

## Serotonin Syndrome

Ables AZ, Nagubilli R. *Am Fam Physician*. 2010 May 1;81(9):1139-42.

**Classic:** Altered mental status + Autonomic instability + Neuromuscular hyperactivity

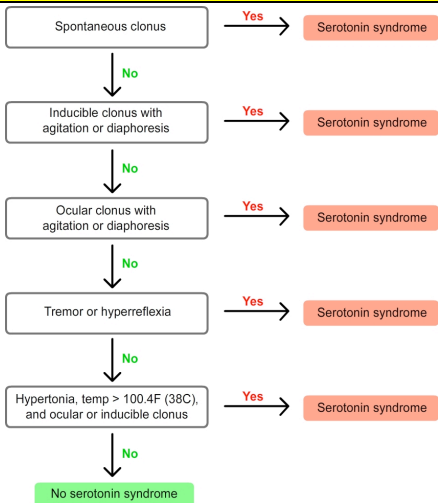
**Medications contributing to serotonin syndrome:**

- Amphetamines and derivatives
- Analgesics (cyclobenzaprine, fentanyl, meperidine, tramadol)
- Antidepressants/ mood stabilizers (buspirone, lithium, MOA-I, SSRIs, SNRIs, serotonin 2A-R blockers, St. John's wort, TCAs)
- Antiemetics (metoclopramide, ondansetron)
- Antimigraine med (carbamazepine, ergots, triptans, valproic acid)
- Miscellaneous (cocaine, dextromethorphan, linezolid, L-tryptophan, 5-hydroxytryptophan)

**Tip:** Be especially aware of adding drug that inhibits cytochrome P450 2D6 +/- 3A4 (eg. erythromycin) to someone on SSRI.

**Tx:** Usually supportive (benzodiazepines), although can give cyproheptadine (serotonin 2A antagonist)

### Hunter's decision rule (sensitivity 84%, specificity 97%)



### Sternbach's criteria: Need 3 of 10 (sensitivity 75%, specificity 96%)

Agitation (restlessness), diaphoresis, diarrhea, hyperreflexia, incoordination (ataxia), confusion, hypomania, myoclonus, shivering, tremor



**DDx:**

Anticholinergic syndrome,  
neuroleptic malignant  
syndrome, malignant  
hyperthermia

Table adapted from:

Boyer EW, Shannon M,  
NEJM. 2005;352:1112-20.)

Condition	Med History	Time Needed to Develop	Vitals	Pupils	Mucosa	Skin	Bowel Sounds	Neuromusc Tone	Reflexes	Mental Status
Serotonin Syndrome	Serotonergic drug	< 12 hours	Hypertension Tachycardia Tachypnea Hyperthermia (>41.1C)	Big	Sialorrhea	Sweaty	Increased	Increased (mainly legs)	Hyperreflexia, clonus	Agitation, coma
Anticholinergic Syndrome	Anticholinergic drug	< 12 hours	Hypertension (mild) Tachycardia Tachypnea Hyperthermia ( $\leq$ 38.8C)	Big	Dry	Red, hot, dry	Decreased	Normal	Normal	Agitation, delirium
Neuroleptic Malignant Syndrome	Dopamine antagonist	1-3 days	Hypertension Tachycardia Tachypnea Hyperthermia ( $\geq$ 41.1C)	Normal	Sialorrhea	Pale, sweaty	Normal or decreased	"Lead pipe" rigidity diffusely	Bradyreflexia	Stupor, mute, coma
Malignant Hyperthermia	Inhalational anesthesia	0.5-24 hours	Hypertension Tachycardia Tachypnea Hyperthermia (up to 46C)	Normal	Normal	Mottled, sweaty	Decreased	Rigor mortis-like rigidity	Hyporeflexia	Agitation

