INTRODUCTION: American poison control centres report cardiovascular drugs as the substance category with the third rate of increased exposures (Bronstein et al., 2012). A retrospective study conducted in two Canadian cities underlined that CCB poisoning is associated with a morbidity of 50% and a mortality of 6% (St-Onge et al., 2012). The same article also found only 42% adherence to the current Poison Control Centre's recommendations (St-Onge et al., 2012). This lack of adherence can be interpreted as a care gap, although given that the current recommendations are not evidence-based and vary from one poison control centre to another, it could also reflect practice variation.

OBJECTIVES: The objective was to develop a guideline for the treatment of CCB poisoning endorsed by international critical care, emergency medicine and toxicology associations in order to decrease practice variation and care gap.

METHODS: The guidelines look at what type of interventions should be recommended for patients poisoned with a CCB (asymptomatic, symptomatic, refractory to conventional treatment or in cardiac arrest) who consult in a hospital. Target users comprise bedside physicians, consultants (at the bedside or on the phone) and the poison control centers. The guidelines answers the following key questions: 1) Is there evidence that one (or more than one) intervention(s) improves health outcomes (mortality, functional outcomes, hospital LOS, ICU LOS)?; 2) Do a patient’s characteristics influence the intervention(s) provided and the outcomes?; 3) Is there evidence that one (or more than one) intervention(s) improves intermediate outcomes?; 4) Are intermediate outcomes associated with health outcomes?; 5) Does one (or more than one) intervention(s) results in adverse effects or is not cost-effective? THE EVIDENCE was underlined by a systematic review (St-Onge et al., accepted to Clin Tox 2014). It showed a
possible benefit of high-dose insulin on hemodynamics and on mortality at the risks of hypoglycemia and hypokalemia (low QOE); a possible role for VA-ECMO in patients in severe shock or in cardiac arrest to improve survival at the cost of bleeding, thrombosis, or limb ischemia (low QOE with some indirectness). It also showed that calcium, dopamine, norepinephrine, or epinephrine may improve hemodynamics (very low QOE); that lipid emulsion may improve hemodynamics and; that atropine, glucagon, the use of pacemaker and plasma exchange demonstrated inconsistent results. THE COST was evaluated by a cost-effectiveness analysis conducted from a societal perspective. It supported the use of VA-ECMO in the treatment of cardiotoxicant poisonings if its effectiveness is confirmed (St-Onge et al., submitted to CCM 2014). THE RECOMMENDATIONS were developed by representatives of international associations in critical care, emergency medicine and toxicology. All workgroup members filled out and declared financial and non-financial conflict of interest. The process was not externally funded. Sub-groups first built a document detailing the level of evidence, the risks, the benefits and the circumstances in which the recommendations may not apply. Then, the recommendations were developed and the strength of the recommendation was established with a modified Delphi method (RAND/UCLA). Two face-to-face meetings were / will be also held (Brussels in May 2014 & New Orleans in October 2014). An external review will be done and results will be disclosed. THE VALUES AND THE PREFERENCES of the workgroup members influencing the vote were reported. Moreover, once approved by the associations, the draft of recommendations will be posted on a blog (www.poisoningsguidelines.com) to obtain comments and suggestions from decision makers, guidelines users, patients, and their relatives. THE IMPLEMENTATION of the guideline will be facilitated by an implementation tool to promote adherence to key recommendations.

Results: Recommendations will be available in October 2014. Areas for future research will also be targeted.

Conclusion: With the use of good implementation strategies, this guideline for the treatment of CCB poisoning endorsed by international critical care, emergency medicine and toxicology associations may decrease practice variation and improve care gap.

International guideline development for the treatment of calcium channel blocker (CCB) poisoning


Introduction

BACKGROUND OF ILLNESS
- CCBs are a class of medications that can cause hypotension, bradycardia, and cardiovascular collapse.
- The most common CCBs include nifedipine, verapamil, and diltiazem.
- The mortality rate from CCB poisoning is estimated to be 2-5%.
- CCB poisonings can be due to accidental ingestion, suicide attempts, or intentional overdoses.

CURRENT STATUS
- There are no specific antidotes for CCB poisoning.
- Treatment is primarily supportive and symptomatic.
- The lack of specific antidotes can make management challenging.
- There is a need for evidence-based guidelines to improve outcomes.

PRACTICE VARIATION
- There is significant variability in the management of CCB poisonings among healthcare providers.
- The variability is due to lack of evidence-based guidelines.

Objective & Key Questions (KQ)

- Develop a guideline for the treatment of CCB poisoning endorsed by international critical care, emergency medicine, and toxicology associations in order to decrease practice variation and improve outcomes.

THE EVIDENCE

- KQ 1.1. Is there evidence that one (or more than one) intervention(s) improves health outcomes?
- KQ 1.2. Do a patient’s characteristics influence the intervention(s) provided and the outcomes?
- KQ 1.3. Is there evidence that one (or more than one) intervention(s) improves intermediate outcomes?
- KQ 1.4. Are intermediate outcomes associated with health outcomes?
- KQ 1.5. Does one intervention(s) result in adverse effects or not cost-effective?

Methods

SCORE AND TARGET USERS
- The guideline will be developed for patients (adults and pediatrics) poisoned with CCB (hypotension, symptomatic, refractory to conventional treatment or in cardiac arrest) who consult in a hospital.
- Target users include healthcare professionals, consultants (at the bedside or on the phone) and the poison control centers.

RECOMMENDATIONS DEVELOPMENT
- Risk groups will be identified with the help of evidence, the risk, the benefits, and the circumstances in which the recommendations may apply.
- Recommendations were developed and the strength of the recommendation was established with a modified Delphi method (RANTES).

Recommendations to come in fall 2014!