

Calls managed by the BC Drug and Poison Information Centre following the 2011 nuclear reactor incident at Fukushima, Japan

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Background

On March 11, 2011, a 9.0 magnitude earthquake and 10 metre tsunami struck northeast Honshu Island, Japan. More than 15,800 people were killed and another 3150 were reported as missing.¹⁻³ The earthquake and tsunami severely damaged 4 of the 6 reactors at the Fukushima Daiichi nuclear power complex.^{4,5} Media reported that radioactive material was being released from the damaged reactors,⁶⁻⁹ with emissions to air and seawater. While government officials in Canada advised that the likelihood of radiation at levels sufficient to impact the health of BC residents was not great,¹⁰⁻¹¹ both traditional and social media reported public concerns about radiation exposure, contamination of air, water and food, the need for radiation antidotes and nuclear safety in general.¹²⁻¹⁴

Fear of radiation moving across the Pacific sparked a run on potassium iodide tablets at pharmacies in Western Canada.¹³ Stores that offered iodine supplements in turn sold out. Media releases were issued on March 14 and 15 by both Dr. Perry Kendall (BC's Provincial Health Officer) and Prime Minister Stephen Harper reassuring Canadians that they were not at risk from radiation originating in Japan, and that stockpiling or taking iodide tablets was not necessary.

Poison control centres have been used to field exposure- and information-related calls following large-scale natural disasters,^{15,16} consumer product concerns,¹⁷ adverse drug effects,^{18,19} food-borne outbreaks²⁰ and to quell public anxiety about the H1N1 virus.²¹ Largely unrecognized and untapped, however, particularly in Canada, is their potential as a source of information to identify and monitor

emerging public health issues.

Staffed by pharmacists, registered nurses and physicians, the BC Drug and Poison Information Centre (BC DPIC) receives telephone call inquiries concerning exposures to poisons and medications from both public and health care professionals, 24 hours a day, 7 days a week; a dedicated professional support line offering information and guidance on adverse effects of medications is open during the work day to BC health care providers.

We reviewed calls to BC DPIC during the 6 months following the earthquake in Japan as a reflection of public and health care provider concerns about the Fukushima reactor incident and its attendant publicity. As the BC public and health care practitioners were not specifically advised to call BC DPIC about Fukushima concerns and queries, this review of calls should reasonably represent how poison control centres are used during such evolving public health threats.

Methods

We undertook a manual review of all paper call records from both poison control and professional drug information lines from March 11 to April 30 and August 1 to 31, 2011. These time periods reflect activity immediately following the earthquake in Japan and following an article in the August 4th edition of the *Georgia Straight*, a widely distributed, free local weekly newspaper, which alleged that radiation health hazards related to the Fukushima incident had been minimized by public health officials.²² Fukushima-related calls to both lines were classified as either drug/poison exposure or information calls; they were further clas-

sified by type of caller, health authority of caller's residence and reason for call: radiation, potassium iodide (KI), both KI and radiation, other radiation antidote (natural remedy, Lugol's solution, iodine, Prussian Blue, chelator DTPA) or other.

The total call volume for 2010 and 2011 was compiled by manual count of all paper records for the 2 years.

Results

Forty-seven calls related to the Fukushima nuclear incident were received at BC DPIC from March 12 to April 30, with 45 being received by March 31, 21 days post-earthquake.

The spike in calls from March 14 to 17 was tied to public concern and media attention following the earthquake, tsunami and early reports of reactor damage (Figure 1). From March 12 to 31, calls related to the Fukushima incident accounted for approximately 1.3% of those taken by poison control and almost 20% of calls to the professional drug information lines at BC DPIC.

The majority of calls to BC DPIC were from clients seeking information on either radiation ($n = 7$, 15%) or KI ($n = 32$, 68%) issues. One client called for advice after ingesting multiple doses of Lugol's solution (elemental iodine and potassium iodide in water), while another who had purchased Lugol's asked if and when he should take it. Seventy-one percent of calls ($n = 15$) to the poison control line were from the general public, with pharmacists, nurses and one media inquiry accounting for the remainder. One call to the professional drug information line was from a general practitioner; the others ($n = 23$) were from community pharmacists.

The number of calls received was proportional to the populations of BC's health authorities: callers from Vancouver Coastal Health and Fraser Health Authority, which cover Greater Vancouver and surrounding regions, represented 60% of Fukushima-related calls to BC DPIC. The third most populous health authority, Vancouver Island Health Authority (with 16% of the BC population), accounted for 15% of calls during the 48 days following the Fukushima incident.

Two calls linked to the Fukushima incident were taken by the poison control line in April. Clinicians documented a call from a parent concerning aggression seen in a small child following the parent's administration of 3–7 drops of KI 3–4 times a week for 3–4 weeks. This was the only Japanese earthquake-associated call related to children documented at BC DPIC for the time periods under investigation.

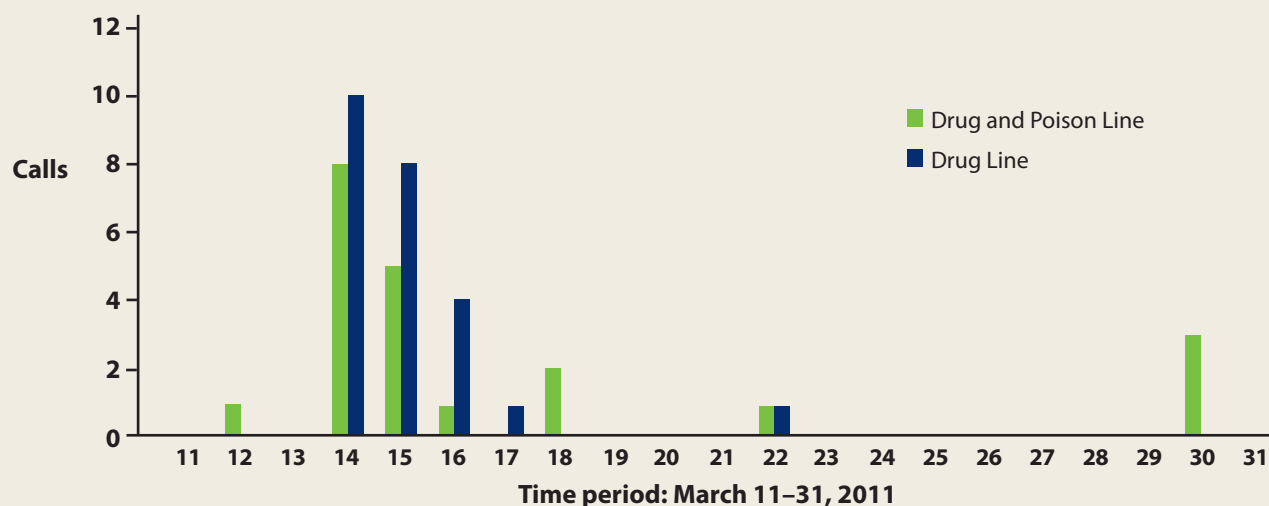
In spite of renewed media publicity, no calls to BC DPIC related to this event were documented in August.

Discussion

Our review of BC DPIC's paper call records corresponding to the time period after the Japanese nuclear incident illustrates the capacity of this service to act as a conduit for disseminating quick and expert information to an anxious public in response to a rare but fearsome and evolving health threat.

While there was little increase in overall BC DPIC call volume during the 3 weeks that followed the Fukushima reactor incident, our review of call records suggests that the service filled a niche in the health care system by providing the public and

FIGURE 1 Fukushima-related calls to both the BC Drug line and Drug and Poison information line, March 11–31, 2011



health care professionals round-the-clock access to expert consultation during the crisis. This was exemplified by the number of potassium iodide and other radiation antidote queries directed to the professional drug information line alone.

Historically, poison control centres in both the United States and Europe have demonstrated their capacity to alert public health,¹⁵ law enforcement²³ and drug and consumer product agencies¹⁷ when public health action is required. Surveillance of poison control centre information has been used to detect and monitor the emergence of trends and real-time incidents involving drug and substance abuse,^{24,25} food-borne illness,²⁶ mass poisoning,²⁷ food/medication contamination,^{28,29} adverse drug reactions^{19,30} and injuries from commercial and consumer products.³¹ The number of calls fielded by BC DPIC following the Fukushima Daiichi nuclear reactor crisis underscores the value that poison control centres offer in capturing public concerns and responses during an emerging crisis. The monitoring of public and health care provider concern, as well as the demand, use and potential misuse of radiation antidotes (in this scenario) helped alert provincial public health authorities to the need for public advice and practitioner support. BC DPIC informed and contributed to both public and professional media releases

issued by the BC Centre for Disease Control. The BC response to the Fukushima incident did not include the provision of print material to pharmacists for communication with their clients; this could be considered in future.

A recent (unpublished) analysis of the geographic location of calls to BC DPIC indicates lower call rates from residents of Vancouver Island as compared to BC as a whole. Call rates (the number of calls to a poison control centre per unit of population) are often used as surrogate markers for public awareness.³² The relatively lower proportion of calls to BC DPIC from Vancouver Island residents may point to a lack of public awareness in that part of the province of the services the BC DPIC provides. Given that radiation from Japan would first impact Vancouver Island and that the Vancouver Island Health Authority (VIHA) covers the third most populous health region in BC, call volume from VIHA did not reflect the exaggerated public concern for coastal impacts expressed in media accounts. This points perhaps to the need for targeted public and professional messaging to encourage a concerned population to call their poison control centre for information and advice during chemical or radiological incidents in the future. ■

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