

Target Serotonin Syndrome

def. Toxicity caused by excessive serotonin levels that results from a drug overdose or interaction

Assess the patient Symptoms start within hours to 1 day of increasing a dose or adding a drug

Mild

Nervousness
Insomnia
Nausea/diarrhea
Tremor
Big pupils

Moderate

Hyperreflexia
Sweating
Agitation/restlessness
Inducible clonus
Side-to-side eye movements

Severe

Fever >38.5°C/101.3°F
Confusion/delirium
Sustained clonus/rigidity
Rhabdomyolysis
Death

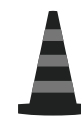
Assess all drugs Most cases involve 2 drugs that increase serotonin in different ways – full list on back



Prescription drugs



OTC and natural drugs



Illicit drugs

Rule out Serotonin syndrome can look like other things; diagnosis requires an accurate drug history

Antidepressant Discontinuation
Anticholinergic Toxicity
Malignant Hyperthermia
Neuroleptic Malignant Syndrome
Meningitis/Encephalitis
Drug Overdose
Alcohol/Benzo Withdrawal



Similar-looking conditions

Remind all patients:

Non-toxic increases in serotonin can cause anxiety, restlessness and irritability for 1-2 weeks

If you suspect serotonin syndrome Don't wait, take action – it progresses rapidly



Stop the drug(s)



Refer patient to hospital



once symptoms are gone

Try other drugs or restart low doses slowly

Prevent serotonin syndrome Stay alert – most cases can be prevented

- ✓ Use lowest effective dose
- ✓ Check drug monographs for tapering and wash-out periods
- ✓ Reassess the need for a serotonin drug yearly
- ✓ Ask about illicit drug use
- ✓ Follow up 1-2 days after upping a dose or starting a new drug
- ✓ Teach patients to recognize serotonin syndrome

AVOID: **Group A** with **Group A** or **Group A** with **Group B**

CAUTION: TWO or more **Group B** drugs especially when ONE is used at a high dose

MONITOR: If a patient uses a **Group B** drug and a second **Group B** drug is added, start low, increase the dose cautiously, and watch for symptoms for 24-48h after every change

Group A

Non-selective and irreversible

MAOi A and B

Isocarboxazid

Isoniazid

Phenelzine

Tranylcypromine

Non-selective and reversible

MAOi A and B

Linezolid

Selective and irreversible MAOi B

Selegiline (non-selective at higher doses)

Rasagiline

Selective and reversible MAOi A

Moclobemide

Methylene blue (non-selective at higher doses)

Group B

Antidepressants

Selective Serotonin Reuptake Inhibitors (SSRI): Paroxetine, fluvoxamine, sertraline, citalopram, escitalopram, fluoxetine

Serotonin Norepinephrine Inhibitors (SNRI): Venlafaxine, desvenlafaxine, duloxetine

Tricyclic Antidepressants: Clomipramine, imipramine

Opioids and other pain medications

Tramadol, meperidine, methadone, fentanyl (unlikely with morphine, codeine, oxycodone, buprenorphine)

Cough, cold and allergy

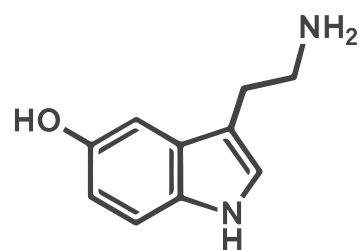
Dextromethorphan ("DM"), chlorpheniramine

Natural health products

St. John's wort, L-tryptophan, diet pills

Illicit drugs

Ecstasy (MDMA), amphetamine, cocaine



Commonly listed but unlikely to cause serotonin syndrome

Triptans (e.g., sumatriptan)

Antidepressants: amitriptyline, mirtazapine, trazodone

Antiemetics: 5HT3 receptor antagonists (e.g., ondansetron), metoclopramide

Buspirone, lithium

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