

# TOX IN ANTICHOLINERGICS



## PRINCIPLES OF TOXICITY

- Anticholinergic agents cause toxicity by inhibiting acetylcholine at muscarinic receptors
- Muscarinic receptors are found in **smooth muscle, salivary and sweat glands, the ciliary body of the eye, and the central nervous system**

Agents that commonly precipitate anticholinergic toxicity include:



H1 Antihistamines



Atypical Antipsychotics



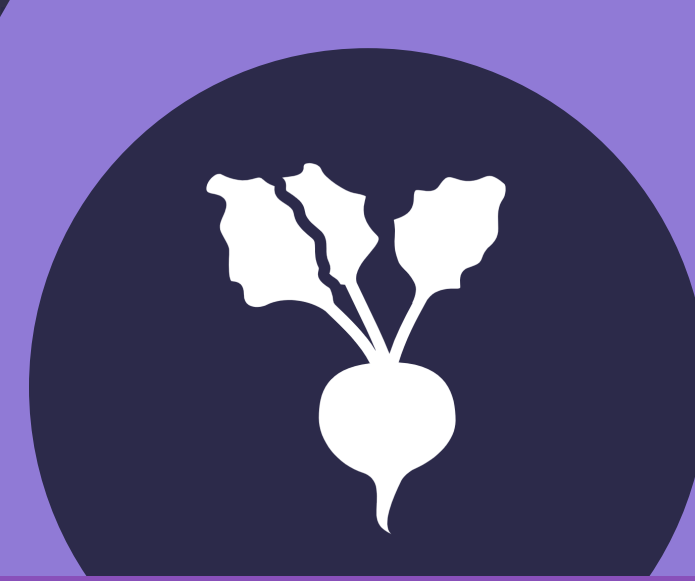
Tricyclic Antidepressants

## CLINICAL FEATURES

### Peripheral Manifestations



Hot as a hare



Red as a beet



Dry as a bone

### Central Manifestations



Mad as a hatter

Tremor, Confusion  
Agitation, Mumbling  
Delirium, Hallucinations  
Myoclonus, Coma



Blind as a bat



Full as a flask



Decreased bowel sounds

## DIAGNOSTIC TESTING

### If the patient has

Mild toxicity  
+  
Reliable exposure history  
+  
Symptoms consistent with  
antimuscarinic toxicity



No additional testing needed

### If the patient has

Moderate to severe toxicity  
or  
Unreliable exposure history  
or  
Other potential etiologies of  
toxicity or hyperthermia

Evaluate for causes of altered mental status and end-organ toxicity:

- Serum glucose
- Electrolytes
- Cardiac biomarkers
- Renal function
- Creatinine kinase (for rhabdomyolysis)
- ECG (if TCA or diphenhydramine toxicity suspected)

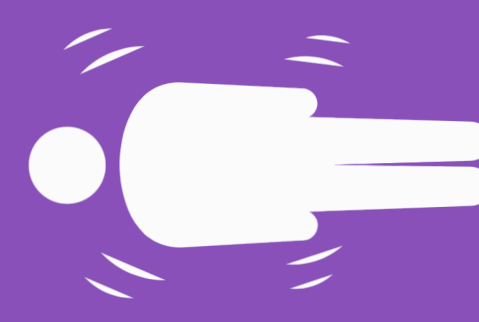
## MANAGEMENT

### Stabilization and Decontamination



If QRS > 120 ms  
(sodium channel blockade):

- Sodium Bicarbonate
- Repeat until QRS < 110 ms



If recurrent seizures or  
agitation:

- Lorazepam or
- Midazolam or
- Diazepam
- Repeat q 5-15 min prn



Consult toxicology for use of  
oral activated charcoal  
(select patients only)

### Intervention and Treatment



Treat antimuscarinic toxicity:

- Physostigmine for agitation or delirium
- May repeat q 10 min prn
- Consider an infusion if ≥ 3 administrations needed



Contraindications include:

- Narrow angle glaucoma
- 1st degree AV block
- Bradycardia
- Seizures due to current overdose



Consult toxicology for further  
questions about management  
for antimuscarinic toxicity

## DISPOSITION



- Patients with **mild toxicity** (normal mental status or slight drowsiness, normal vitals, and no ECG changes) should be **observed until symptoms resolve**
- Patients **treated with physostigmine** can be medically cleared if asymptomatic after **6 or more hours**



- Patients with **moderate to severe toxicity** or **self-harm attempts** should have an **extended observation period** to decide on further management
- Patients requiring **≥ 3 doses in 6 hours (or an infusion)** should be **admitted** to a monitored setting