Nova Scotia Antidote Program

2020 Quarterly Report #3
July 1, 2020 to Sept 30, 2020

The Nova Scotia Antidote Program is pleased to present another Quarterly Report, which provides information on changes and trends in antidote therapy and reports ongoing Provincial Antidote usage.

Antidote usage July 1 to Sept 30, 2020						
Western Zone	Northern Zone	Eastern Zone	Central Zone	IWK	Quarterly Total	Year to Date
11	19	5	20	1	56	135

Highlights of antidote use during the past 3 months

A total of **56 antidotes** were used in **50 different patient cases** across Nova Scotia. Of these, 6 antidotes were used by community hospitals, 42 in regional facilities and 8 in tertiary hospitals.

- Antidotes accessed in community hospitals: calcium, naloxone, high dose insulin, and sodium bicarbonate
  - Five out of six patients were transferred to a regional hospital for further care.
- Naloxone was reported as used for 22 patients with known or suspected opioid toxicity.
  - Four of these patients required a naloxone infusion, along with bolus doses
- Sodium Bicarbonate was used as an antidote in 18 patients.
  - Four of these patients presented with ASA toxicity.
- Fomepizole was given in five patients with actual or suspected toxicity due to toxic alcohols (methanol or ethylene glycol)

Sodium Bicarbonate for TCA Cardiotoxicity

QRS widening (Sodium Channel Blockade)

Toxic effects seen in TCA poisoning (i.e. amitriptyline) are due to sodium channel blockade in the CNS and myocardium. “Sodium channel blockers” block the rapid influx of sodium in phase ‘0’ of the action potential, leading to ECG abnormalities and hemodynamic instability. Usual features of toxicity includes QRS widening (>100ms) and hypotension. The degree of QRS broadening is correlated with seizures and ventricular arrhythmias.

Sodium bicarbonate **boluses** (1-2 mEq/kg; 50-100 mL of sodium bicarbonate 8.4%) are indicated to treat signs of cardiotoxicity (wide QRS / hypotension) due to TCA poisoning. **Bolus dosing** results in a “flooding” of the sodium channels with sodium to improve cardiac contractility.

QTc prolongation.

Sodium bicarbonate is not indicated to treat a drug induced prolonged QTc interval, which is most commonly generated by potassium efflux channel blockade. The primary risk of QT prolongation is that it predisposes the patient to the ventricular dysrhythmia Torsades de Pointes. **Intravenous magnesium sulfate** is considered the first line therapy for both the prevention and treatment of medication-induced Torsades de Pointes, as it appears to stabilize the myocardium by suppressing aberrant depolarization. After a known or possible ingestion, typical dosing for QTc intervals > 500 ms is 2 grams magnesium sulfate IV in adults (25-50 mg/kg). Electrolyte abnormalities should also be corrected.

You can reach the Poison Centre 24 hrs a day at 1-800-565-8161

We can help with the management of patients with **acute or chronic drug toxicity** and with appropriate use of antidotes and other treatments.

Contact Jill Duncan, Provincial Antidote Co-ordinator, at 902-470-3857 or jill.duncan@iwk.nshealth.ca with any inquiries.