

J08: Tricyclic Antidepressant Toxicity

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Introduction

Although not as commonly used for their original purpose, tricyclic antidepressants (TCAs) remain in use for the treatment of depression and other conditions.

Essentials

- TCA overdose produces sedation, unconsciousness, and seizures. Tachycardias, including wide complex tachycardias, and hypotension are common.
- Patients who have overdosed on TCAs can deteriorate rapidly. Urgent conveyance with appropriate preparation should be undertaken.
- As with most poisonings or overdoses, care for TCA toxicity is primarily supportive. Protect the airway, provide supplemental oxygen, maintain effective ventilation, and support blood pressure as necessary.
- ECG monitoring can be helpful in identifying cardiac rhythm disturbances common to TCA overdose. Consider ACP intercept where available.
- Consider the possibility of co-ingestion of other medications or substances. Care more generally for the patient than for any particular poison.

Additional Treatment Information

- Patients who have overdosed on TCAs are frequently hypotensive. Fluid resuscitation should be initiated in patients who are significantly hypotensive; unmanaged hypotension is a primary cause of mortality in these patients.
- Sodium bicarbonate should be considered, in consultation with CliniCall, when the QRS interval exceeds 100 ms or the QRS morphology is grossly distorted.
- As a general rule, antiarrhythmics should be avoided in TCA overdose: their interactions with a disordered heart are unpredictable and most have been poorly studied. Magnesium *may* be an acceptable antiarrhythmic in the context of cardiac arrest, but should only be given in consultation with CliniCall.

General Information

- TCA overdoses carry several important clinical consequences; the most significant is the blockade of fast sodium ion channels in the heart.
- The clinical course of a TCA poisoning is unpredictable due to complexities with uptake from the gastrointestinal tract, bioavailability, and drug metabolism. Patients may initially appear well, but deteriorate rapidly and without warning.
- Signs of TCA poisoning typically include sedation, but may also feature confusion, delirium, and hallucinations. Anticholinergic effects, such as hyperthermia, flushing, and dilated pupils are common. Hypotension is the most ominous finding; the majority of patients who die from TCA overdose do so as a result of refractory, uncorrectable hypotension.
- ECG findings in TCA overdose include:
 - QRS > 100 ms
 - Deep S waves in leads I, aVL
 - Tall R waves in lead aVR
 - Tachycardias, including sinus tachycardia

Interventions

First Responder

- Keep the patient warm and protect from further heat loss
- Place the patient in a position of comfort, as permitted by clinical condition
- Protect the airway and ensure adequate oxygenation and ventilation
 - → [B01: Airway Management](#)
- Provide supplemental oxygen as required
 - → [A07: Oxygen Administration](#)

Emergency Medical Responder – All FR interventions, plus:

- Provide supplemental oxygen to maintain $\text{SpO}_2 \geq 94\%$
 - → [A07: Oxygen Administration](#)
- Support ventilation as required
- Obtain and measure capillary blood glucose
- Initiate conveyance; prepare for acute deterioration en route
- Consider intercept with additional resources

Primary Care Paramedic – All FR and EMR interventions, plus:

- Obtain vascular access and correct hypotension and hypoglycemia
 - → [D03: Vascular Access](#)
 - → [E01: Hypoglycemia and Hyperglycemia](#)

Advanced Care Paramedic – All FR, EMR, and PCP interventions, plus:

- Obtain and interpret 12-lead ECG
 - → [PR16: 12-Lead ECG](#)
- [OnCall consultation required](#) prior to initiation and to discuss suitability of any of the following therapies:
 - Consider [sodium bicarbonate](#); assess for QRS narrowing following administration
 - Consider push-dose [EPINEPHrine](#) for hypotension refractory to fluid bolus
 - [Magnesium sulfate](#) may be an acceptable antiarrhythmic in the context of cardiac arrest

Critical Care Paramedic – All FR, EMR, PCP, and ACP interventions, plus:

- Consider sodium bicarbonate infusion (37.5 mEq/hr) if initial bolus dose of sodium bicarbonate was effective at narrowing QRS complex
- Consider norepinephrine for refractory hypotension

Evidence Based Practice

Overdose-Poisoning

Supportive

- [Activated Charcoal](#)
- [Naloxone-IM \(Opiate OD\)](#)
- [Naloxone-IN \(Opiate OD\)](#)
- [Naloxone-IV \(Opiate OD\)](#)
- [Naloxone-SQ \(Opiate OD\)](#)
- [Capnography](#)
- [Naloxone-Nebulized \(Opiate OD\)](#)
- [Oxygen](#)

- [Oxymetry Monitoring](#)
- [Sodium Bicarb \(TCA OD\)](#)

Neutral

- [Glucagon \(Beta-Blocker OD\)](#)
- [Treat & Release \(Opiate OD\)](#)

Against

- [Benzodiazepine antagonist \(Benzo OD\)](#)

