

**TOX IN**

10

# ANTICHOLINERGICS



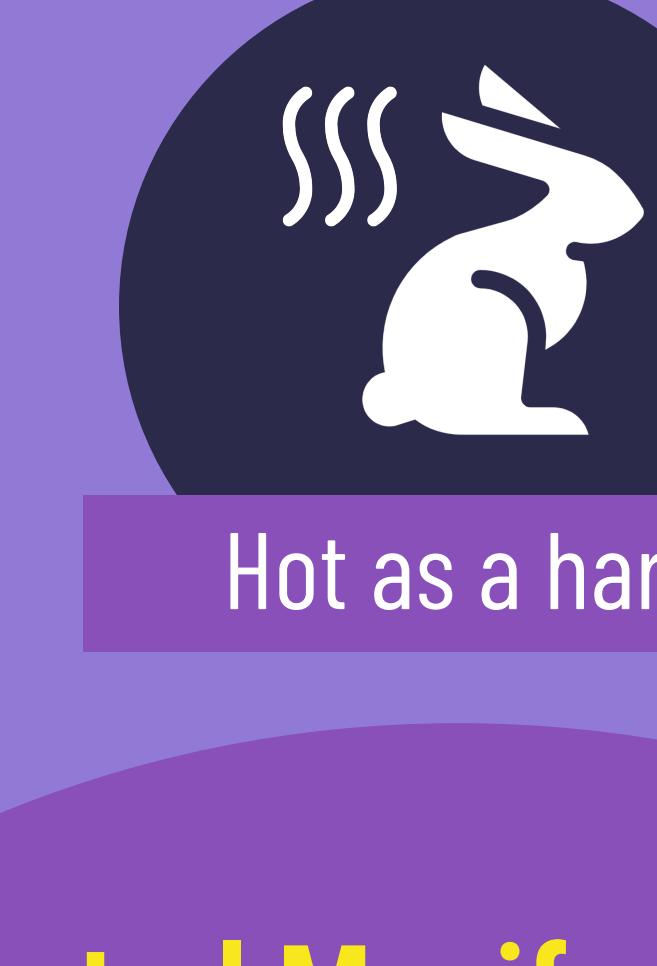
## PRINCIPLES OF TOXICITY

- 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



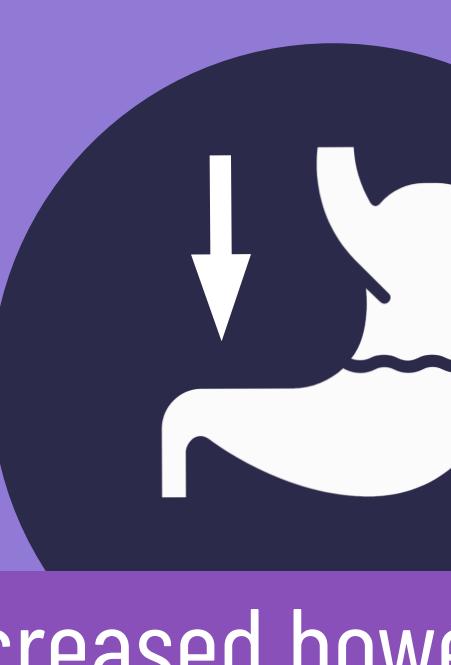
Atypical Antipsychotics



Tricyclic Antidepressants

## CLINICAL FEATURES

### Peripheral Manifestations



Hot as a hare

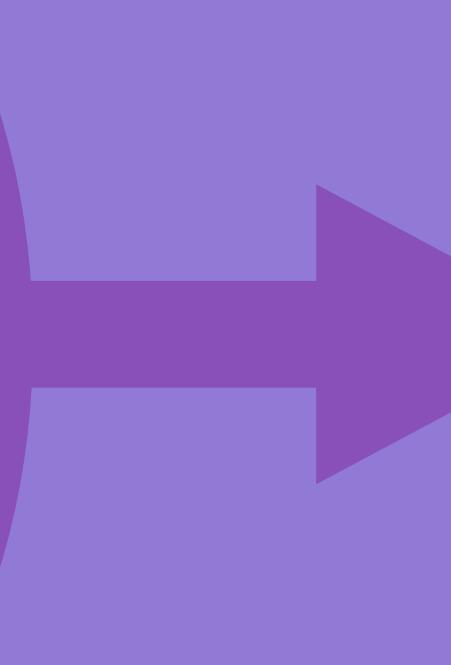


Red as a beet



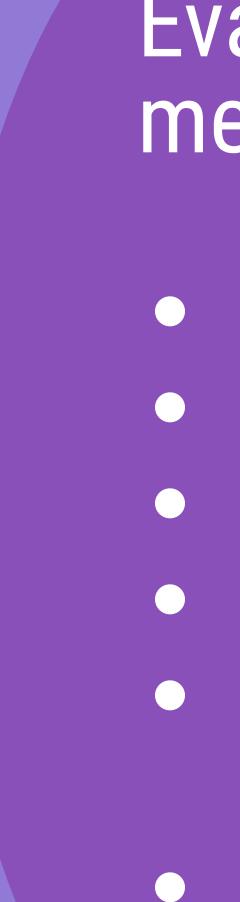
Dry as a bone

### Central Manifestations

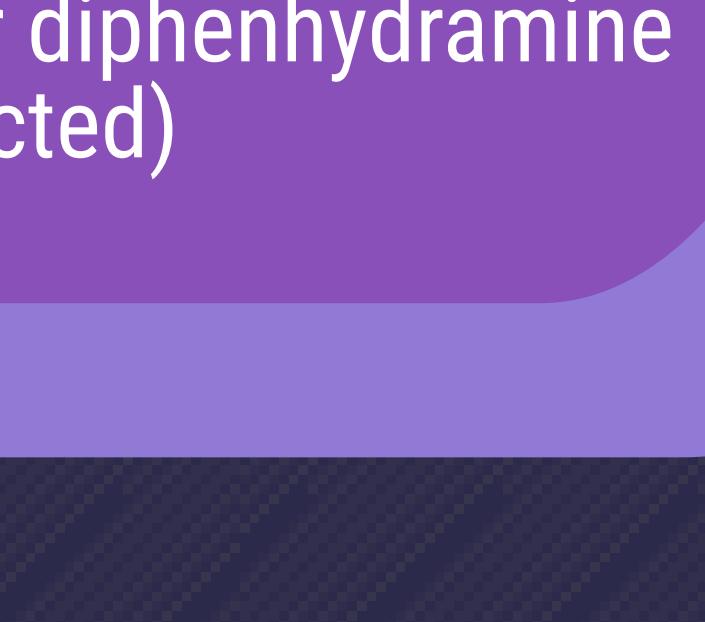


Mad as a hatter

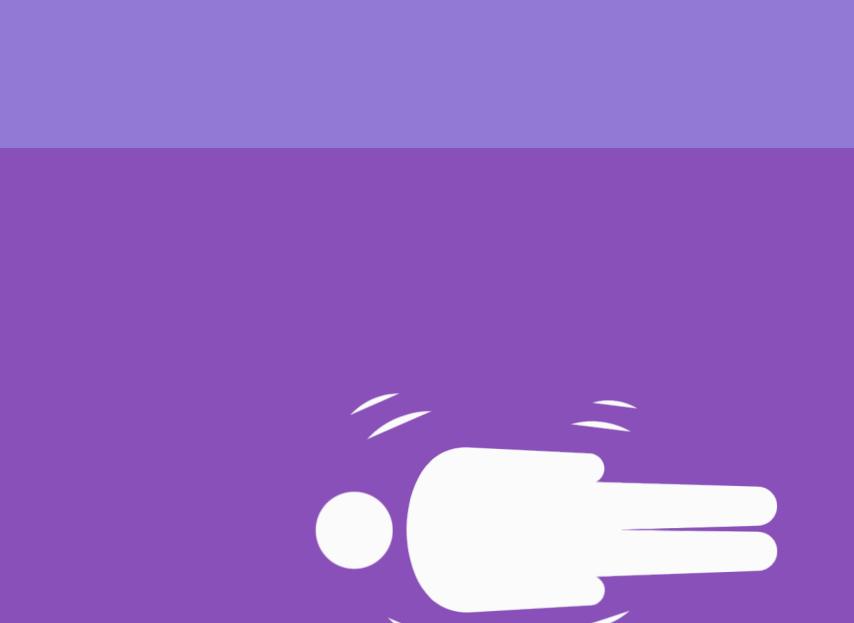
- Tremor, Confusion  
Agitation, Mumbling  
Delirium, Hallucinations  
Myoclonus, Coma



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**



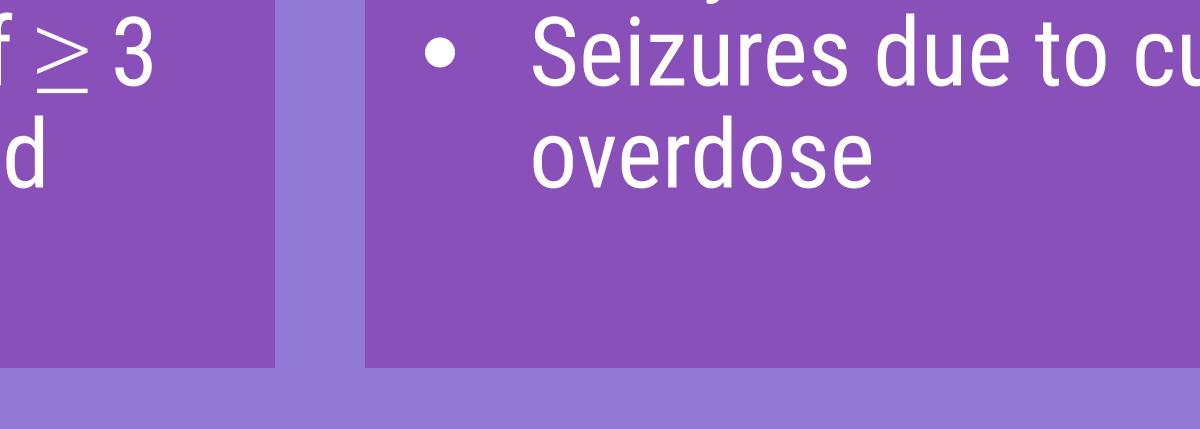
No additional testing needed

### 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)



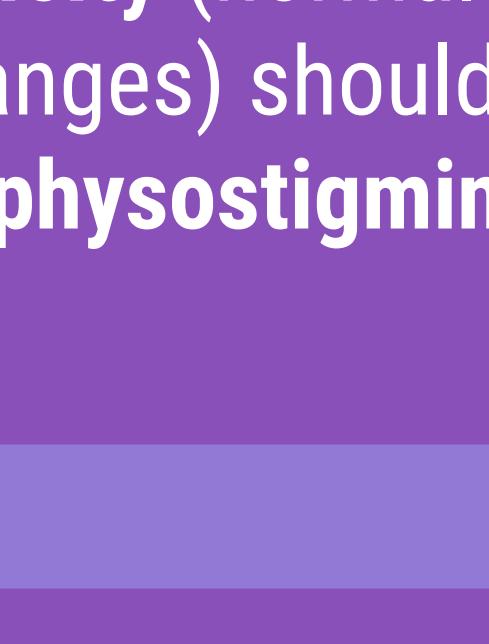
## MANAGEMENT

### Stabilization and Decontamination



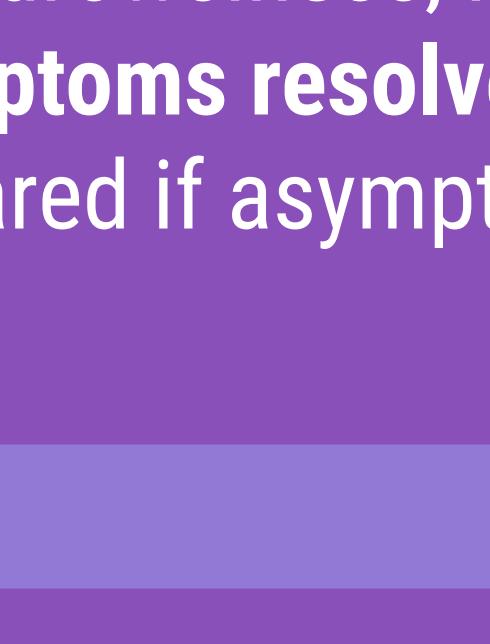
If QRS > 120 ms (sodium channel blockade):

- Sodium Bicarbonate
- Repeat until QRS < 110 ms



If recurrent seizures or agitation:

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



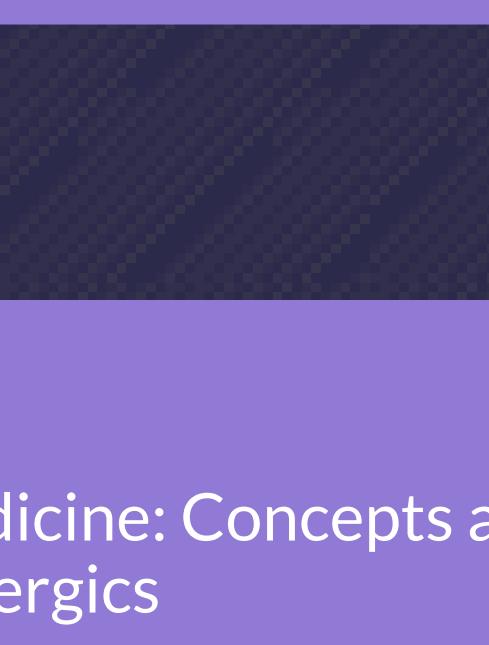
Consult toxicology for use of **oral activated charcoal** (select patients only)

### Intervention and Treatment



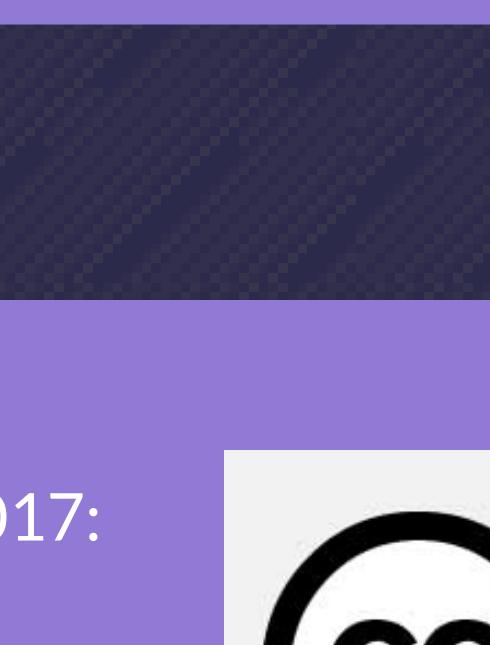
Treat **antimuscarinic toxicity**:

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



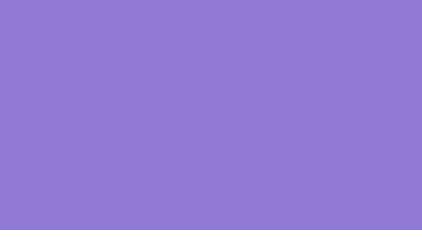
Contraindications include:

- 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  **$\geq 3$  doses in 6 hours (or an infusion)** should be **admitted** to a monitored setting