Cyclic antidepressant poisoning is best managed by clinicians with appropriate knowledge and experience in cardiovascular critical care support and in poisoning treatment.

**Background:** The Major Pharmacological Actions of Cyclic Antidepressants

a) Sodium Channel Blockade (“membrane depressant” effect)
   - Causes wide QRS and tachydysrhythmia
   - $\text{QRS} > 100 \text{ mSec}$ predicts risk for seizure
   - $\text{QRS} > 160 \text{ mSec}$ predicts risk for dysrhythmia

b) Seizure Generation

c) Alpha$_1$-Blockade
   - Causes hypotension from vascular dilation

d) Inhibited Reuptake of Norepinephrine
   - May make hypotension resistant to “indirect acting” vasopressor drugs like dopamine

e) Anticholinergic
   - May cause anticholinergic features, but not a typically life-threatening feature after overdose

**Principles of Treatment after Cyclic Antidepressant Overdose**

- Consider options for GI decontamination to prevent further drug absorption.
- Restore and maintain euvolemia.
- Prevent seizures; treat seizures aggressively if they occur.
- Administration of sodium helps overcome sodium channel blockade, and alkalinization of pH helps reduce drug binding to receptors on myocardium:
  - Ensure that ventilation is adequate to allow $\text{pCO}_2$ near 40 mmHg
  - Administer IV sodium bicarbonate boluses (1 meq/kg – max 50 meq) as needed to see narrowing of QRS and to achieve blood pH 7.45 to 7.5
  - Administer IV infusion of sodium bicarbonate to maintain pH 7.45-7.5
  - Monitor and correct serum K, Ca, Mg as necessary
- Direct-acting vasopressors (such as norepinephrine) may be used per critical care practice to support blood pressure.
- Lidocaine and/or magnesium sulfate may be used for refractory ventricular tachycardia.
- Some advocate a trial of lipid emulsion* therapy when standard therapies seem to be failing.
- Extracorporeal life support (such as “ECMO”) may be useful when standard therapies have failed.

* See The Poison Control Center’s Tip Sheet for lipid emulsion therapy for more information.

The specialists, and consulting toxicologists, at The Poison Control Center may be able to provide more nuanced information to assist clinicians trying to make patient care decisions.

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