

## Toxicology

Anti-Depressants: SSRI's and SNRI's	
<b>Toxicity</b>	SSRI's: less toxic than MAOI's or TCA's; most fatalities due to co-ingestion SNRI's: greater toxicity vs. SSRI's (but less than MAOI's or TCA's)
<b>Pathophysiology</b>	Inhibit serotonin +/- norepinephrine reuptake (primarily in CNS)
<b>Symptoms</b>	<ul style="list-style-type: none"> <li>• Vomiting, CNS depression, tachycardia</li> <li>• Serotonin syndrome: altered mental status, neuromuscular hyperexcitability (clonus, rigidity, hyperreflexia), autonomic instability (hyperthermia, tachy, HTN) → can lead to rhabdo, seizures, renal failure, DIC</li> </ul>
<b>Evaluation</b>	Electrolytes, serum/tox screen, EKG (↑QTc, rare ↑ QRS w/ some SNRI's); levels not helpful
<b>Management</b>	<ul style="list-style-type: none"> <li>• Decontamination and supportive care</li> <li>• Benzos and/or serotonin antagonists (cyproheptadine) for serotonin syndrome, consider cooling and paralysis for severe serotonin syndrome</li> </ul>

Anti-Depressants: TCAs	
<b>Toxic Dose</b>	"One pill can kill" in toddlers
<b>Pathophysiology</b>	Peripheral and central anti-cholinergic, peripheral alpha-1 adrenergic blockade, inhibits CNS NE and serotonin reuptake, blocks cardiac fast Na channels, blocks GABA receptors
<b>Symptoms</b>	<ul style="list-style-type: none"> <li>• Anticholinergic toxidrome (see toxidrome chart)</li> <li>• Neurotoxicity (seizures, coma)</li> <li>• Cardiovascular toxicity (arrhythmias, refractory hypotension, widened QRS)</li> </ul>
<b>Evaluation</b>	Electrolytes, CK, D-stick, urinalysis, tox screens, TCA level not useful (other than to confirm ingestion), EKG (prolonged QRS (>100ms a/w seizure, dysrhythmias), sinus tach, vent arrhythmias, lead aVR prominent R waves)
<b>Management</b>	<ul style="list-style-type: none"> <li>• Gastric decontamination, close monitoring, EKGs</li> <li>• NaHCO<sub>3</sub> titrated to serum pH 7.45-7.55 (indicated for QRS &gt; 100ms w/ other signs of TCA toxicity, vent. arrhythmias, CV collapse, seizures). Mechanism: increase pH → increase non-ionized TCA = cannot bind sodium channels. Also increases gradient across cardiac cell membranes → attenuates TCA-induced blockade of rapid sodium channels.</li> <li>• Supportive care (treat refractory hypotension w/alpha-agonist pressors)</li> </ul>

Anti-Depressants: Bupropion	
<b>Toxic Dose</b>	"One pill can kill" in toddlers
<b>Pathophysiology</b>	Dopamine and NE reuptake inhibitor w/ some serotonin reuptake blockade; contraindicated in eating disorder patients given ↑ seizures
<b>Symptoms</b>	Seizures, agitation, HTN, tachycardia, arrhythmias
<b>Evaluation</b>	Levels not helpful, electrolytes, EKG (QRS and QTc prolongation)
<b>Management</b>	Supportive care, benzos for seizures, admit for >24 hours to monitor for late onset seizures if ingested Wellbutrin SR, ↑ QRS treated w/ IV sodium bicarb (though may not be as effective)

Iron	
<b>Toxic Dose</b>	<ul style="list-style-type: none"> <li>• &lt; 20mg/kg <b>elemental iron</b> usually asymptomatic</li> <li>• 20-60 mg/kg: variable response</li> <li>• &gt; 60 mg/kg: greatest risk of serious toxicity (death reported at 60-300+ mg/kg)</li> </ul>