

Research Article

Provincial Survey of Health Care Professionals Involved in the Care of Poisoned Patients

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ABSTRACT

Aim: The goal of this survey was to identify areas for improvement in the services currently provided by the Centre antipoison du Québec. Our primary objective was to describe the perceptions of clinicians regarding the ability of the Centre antipoison du Québec to fulfill its missions, but we also evaluated as secondary objectives if our services are easily accessible.

Methods: This web-based survey was conducted amongst emergency physicians, intensivists, internists, paediatricians, family physicians and nurses working in primary care or in-hospital care setting in the Province of Quebec. The main outcome measures collected included the proportion of participants perceiving that the Centre antipoison du Québec fulfill its mission and the proportion of participants perceiving that they have an appropriate access to the Centre antipoison du Québec services.

Results: Among our 268 participants (13% response rate), the majority (58-96%) reported that they felt the Centre antipoison du Québec fulfill its clinical mission. They

expressed more uncertainty regarding to educational (56-60%) and research (46-67%) missions. In terms of accessibility, 46 participants mentioned they have not been able to reach the Centre antipoison du Québec in a reasonable time frame at least once, 36 mentioned they have not been able to reach the toxicologist at the Centre antipoison du Québec in a reasonable time frame at least once and 63 mentioned they have experienced unreasonable delays at least once before receiving toxicology laboratory results. In terms of education, 234 respondents answered that they do not have access to toxicology training if they would like to learn more about this area in medicine.

Conclusion: The majority of participants perceived that the Centre antipoison du Québec fulfill its missions, but expressed more uncertainties regarding the educational and research missions. They asked for improvement regarding accessibility to clinical services and training, elements on which the Centre antipoison du Québec already made progress.

Keywords: Poison control centres; Toxicology; Health services; Quality improvement; Surveys

What do we know?

Each dollar spent on a poison control centre saves society 8\$ based on a summary of cost-outcome analysis for injury prevention programs. Since 1986, the Centre antipoison du Québec offers 24/7 services to the public and health care professionals concerning acute exposures to potentially toxic substances. From 2008 to 2014, the Centre antipoison du Québec helped with approximately 45 300 cases of exposure per year (78% calls from the public, 22% calls from health care professionals).

What does this paper add?

No study have been published concerning healthcare professionals perceptions of the services provided by North American poison centres even if poisonings represent an important cause of healthcare services use.

Introduction

Each dollar spent on a poison control centre saves society 8\$ based on a summary of cost-outcome analysis for injury prevention programs.¹ Since 1986, the Centre antipoison du Québec offers 24/7 services to the public and health care professionals concerning acute exposures to potentially toxic substances. From 2008 to 2014, the Centre antipoison du Québec helped with approximately 45 300 cases of exposure per year (78% calls from the public, 22% calls from health care professionals).² The activities of the Centre antipoison du Québec are organized around its missions detailed as follows:

Clinical mission

- To offer a 24/7 telephone service to the public and healthcare professionals throughout Quebec concerning cases of acute poisoning, whether actual or apprehended;
- To offer a telephone consultation service by providing on-call toxicologists to guide medical professionals in the diagnosis and treatment of complex poisoning;
- To provide toxicological analysis service support to inadequately equipped analytical centres. Two laboratories have been authorized for this purpose by the Health Ministry;

Educational mission

- To act as leaders in the field of teaching toxicology to health care professionals;
- To preventing poisoning, to evaluate and to improve the care of poisoned patients;

Research mission

- To contribute to the advancement of knowledge in toxicology by developing better tools for prognosis, monitoring, prevention, better treatments;
- To contribute to an organized and efficient delivery of health care in acute toxicology;
- To develop ways to promote effective knowledge transfer to the public and healthcare professionals.

No study have been published concerning healthcare professionals perceptions of the services provided by North American poison centres even if poisonings represent an important cause of healthcare services use. In the Province of Quebec in 2010, poisonings were responsible for at least 18,799 emergency room visits and 4 203 hospitalizations.³ Those important numbers suggests that healthcare professionals do not always call the Centre antipoison du Québec.

Consequently, the goal of this survey was to identify areas for improvement in the services currently provided. Our primary objective was to describe the perceptions of clinicians regarding the ability of the Centre antipoison du Québec to fulfill its missions, but we also wanted to evaluate if our services are easily accessible. Therefore, our secondary objectives were to describe: 1) the proportion of respondents who have not been able to speak to the Centre antipoison du Québec within a reasonable time frame, 2) the proportion of respondents who have not been able to talk to the toxicologist on call within a reasonable time frame, 3) the proportion of respondents who have not been able to receive toxicology lab results within a reasonable time frame, 4) the proportion of respondents who do not have access to toxicology training, and 5) the perception of respondents with respect to the clarity and applicability of Centre antipoison du Québec recommendations.

Methods

Study design and sample

The survey, considered as quality improvement project by the research ethics board of the CIUSSS de la Capitale-Nationale, was conducted in the Province of Quebec. It targeted all physicians and nurses taking care of acutely poisoned patients. The sample included all members of the following organisations: Association des médecins d'urgence du Québec (AMUQ), Associations des spécialistes en médecine d'urgence du Québec (ASMUQ), Regroupement des omni-intensivistes du Québec (ROIQ), Société des intensivistes du Québec (SIQ), Association des spécialistes en médecine interne du Québec (ASMIQ), Association des pédiatres du Québec (APQ), Association des infirmiers et infirmières en urgence du Québec, and the Regroupement des infirmiers et infirmières en soins intensifs du Québec. The Ordre des infirmiers et infirmières du Québec also allowed to contact their members working in

primary care and in-hospital care setting. Members who were not taking care of poisoned patients or who were retired were excluded.

The survey questionnaire was developed in English and French, and was intended for web-based administration.⁴ Item generation and reduction involved one physician and two nurses, resulting in 32 multiple-choice and open-ended questions intended to document participants' demographics; their perceptions concerning the Centre antipoison du Québec ability to fulfill its missions, how the Centre antipoison du Québec can improve its services and if those services are accessible. The survey was pretested and further refined using representatives of each participating association. The English version of the survey was adapted from the French version and reviewed by an external editing company.

The final questionnaire asked respondents for which department(s) or service(s) they were working, how often they were taking care of poisoned patients and how often they were calling the Centre antipoison du Québec. The participants were asked if they felt the Centre antipoison du Québec was fulfilling each of his missions and if the organisation should get better using a seven-point Likert scale. The respondents described how the Centre antipoison du Québec could better fulfill its missions using open-ended question. Using multiple-choice questions, the participants answered if they ever tried to reach the Centre antipoison du Québec and not being able to talk to a nurse or a toxicologist within a reasonable time frame, if they ever experienced unreasonable delays before receiving toxicology lab's results that were sent to one of our partners, if they felt they had access to toxicology training, if the Centre antipoison du Québec recommendations were understandable and applicable.

Data collection

FluidSurveys (Ottawa, Ontario) was used to administer the web-based survey. An invitation to participate was sent at least twice in November 2015 to approximately 2000 members of the previously listed associations and to 5000 nurses members of the Ordre des infirmiers et infirmières du Québec corresponding to our inclusion criteria. The link to the survey first directed potential respondents to a consent form and, once completed, led participants to the web-based questionnaire.

Data analysis

Only completed questionnaires were analysed. Results were summarized and reported using descriptive statistics (raw numbers and proportions). Suggestions for improvement were grouped as statements expressing the same idea by two members of the study team. Disagreements in these groupings were resolved by consensus and a third member of the study team.

Results

A response rate of 13% (268 of 2 000) was obtained among physicians, but of 36% (180 of 501) among emergency physicians. The response rate among nurses was lower (4% response rate, 188 of 5 000). Table 1 describes the respondent's characteristics. The majority of physicians (51%) were taking care of poisoned patients between once per day and once per month whereas the majority

Table 1: Study participant characteristics.

	Physicians (n=268)	Nurses (n=188)
Department or services		
Emergency department	180 (67%)	40 (21%)
Critical care unit	69 (26%)	65 (35%)
Ward	40 (15%)	11 (6%)
Pediatric ward	40 (15%)	3 (2%)
Pediatric critical care unit	8 (3%)	1 (0%)
Other (primary care facility, public health, etc.)	35 (13%)	86 (46%)
Years of practice		
Less than 5 years	76 (28%)	6 (3%)
5-10 years	57 (21%)	16 (9%)
11-15 years	36 (13%)	33 (18%)
16-20 years	30 (12%)	25 (13%)
More than 20 years	69 (26%)	108 (57%)

Table 2: Perceptions of clinicians regarding the ability of the Centre antipoison du Québec to fulfill its missions.

n=456	Probably or certainly	Maybe or maybe not	Probably not or certainly not
Clinical mission			
To offer a 24/7 telephone service to the public and healthcare professionals throughout Quebec concerning cases of acute poisoning, whether actual or apprehended.	439 (96%)	15 (3%)	2 (0%)
To offer a telephone consultation service by providing on-call toxicologists to guide medical professionals in the diagnosis and treatment of complex poisoning.	390 (86%)	63 (14%)	3 (0%)
To provide toxicological analysis service support to inadequately equipped analytical centres. Two laboratories have been authorized for this purpose by the Health ministry.	266 (58%)	185 (41%)	5 (1%)
Educational mission			
To act as leaders in the field of teaching toxicology to health care professionals.	256 (56%)	183 (40%)	17 (4%)
To preventing poisoning, to evaluate and to improve the care of poisoned patients.	276 (60%)	171 (38%)	9 (2%)
Research mission			
To contribute to the advancement of knowledge in toxicology by developing better tools for prognosis, monitoring, prevention, better treatments.	212 (46%)	236 (51%)	8 (2%)
To contribute to an organized and efficient delivery of health care in acute toxicology.	307 (67%)	138 (30%)	11 (3%)
To develop ways to promote effective knowledge transfer to the public and healthcare professionals.	248 (54%)	183 (40%)	25 (6%)

of nurses (53%) were taking care of poisoned patients between once per week and less than once per month. However, 77% of physicians consulted the Centre antipoison du Québec between once per week and less than once per month and; 75% of nurses consulted the Centre antipoison du Québec less than once per month or rarely. Nearly all respondents already knew the existence of the Centre antipoison du Québec before answering the survey.

Table 2 describe the perceptions of clinicians regarding the ability of the Centre antipoison du Québec to fulfill its missions. Most participants answered positively most of the time. However, they expressed more uncertainty regarding to educational and research missions. In terms of accessibility, 46 participants mentioned they have not been able to reach the Centre antipoison du Québec in a reasonable time frame at least once, 36 mentioned they have not been able to reach the toxicologist at the Centre antipoison du Québec in a reasonable

time frame at least once and 63 mentioned they have experienced unreasonable delays at least once before receiving toxicology laboratory results. In terms of education, 234 respondents answered that they do not have access to toxicology training if they would like to learn more about this area in medicine. The majority of participants mentioned that the Centre antipoison du Québec's recommendations are understandable (420) and applicable (417).

In their comments, the participants suggested notably the following:

- Having a more rapid access to the Centre antipoison du Québec line.
- Having access more easily and rapidly to poisoning management information.

- Adapting the information given by the Centre antipoison du Québec to the caller's baseline toxicology knowledge.

Discussion

The majority of participants perceived that the Centre antipoison du Québec fills its missions, but expressed more uncertainties regarding the educational and research missions. They asked for improvement regarding accessibility to clinical services and training. In 1998, Cameron et al. conducted a survey to assess client satisfaction with the New Zealand National Poisons Information Service.⁵ Their participants (354 members of the general public and 79 health professionals) also perceived that the poison centre met their needs but stressed the importance of a greater public awareness and improved access to services.

Based on those survey results, the Centre antipoison du Québec built a plan of action to better serve its population. First, the organization will change its phone system in order to better document the waiting time, which may help to reorganize resources based on demand. Second, the Centre antipoison du Québec is also translating its antidote website (<https://www.inspq.qc.ca/toxicologie-clinique/les-antidotes-en-toxicologie-d-urgence>) and developing a bilingual app to allow an easier access to important information related to the management of poisoned patients. Finally, the personal at the Centre antipoison du Québec built a training to teach basics in clinical toxicology and will now offer online webinars (total of 14 sessions of 1h). The organization will use this opportunity to disseminate information regarding its missions and services.

Limitations

Even if this survey allowed the Centre antipoison du Québec to improve its services, some limitations need to consider. The response rate to this web-based survey was poor and most of the respondents already knew the Centre antipoison du Québec. Therefore, our results are subjects to selection bias, but also recall bias when the participants were asked about accessibility to the Centre antipoison du Québec services.

Moreover, this survey only included physicians and nurses. In the future, other key stakeholders such as pharmacists and the public could be considered.⁶ They may express a different opinion. It would also be interesting to compare our result to other poison centres.

Conclusion

In conclusion, the majority of survey participants perceived that the Centre antipoison du Québec fills its missions, but expressed more uncertainties regarding the educational and research missions. They asked for improvement regarding accessibility to clinical services and training, elements on which the Centre antipoison du Québec already made improvements. A follow up survey will be considered in the future to monitor progress.

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