulation results (PTT or Anti-X A)
Side Effects	• Bleeding either internal or external – think often about risk for stroke
General Information	• Neuro checks! • Check coagulation labs 4 hours after a change and daily • No: rectal temps or hard bristle toothbrushes • Be cautious with: placing or removing IV lines, placing new feeding tubes or foleys

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Enoxaparin

What is it used to treat?	• Treatment of arterial or venous thromboembolism, myocardial infarction, non-hemorrhagic stroke, or mechanical valve prophylaxis • Prophylaxis in high-risk patients (history of central line-related thrombosis, post cardiac surgery, or pulmonary hypertension) • Venous Thromboembolism (VTE) prophylaxis
How does it work?	• Binds to and speeds up the activity of antithrombin III (protein that inhibits clotting) → activated antithrombin III then inactivates Factor Xa → clotting cascade blocked
Standard Dosing (Sub-Q)	• Dosing titrated to targeted levels using anti-Xa levels • Treatment of thrombus: 1 mg/kg Q12hrs • Prophylaxis in high risk patients: 0.75 - 1 mg/kg Q12hrs • VTE prophylaxis: 0.5 - 0.75 mg/kg Q12hr; > 60kg, 30mg Q12hr or 40mg Q24hr
Side Effects	• Hemorrhage, Anemia • Heparin-induced thrombocytopenia (HIT) • Increased LFTs
General Information	• Complete baseline lab work within 48 hours before starting; check CBC 5-7 days after initiation to ensure platelet count has not fallen • Draw anti-Xa level 4 hours after the 2nd or 3rd dose after initiation or dose change, then weekly if admitted, and monthly after discharge • Will need to hold at least 24 hours prior to surgery and/or transition to IV heparin

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Warfarin

What is it used to treat?	• Prophylaxis and treatment of thrombosis and thromboembolism
How does it work?	• Warfarin competitively inhibits the subunit 1 of the multi-unit VKOR complex, thus depleting functional vitamin K reserves and hence reduces synthesis of active clotting factors
Standard Dosing	• Dose based on INR levels (therapeutic target 2-3; prophylaxis target 1.5-1.9); Draw daily INR until therapeutic
Side Effects	• Bleeding, hemorrhage, stroke • Decreased bone mineral density • Calciphylaxis
General Information	• Strict lab monitoring required • Remain on alternate anticoagulation therapy until therapeutic INR achieved • Either avoid foods with high vitamin K, or maintain consistent diet (leafy greens), separate administration from feed/meal by 1 hour before and after

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Aspirin

What is it used to treat?	• Prevent blood clots • Temporary pain relief
How does it work?	• Antiplatelet Agent; NSAID • Irreversibly inhibits COX-1 & 2 enzymes → decreased formation of prostaglandin precursors → irreversibly inhibits thromboxane A2 → inhibiting platelet aggregation
Standard Dosing (PO/PR)	• Antiplatelet effect: 1 to 5 mg/kg/dose once daily
Side Effects	• Dyspepsia, nausea • Minimal at low doses
General Information	• Should be held prior to invasive procedures and surgery • Can be given PR if PO administration is unsuccessful

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Clopidogrel

What is it used to treat?	• Prevent blood clots
How does it work?	• Irreversibly blocks a specific receptor on the surface of platelets
Standard Dosing (PO)	• Infants & Children ≤ 24 months: 0.2 mg/kg/dose once daily • Children > 2 years and adolescents: 1mg/kg once daily, max 75 mg once daily
Side Effects	• Bleeding • Hypersensitivity reactions • Thrombotic thrombocytopenic purpura (TTP) – very rare
General Information	• Effects are seen for duration of platelet lifespan (~ 7-10 days)

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Sedation/Pain

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Fentanyl

What is it used to treat?	• Post-procedural/operative pain • Intubated patients for <24hrs
How does it work?	• Opioid used to alter pain perception • Onset of action 2-10 minutes and half life ~1hr
Standard Dosing	• Intermittent: 0.5-2mcg/kg • Continuous: 0.5-2mcg/kg/hr • Higher doses typically seen with increased exposure/dependence
Side Effects	• Sedation • Respiratory depression • Reversal agent - Naloxone
General Information	• Give over 2-5 minutes to avoid risk of chest wall rigidity • Intermittent/PRN dose should be utilized for intubated patients

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Morphine

What is it used to treat?	• Post-procedural/operative pain
How does it work?	• Opioid used to alter pain perception
Standard Dosing	• Pediatrics: 0.05-0.1mg/kg • Adults: 1-3mg • Can give q 5 minutes until pain appropriately resolved
Side Effects	• Respiratory depression, itching, nausea • Hypotension • CNS depression • Reversal agent - Naloxone
General Information	• Can administer to patients who are not intubated • Monitor blood pressure and respiratory drive • Watch for signs of withdrawal after ~5-7 days of continuous infusions (sweaty/yawning/sneezing/diarrhea/vomiting/muscle rigidity)

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Ketamine

What is it used to treat?	• Acute pain; procedural sedation; induction and maintenance of general anesthesia
How does it work?	• Produces cataleptic-like state in which the patient is dissociated from the surrounding environment by direct action on the cortex and limbic system
Standard Dosing	• 0.5-1 mcg/kg/dose; may repeat to achieve desired effect
Side Effects	• Hypertension, tachycardia, hypertonia, hallucinations
General Information	• Helpful anesthetic for patients with hemodynamic compromise

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Propofol

What is it used to treat?	• Induction and maintenance of general anesthesia; sedation of intubated and mechanically ventilated patients
How does it work?	• Causes global CNS depression through agonism of GABA receptors and reduces activity through NMDA receptor blockade
Standard Dosing	• Sedation loading dose- 0.5-1 mg/kg/dose • Continuous infusion- 1-4 mg/kg/h
Side Effects	• Myocardial suppression, arrhythmias, Propofol-related infusion syndrome (PRIS)
General Information	• Can cause a serious adverse reaction (PRIS) which manifests as dysrhythmia, widening of QRS complex, heart failure, hypotension and asystole. Risk is dose and duration related

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Paracetamol

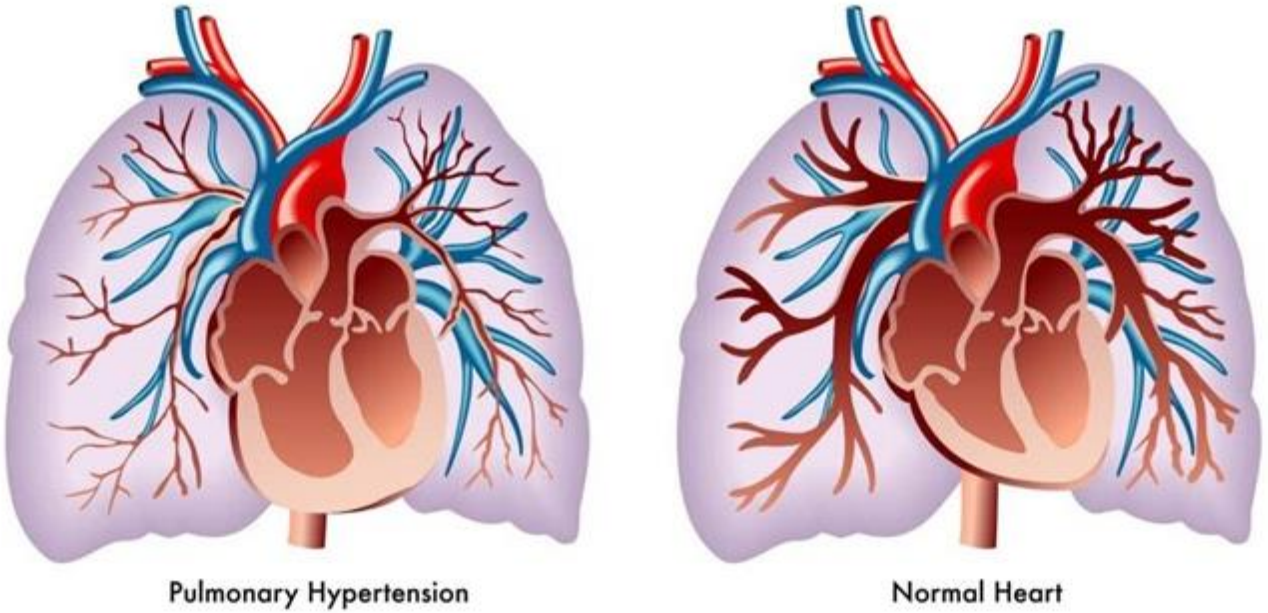
What is it used to treat?	• Treat fever and pain
How does it work?	• Inhibits COX enzymes in central nervous system
Standard Dosing	• PO: 10 to 15 mg/kg/dose every 4 to 6 hours PRN; do not exceed 5 doses in 24 hours; max daily dose: 75 mg/kg/day not to exceed 4,000 mg/day • IV: 7.5 to 15 mg/kg/dose every 6 hours; maximum daily dose: 60 mg/kg/day; max single dose: 15 mg/kg up to 750 mg; max daily dose: 75 mg/kg/day not to exceed 3,750 mg/day
Side Effects	• Nausea, vomiting, constipation • Liver damage • Skin reactions, allergic reactions
General Information	• After surgery, consider giving as soon as tolerating liquids (PO) or IV as adjunct to IV pain medications

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Ibuprofen

What is it used to treat?	• Treat fever and pain
How does it work?	• NSAID – Blocks the COX 1 and COX 2 enzymes responsible for the production of prostaglandins
Standard Dosing	• PO: 4 to 10 mg/kg/dose (max dose: 600 mg/dose) every 6 to 8 hours as needed; maximum daily dose: 40 mg/kg/day
Side Effects	• Nausea, vomiting, dyspepsia • Kidney damage • Bleeding
General Information	• After surgery, consider giving as soon as tolerating liquids PO as adjunct to IV pain medications • Careful with interactions with anticoagulants due to platelet effects

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9

Pulmonary Vasodilators

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Sildenafil

What is it used to treat?	• Treats pulmonary arterial hypertension (PAH)
How does it work?	• Phosphodiesterase Type-5 (PDE5) Inhibitor • Inhibits PDE5 in smooth muscle of pulmonary vasculature → increases cGMP resulting in pulmonary vasculature relaxation → vasodilation in the pulmonary bed and systemic circulation (to a lesser degree)

Standard Dosing (PO)	• Infants: Initial: 0.25 mg/kg/dose Q6hrs or 0.5 mg/kg/dose Q8hrs; titrate as needed; max range: 1 to 2 mg/kg/dose Q8hrs.
	• Children and Adolescents <18 years:
	  • ≤20 kg: 10 mg three times daily.
	  • >20 to 45 kg: 20 mg three times daily.
	  • >45 kg: 20 mg three times daily; titrate as needed

Side Effects	• Flushing, headache • Hypotension • Diarrhea/upset stomach • Vision/hearing changes (vision color changes, blurred vision, photophobia, tinnitus, dizziness) • Priapism
General Information	• Can be given TID rather than Q8hrs for ease of administration

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Tadalafil

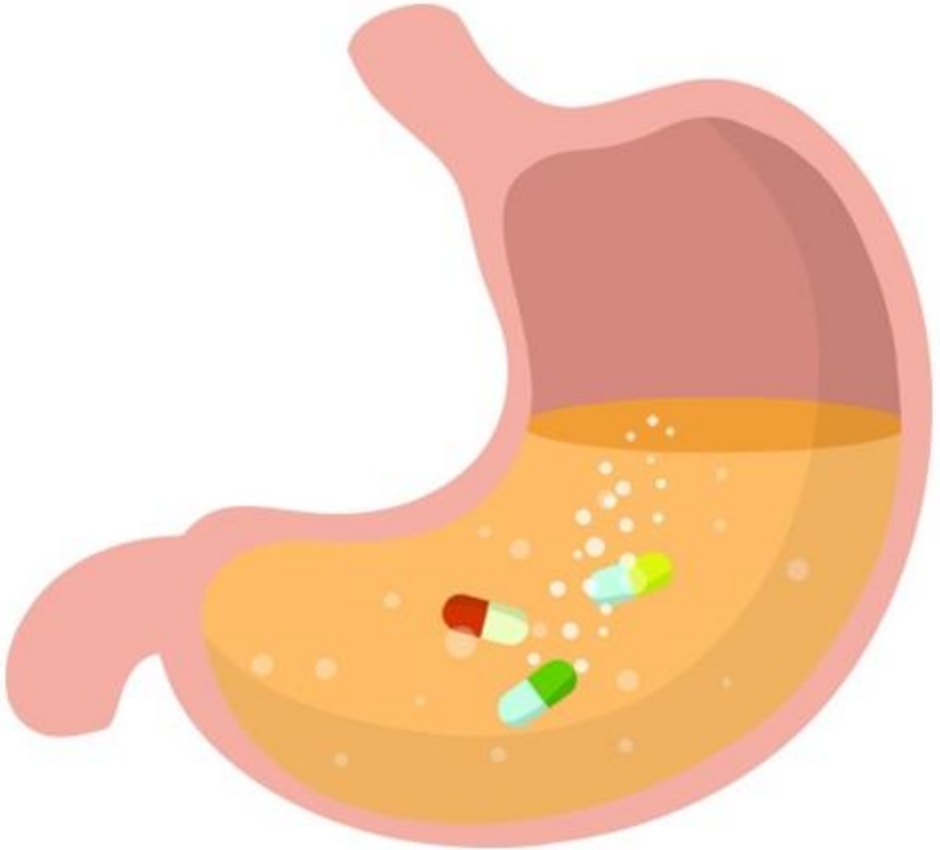
What is it used to treat?	• Treats pulmonary arterial hypertension (PAH) – off label use
How does it work?	• Phosphodiesterase Type-5 (PDE5) Inhibitor • Inhibits PDE5 in smooth muscle of pulmonary vasculature → increases cGMP resulting in pulmonary vasculature relaxation → vasodilation in the pulmonary bed and systemic circulation (to a lesser degree)
Standard Dosing (PO)	• Enteral: 1 mg/kg (max 40 mg) daily
Side Effects	• Flushing, headache, nausea, upset stomach • Vision/hearing changes (vision color changes, blurred vision, photophobia, tinnitus, dizziness) • Priapism • Back pain, limb pain, myalgia • Respiratory tract infection
General Information	• Administered once daily, which helps with compliance

PROPRIETARY AND CONFIDENTIAL

Bosentan

What is it used to treat?	• Treatment of pulmonary arterial hypertension (PAH) in patients with idiopathic or congenital PAH to improve pulmonary vascular resistance (PVR)
How does it work?	• Endothelin Receptor Antagonists work by blocking the action of endothelin, a peptide that causes blood vessels to constrict, thereby widening the vessels and lowering blood pressure
Standard Dosing (PO)	• Initial: 1mg/kg BID (max: 62.5 mg/dose) and continue for 3-7 days • Evaluate LFT's prior to titrating to target dose of 2 mg/kg BID (max: 125 mg/dose)
Side Effects	• Edema • Increased LFTs • Headache • Respiratory tract infection
General Information	• Teratogenic – wear gloves when handling; pregnancy test for all females of child-bearing age prior to initiation and then monthly thereafter and 1 month after discontinuation. • Hepatotoxicity – monitor liver function tests (LFTs) prior to initiation, 1 week after initiating therapy or changing dose, and monthly

PROPRIETARY AND CONFIDENTIAL



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Gastrointestinal

Presented by Taylor

PROPRIETARY AND CONFIDENTIAL

Omeprazole

What is it used to treat?	• Treatment of GERD, heartburn, & H. pylori
How does it work?	• Proton pump inhibitor • Suppresses gastric basal and stimulated acid secretion by inhibiting the parietal cell H+/K+ ATP pump
Standard Dosing	• 5 kg to <10 kg: 5 mg once daily; 10 kg to <20 kg: 10 mg once daily; ≥20 kg: 20 mg once daily • 1-4 mg/kg/day; max daily dose: 40 mg/day
Side Effects	• Diarrhea • Hypomagnesemia; vitamin B12 deficiency • Bone fractures
General Information	• Ideally used as a 14-day course • Potential drug interactions: clopidogrel – can diminish antiplatelet effect, warfarin – can increase INR

PROPRIETARY AND CONFIDENTIAL

Ranitidine

What is it used to treat?	• GERD, peptic ulcers, stress ulceration in critically ill patients
How does it work?	• Histamine H2 Antagonist - competitive inhibition of histamine at H2-receptors of the gastric parietal cells, which inhibits gastric acid secretion, gastric volume, and hydrogen ion concentration are reduced
Standard Dosing	• Infants, Children, and Adolescents ≤ 16 yrs: 2 to 8 mg/kg/day divided twice daily; maximum daily dose: 300 mg/day • > 16 yrs: 150 mg once daily up to twice daily
Side Effects	• Nausea, vomiting, headache, dizziness, insomnia
General Information	• No longer approved in United States due to NDMA (probable carcinogen)

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thank you



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