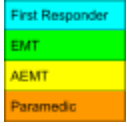


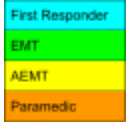
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CARDIOVASCULAR  
DRUGS



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

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

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<p><i>Tamsulosin</i> <i>Terazosin</i></p> <p><math>\alpha</math>2-Agonist <i>Clonidine</i></p>	<ul style="list-style-type: none"> <li>● <b>Tamsulosin</b> is used exclusively for management of benign prostatic hyperplasia (BPH)</li> <li>● <b>Clonidine</b> <ul style="list-style-type: none"> <li>○ <b>ONE PILL may cause severe symptoms in a child</b></li> <li>○ Stimulates <math>\alpha</math>2-adrenergic receptors in the CNS, inhibiting release of catecholamines, resulting in decreased heart rate, contractility, and peripheral vascular resistance.</li> <li>○ Severe symptoms → <b>bradycardia, CNS depression, and hypotension</b></li> </ul> </li> </ul>	
<p><b>ACE Inhibitors [-PRIL's]</b> (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><b>ARBs [-SARTAN's]</b> (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"> <li>● <u>Not</u> been associated with significant morbidity in overdose.</li> <li>● Mechanism: inhibition of ACE causes decreased production of angiotensin II, resulting in vasodilation. ARB's block the receptor directly.</li> <li>● <b>Angioedema</b> <ul style="list-style-type: none"> <li>○ Most dangerous adverse effect</li> <li>○ <u>Not</u> dose dependant</li> <li>○ <b>Can occur any time</b> during treatment (i.e. years of being on the drug)</li> </ul> </li> </ul>	<p><b>Aggressive airway management</b> with angioedema, including the need for potential surgical airway (cricothyrotomy)</p>

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