Nova Scotia Antidote Program

2021 Quarterly Report #1
Jan 1, 2021 to Mar 31, 2021

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 Jan 1 to Mar 31, 2021						
Western Zone	Northern Zone	Eastern Zone	Central Zone	IWK	Quarterly Total	Year to Date
6	7	7	20	2	42	42

Highlights of antidote use during the past 3 months

A total of **42 antidotes** were used in **32 different patient cases**. Of these, 4 antidotes were used by community hospitals, 29 in regional facilities and 9 in tertiary hospitals.

- Antidotes accessed in community hospitals: naloxone and sodium bicarbonate
- Sodium Bicarbonate was used in six patients: Three patients with salicylate toxicity and three patients with evidence of sodium channel blockade (wide QRS).
- Naloxone was reported as used for 18 patients with known or suspected opioid toxicity.
    - **Six** of these patients required a naloxone infusion, along with bolus dose(s).

ISMP Alert: Methylene Blue

The Institute for Safe Medication Practices Canada (ISMP) has issued a statement about "Hospital Readiness to Use the Antidote Methylene Blue". There have been reported emergency situations where there was confusion as to the availability and dosing of methylene blue, resulting in delays in administration. (ISMP Canada Safety Bulletin; Vol. 21, Issue 5; May 6, 2021)

Through our Provincial Antidote Program, emergency departments across Nova Scotia have sufficient stock (10 vials in Regional Kits, 3 vials in Community Kits) and access to online antidote monographs with information about methylene blue dosing and administration, adverse effects and monitoring parameters.

Indications for Methylene Blue: Methylene Blue is indicated for the treatment of symptomatic methemoglobinemia (usually with methemoglobin levels greater than 20%) and has been used to treat vasodilatory shock unresponsive to conventional therapy.

What is methemoglobinemia? Methemoglobinemia can be caused by chemicals that oxidize Fe^{2+} to Fe^{3+} in hemoglobin. This oxidized form of hemoglobin is called methemoglobin and has poor oxygen carrying capacity. Causes include nitrites and nitrates, local anesthetics (e.g. teething gels, benzocaine spray), aniline dyes, antimalarials, and dapsone.

Methylene blue is an effective antidote for methemoglobinemia because of its own oxidizing properties. It oxidizes NADPH, forming the reduced product leukomethylene blue, which in turn acts as a reducing agent converting methemoglobin to hemoglobin and thus restoring oxygen carrying capacity.

It is important to contact the Poison Centre for a number of reasons.

1. We can help with the management of patients with **acute or chronic drug toxicity** and with appropriate use of antidotes and other treatments. For example – we can help with assessing the need for Digoxin Immune Fab in chronic digoxin toxicity, and recommending appropriate dosing.
2. As part of the Provincial Antidote Program, we are required to track the use of all antidotes.
3. Data from the IWK Poison Centre is used to monitor and track exposures, including poisonings, overdoses, accidental exposures, adverse events etc. across Nova Scotia.

Contact the Poison Centre – 1-800-565-8161

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