Attempted Suicide—A Case Study on the Treatment of Verapamil Overdose
Alexandra Pizzi, OMS-III, Francois Chidiac, DO, Jose David Suarez, MD, NSUCOM/Larkin Community Hospital, South Miami, FL

Introduction
Verapamil is a calcium channel blocker used to treat cardiovascular disorders such as hypertension, cardiac arrhythmias, and angina pectoris. Patients who ingest more than five to ten times the prescribed dose will show signs of intoxication, most notably hypotension, bradycardia, and hyperglycemia. Verapamil has life-threatening consequences if abused; therefore patients with suicidal ideations should be closely monitored.

Presentation
A 33-year-old obese female with a past medical history of hypertension and past psychiatric history of Bipolar Disorder presented to Larkin ER after intentionally ingesting 30 pills of Verapamil. The patient began convulsing 30 minutes after ingestion with loss of consciousness and urinary incontinence. The patient’s vital signs in the ER were: BP 87/33mmHg, PR 60/min, RR 20/min, and oxygen saturation 98% on room air. She was lethargic but mentally alert and did not appear to be in acute respiratory distress. She was started on a dopamine drip titrated at 10mcg/kg/min up to 40mcg/kg/min, a norepinephrine drip at 17.0mcg/min, and an insulin drip running at 150ml/hr. The patient was extremely hypotensive despite aggressive IV fluid hydration and vasopressor management. She also had persistent metabolic acidosis, which required hydration and vasopressor management. She also was extremely hypotensive despite aggressive IV fluid hydration and vasopressor management. An initial electrocardiogram (EKG) showed a 1st degree A-V block and bradycardia.

Above: Electrocardiogram (EKG) taken upon admission. The EKG shows sinus rhythm with 1st degree A-V block (PR prolongation), an expected finding in Verapamil overdose.

Right: Doepker et. al, 2013 graph showing Mean Arterial Pressure (MAP) and Heart Rate (HR) response to High Dose Insulin (HDI) and Intravenous Lipid Emulsion therapy (ILE) over time in a patient with Verapamil overdose. Vasopressors were discontinued <3 hours after HDI and <1 hour after ILE. (ED=Emergency Department)

Discussion
Initial signs of Verapamil intoxication include hypotension and bradycardia (<50bpm). An EKG will show PR interval prolongation. Verapamil can also cause critical levels of hyperglycemia and hypoinsulinemia. The use of IV fluids is necessary to maintain circulation and prevent end organ damage due to Verapamil-induced hypotension. Severely symptomatic patients should be treated with IV calcium salts, insulin, glucose, norepinephrine, and lipid emulsion therapy. High Dose Insulin (HDI) and IV lipid emulsion therapy have recently been incorporated in the treatment of Verapamil toxicity. HDI increases the endothelial cells’ nitric oxide synthase, which leads to decreased vascular resistance and increased cardiac output. IV intra-lipid emulsion sequesters the lipophilic Verapamil drug and prevents it from reaching its target in the heart. The medical management of Verapamil toxicity involves a multi-drug approach that demands careful monitoring of several physiologic factors concurrently. Once medically stable, the patient should be psychologically evaluated to rule out suicidal causes of overdose.

References