

Special situations

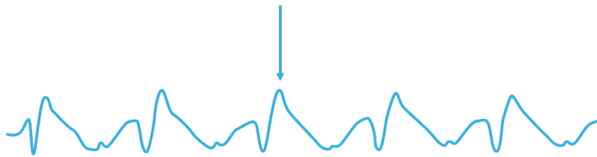
RESUSCITATING THE PATIENT WITH TOXIC OVERDOSE

Opioids

Opioid toxicity is treated with naloxone. Cardiovascular collapse from opioids alone is uncommon, but severe respiratory depression is often present. Naloxone may be used to avoid intubation, or may be considered as an adjunct if opioid overdose is suspected. The dose should be titrated to respiratory status.

Sodium channel blockers

Sodium channel blockers delay nerve conduction and may interfere with cardiac myocyte function. These commonly include diphenhydramine, cocaine, and tricyclic antidepressants. These may be suspected if there is a history of ingestion and a widened QRS, particularly if a prominent terminal R wave is present in the AVR lead, as shown below.



Hypertonic amps of sodium bicarbonate are useful to provide a large sodium load, which may help overcome some of the sodium channel blockade. In addition, the effect of raising the pH may have an advantage for activating these channels as well.

Calcium channel blockers

Calcium channel blockers interrupt the influx of calcium, and may have important cardiovascular effects. Verapamil and diltiazem are the most lethal calcium-channel blockers in overdose. Their cardiodepressant effects may be treated with aggressive calcium administration. In addition, glucagon may help create an alternative pathway for myocyte contractility. Epinephrine or other inotropes or vasopressors may be considered as adjunctive therapies as well.

If these therapies are ineffective, high-dose insulin and glucose infusion or intravenous lipid emulsion may be considered, especially if local protocols exist. Ultimately, mechanical circulatory support may be considered for recoverable cases.

Beta blockers

Beta blocker toxicity is treated in a fashion similar to calcium channel blockers. Glucagon is first-line therapy, but calcium may also provide additional inotropy. Epinephrine, dobutamine, or isoproterenol may help overcome the adrenergic blockade. High-dose insulin and glucose therapy or intravenous lipid emulsion may be considered for salvage, and mechanical circulatory support may be appropriate for some cases.

Digoxin

Digoxin toxicity may display a wide range of bradydysrhythmias—essentially any type—and hyperkalemia is usually present. Bidirectional ventricular tachycardia is a rare but specific finding.

Digoxin-specific antibodies can be administered for significant toxicity, and should usually be coordinated with a local toxicologist. The historical teaching, to avoid calcium for fear of causing cardiac tetany, has been called into question in recent years and calcium supplementation may be considered when appropriate.

Concomitant toxicities

When any toxic ingestion is confirmed or suspected, it is important to maintain suspicion for accompanying overdoses, some of which may be asymptomatic initially (e.g., acetaminophen, salicylates).