A System-wide Solution to Antidote Stocking in Emergency Departments: The Nova Scotia Antidote Program

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Introduction
Inadequate stocking of essential antidotes in hospitals is an internationally documented problem. A concrete and sustainable system-wide solution for easily accessible antidotes in emergency departments (EDs) was developed and implemented in Nova Scotia, Canada.

Methods
Antidote stocking guidelines and a system-wide antidote management strategy were established. A standardized collection of antidotes housed in a highly visible container in provincial EDs was implemented for timely access. Antidote-specific online administration guidelines were developed. Using the poison centre for surveillance, the antidote program maintained a database of antidote utilization patterns; eleven years of data were available for analysis.

Results
2/2 (100%) tertiary care, 9/9 (100%) regional EDs, and 20/26 (77%) community EDs in Nova Scotia stock antidote kits, for an overall compliance rate of 31/37 (84%). A total of 678 antidotes (excluding N-acetylcysteine) were used for 520 patients. The distribution of antidote use by hospital type was 99/678 (15%) in community EDs, 200/678 (29%) in tertiary care EDs, and 379/678 (56%) in regional EDs. The five most commonly used antidotes were: naloxone 143/678 (21.1%), fomepizole 111/678 (16.4%), glucagon 94/678 (13.9%), calcium 70/678 (10.3%), and sodium bicarbonate 67/678 (9.9%). Of the 520 patients in whom antidotes were used, death occurred in 3% (15/520), major outcomes in 35% (183/520), and moderate outcomes in 39% (205/520).

Conclusion
The Nova Scotia Antidote Program demonstrates that a solution to inadequate antidote stocking is achievable and requires a system-wide approach with ongoing maintenance and surveillance. The frequency and distribution of antidote usage documented in this program supports the need for system-wide enhancement of emergency preparedness. The poison centre and hospital pharmacies are crucial to surveillance and maintenance of this program.