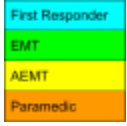


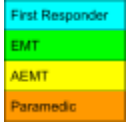
H-R1
CARDIOVASCULAR
DRUGS



NOTE: Poison Control may be contacted [1-800-222-1222] for **INFORMATION ONLY**. Treatment modalities must utilize these guidelines, or may be received through online Medical Control.

Cardiovascular Drugs		
Substance	Notes	Treatment (beyond typical supportive care)
<p>Digitalis/Cardiac Glycosides <i>Digoxin</i></p> <p>Plants <i>Foxglove</i> <i>Lily of the Valley</i> <i>Oleander</i> <i>Red Squill</i></p> <p><i>Skin of Toads (Bufonidae)</i></p>	<ul style="list-style-type: none"> Acute toxicity: <ul style="list-style-type: none"> GI sxs (nausea/vomiting) Cardiac (bradyarrhythmias, AV block, etc.) with dizziness, syncope, etc. Chronic toxicity/accumulation <ul style="list-style-type: none"> Typically the result of drug–drug interactions or changes in kidney function. Usually vague/nonspecific complaints including weakness, fatigue, confusion/delirium, etc. The classic description includes viewing yellow-green halos around objects, termed <i>xanthopsia</i>. 	<p>ED Treatment: Digibind (digoxin-specific antibody [Fab] fragments)</p>
<p>β-Adrenergic receptor antagonists (β-blockers) <i>Atenolol</i> <i>Carvedilol</i> <i>Labetalol</i> <i>Metoprolol</i> <i>Propranolol</i> <i>...and others</i></p>	<ul style="list-style-type: none"> Symptoms: <ul style="list-style-type: none"> Cardiovascular: bradycardia, cardiac dysrhythmias and cardiogenic shock Pulmonary: bronchospasm Neurologic/CNS: altered mental status, coma, and seizures HYPOglycemia Notes: <ul style="list-style-type: none"> Propranolol can block sodium channels → wide QRS = treat with Sodium Bicarbonate Sotalol → QT prolongation/torsades = treat with Magnesium 	<p>Fluid resuscitation and vasopressors, as per Medical Shock [M-06]</p> <p>ED Treatments:</p> <ul style="list-style-type: none"> Glucagon - requires <u>very</u> high doses High-dose Insulin, with dextrose (D50, D10, etc.) Lipid emulsion therapy (acts as a sink lessening the effect of the drug)
<p>Calcium channel</p>	<ul style="list-style-type: none"> All CCBs relax vascular smooth muscle, 	<p>Same as β-blockers</p>

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<p>blockers (CCBs)</p> <p><u>Nondihydropyridines</u> <i>Diltiazem</i> <i>Verapamil</i></p> <p><u>Dihydropyridines</u> <i>Amlodipine</i> <i>Felodipine</i> <i>Isradipine</i> <i>Nicardipine</i> <i>Nifedipine</i> <i>Nimodipine</i> <i>Nisoldipine</i></p>	<p>reduce pacemaker activity, and decrease cardiac contractility that ultimately may result in cardiovascular collapse.</p> <ul style="list-style-type: none"> ● Nondihydropyridines <ul style="list-style-type: none"> ○ Slow heart rate (more rate control, i.e. “cardioselective”) ○ Used to manage hypertension, control atrial flutter/fibrillation and other supraventricular tachycardias ● Dihydropyridines <ul style="list-style-type: none"> ○ Lower blood pressure (more vasodilation) ○ May have reflex tachycardia ○ Used to treat hypertension, angina, and vasospasm after SAH ● Symptoms <ul style="list-style-type: none"> ○ Profound, resistant hypotension from decreased cardiac output and peripheral vasodilation ○ HYPERglycemia (compared to hypoglycemia from β-blockers) 	<p>(above), also may consider more aggressive calcium administration:</p> <p>Calcium Chloride 1 gram (20 mg/kg) IV/IO <i>or</i> Calcium Gluconate 1 gram (20-50 mg/kg) IV/IO</p> <ul style="list-style-type: none"> ● Give over 10 minutes ● Repeat every 20 minutes as needed
<p>Diuretics</p> <p><i>Amiloride</i> <i>Bumetanide</i> <i>Chlorothiazide</i> <i>Chlorthalidone</i> <i>Eplerenone</i> <i>Furosemide</i> <i>Hydrochlorothiazide</i> <i>Indapamide</i> <i>Metolazone</i> <i>Spirolactone</i> <i>Triamterene</i></p>	<ul style="list-style-type: none"> ● Cause increased urine production leading to hypovolemia/dehydration and various possible electrolyte disturbances 	<p>Fluid Resuscitation</p>
<p>Alpha-Adrenergic Blockers</p> <p>α1-Blockers <i>Doxazosin</i> <i>Prazosin</i></p>	<ul style="list-style-type: none"> ● Mechanism: inhibit peripheral sympathetic tone in order to decrease blood pressure. ● Doxazosin, prazosin, and terazosin primarily reduce peripheral vascular resistance (treatment of hypertension) 	

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<p><i>Tamsulosin</i> <i>Terazosin</i></p> <p>α2-Agonist <i>Clonidine</i></p>	<ul style="list-style-type: none"> ● Tamsulosin is used exclusively for management of benign prostatic hyperplasia (BPH) ● Clonidine <ul style="list-style-type: none"> ○ ONE PILL may cause severe symptoms in a child ○ Stimulates α2-adrenergic receptors in the CNS, inhibiting release of catecholamines, resulting in decreased heart rate, contractility, and peripheral vascular resistance. ○ Severe symptoms → bradycardia, CNS depression, and hypotension 	
<p>ACE Inhibitors [-PRIL's] (Angiotensin Converting Enzyme) <i>Benazepril</i> <i>Captopril</i> <i>Enalapril</i> <i>Fosinopril</i> <i>Moexipril</i> <i>Perindopril</i> <i>Quinapril</i> <i>Trandolapril</i></p> <p>ARBs [-SARTAN's] (Angiotensin Receptor Blockers) <i>Candesartan</i> <i>Eprosartan</i> <i>Irbesartan</i> <i>Losartan</i> <i>Telmisartan</i> <i>Valsartan</i></p>	<ul style="list-style-type: none"> ● <u>Not</u> been associated with significant morbidity in overdose. ● Mechanism: inhibition of ACE causes decreased production of angiotensin II, resulting in vasodilation. ARB's block the receptor directly. ● Angioedema <ul style="list-style-type: none"> ○ Most dangerous adverse effect ○ <u>Not</u> dose dependant ○ Can occur any time during treatment (i.e. years of being on the drug) 	<p>Aggressive airway management with angioedema, including the need for potential surgical airway (cricothyrotomy)</p>

H-R1 CARDIOVASCULAR DRUGS		<table border="1"> <tr><td>First Responder</td></tr> <tr><td>EMT</td></tr> <tr><td>AEMT</td></tr> <tr><td>Paramedic</td></tr> </table>	First Responder	EMT	AEMT	Paramedic
First Responder						
EMT						
AEMT						
Paramedic						

Vasodilators <i>Hydralazine</i> <i>Minoxidil</i>	<ul style="list-style-type: none"> • Isolated vasodilation (no direct cardiac effects) decreases blood pressure. • May be associated with reflex tachycardia. 	
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