2008
Annual Report

Ontario Poison Centre
Centre® Anti-Poison de l'Ontario

Expert poison advice 24 hours a day.
Supporting all of Ontario.

This report is published by the Ontario Poison Centre

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Mandate

The Ontario Poison Centre / Centre Anti-Poison de l'Ontario (OPC / CAPO) is a telephone toxicology consultation service that provides expert poison advice 24 hours a day to the public and health-care professionals throughout Ontario. When deemed appropriate, the OPC participates in the ongoing care of the poisoned patient, performs follow-up calls to assess the effectiveness of treatment recommendations based on patient status and to follow these to a known outcome. Our toxicology experts collaborate with other health-care professionals to advocate for optimal, current and evidence-based care of the poisoned patient.

In addition to its primary role, the OPC collects statistical data on poisoning cases, develops and distributes poison prevention education, provides toxicology training and participates in research.

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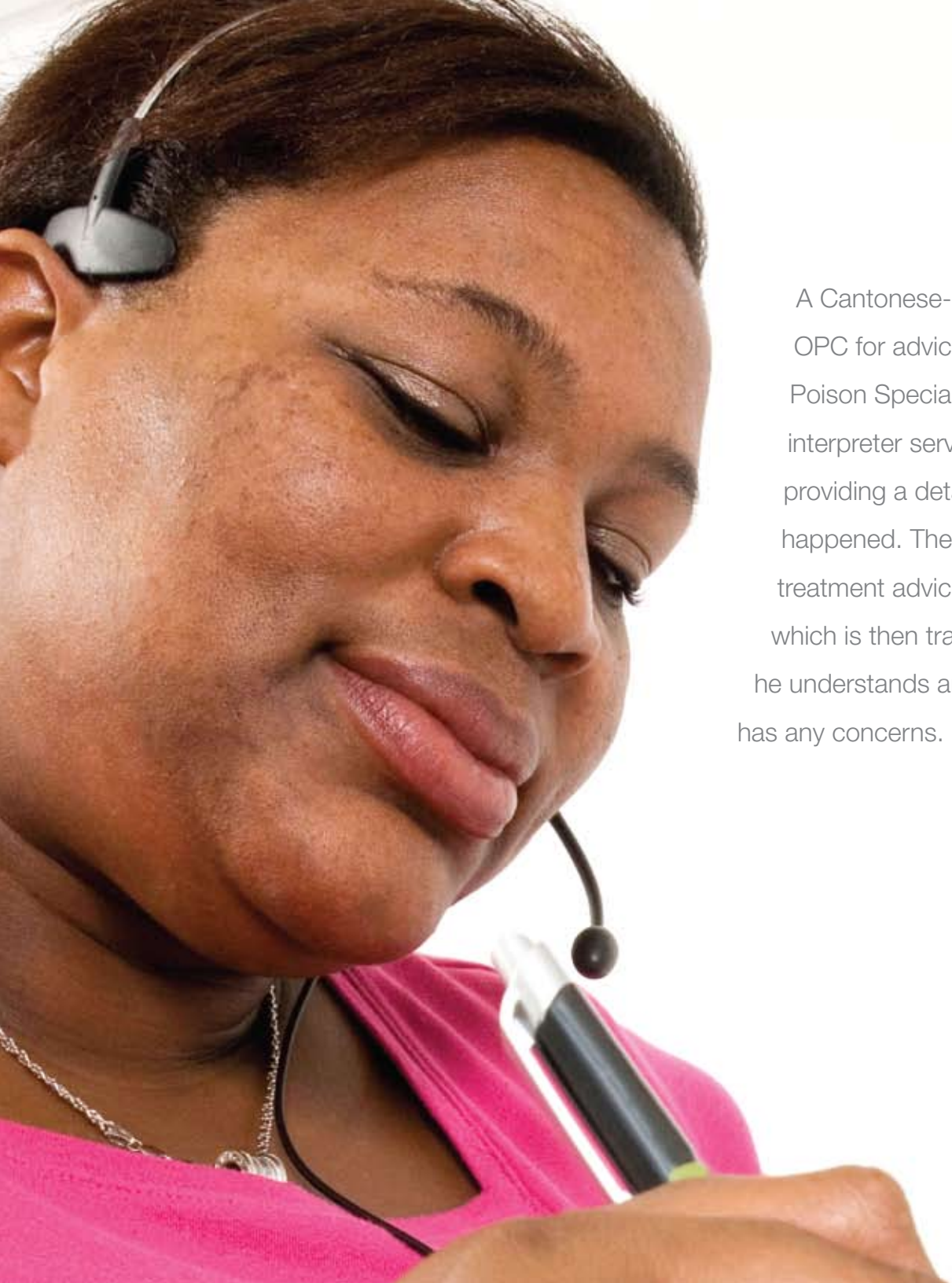

A Cantonese-speaking father calls the OPC for advice regarding his child. The Poison Specialist accesses a telephone interpreter service that assists the father in providing a detailed history about what has happened. The Poison Specialist provides treatment advice and other information which is then translated. The father confirms he understands and agrees to call back if he has any concerns.

Message from the Medical Director

With the ongoing support of The Hospital for Sick Children, Montfort Hospital, the Toronto Central Local Health Integration Network and the Ministry of Health and Long-Term Care, the Ontario Poison Centre continues to be able to offer a unique service to the province of Ontario. Twenty-four hours a day, 365 days a year, highly qualified Specialists in Poison Information, both registered nurses and pharmacists use their knowledge and judgment to assess an exposure and advise the treatment of the poisoned patient over the phone.

Not being reportable diseases, poisonings are provided little press or policy attention. Hence, few resources are available to advertise the services of the poison centre, to provide ongoing professional or poison prevention education or to garner statistics regarding the extent of this national health problem. Yet, for every call made to the poison centre where it is determined that hospital attendance is not necessary, hundreds of health care dollars and unnecessary investigations are saved.

Again this year, I would like to thank the dedicated professionals associated with the Ontario Poison Centre, who contribute to improving the care of the poisoned patient.

"With the ongoing support of The Hospital for Sick Children, Montfort Hospital, the Toronto Central Local Health Integration Network and the Ministry of Health and Long-Term Care, the Ontario Poison Centre continues to be able to offer a unique service to the province of Ontario."

Margaret Thompson MD, FRCP(C), FACMT

History

The OPC, located at The Hospital for Sick Children (SickKids) in Toronto, has been in operation since 1979, when the provincial Ministry of Health provided funding for two regional poison centres. Prior to this time, staff in emergency departments responded to poison calls without any formal training and minimal resources. In the early years, the OPC managed just over 8,000 calls a year and now handles over 100,000 calls annually. While this number is impressive, the true magnitude of the problem is unknown as poison exposures are not a reportable event. The OPC data is based on cases voluntarily reported to the poison centre.

There is no national repository for data related to poison exposures in Canada. In comparison, the U.S. has a comprehensive National Poison Data System[1] which not only provides national statistics, but acts as an early warning surveillance system as well. The Canadian Poison Control Program ceased operations in the late 80s and with it went the national poison database and national statistics. As a member of the Canadian Association of Poison Control Centres (CAPCC) the OPC continues to advocate for a national database, national statistics, and a Canadian surveillance system.

Since 2005, the OPC has been the only poison centre for Ontario's population of almost 13-million people. As the OPC expanded its services throughout the province, it launched an initiative to ensure the provision of French language services to the Francophone community of Ontario. The OPC collaborated with Montfort Hospital in Ottawa and opened the Centre Anti-Poison satellite site in an effort to recruit bilingual Poison Specialist nurses. The OPC is now able to provide live expert poison advice in both official languages. Through the use of a telephone interpreter service the centre is also able to provide advice to the province's diverse multicultural community in the caller's own language. In addition to being an active member of the CAPCC, the OPC is an affiliate member of the American Association of Poison Control Centers (AAPCC).

There is no national repository for data related to poison exposures in Canada.

An anxious mother calls the OPC about her two-year-old daughter who has swallowed a mouthful of bleach. The child has vomited and is crying. The Poison Specialist takes an accurate history and advises the mother to give her daughter a small drink of water. The child settles and begins to play. The family has avoided a call to 911 and an unnecessary trip to a busy emergency department.

Ontario Poison Centre Staff

Poison Specialists

Calls to the OPC are answered by Poison Specialist registered nurses and pharmacists who have received specialized training in toxicology. After a two-year ongoing training period, eligible Specialists in Poison Information write a certification exam to achieve the designation of Certified Specialist in Poison Information.

Medical Director

Margaret Thompson MD, FRCP(C), FACMT

The medical director is ultimately responsible for the toxicological advice given for all telephone consultations coming to the OPC. As such, she writes and reviews protocols, provides one-on-one consultations, offers electives and other continuing education opportunities at various levels for health-care providers and collaborates on toxicology research.

Director

Lutfi Haj-Assaad RN, BA, MBA

The director is accountable for all aspects of managing patient care services, including patient care delivery, operational planning, human resource development, financial management, quality management, education and research.

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Manager

Anne Gallo RN, BScN, CSPI

The manager is responsible for the day-to-day activities within the OPC through the co-ordination and facilitation of clinical activities and resources.

Advanced Nursing Practice Educator

Heather Ferries RN, BScN, MEd, CSPI

The advanced nursing practice educator is responsible for co-ordinating all education initiatives involving the OPC. These education initiatives include new staff orientation, ongoing education, public outreach, and health professional education.

Administrative Support

Donna Tedesco, Administrative Assistant and Dino Bernabeo, Technology and Information Support Specialist (TISS) provide both administrative and technical support to the OPC and its staff.

Division Director

Shinya Ito MD, FRCP(C)

The division head of Clinical Pharmacology and Toxicology at SickKids and the Department of Medicine at the University of Toronto is responsible for quality of care, professional practice, research and education as it applies to the OPC.

Toxicology Consultants

Prashant Joshi MD, FRCP(C)

David Juurlink BPhm, MD, PhD, FRCP(C), FACMT, FAACT

Gideon Koren MD, FRCP(C), FABMT

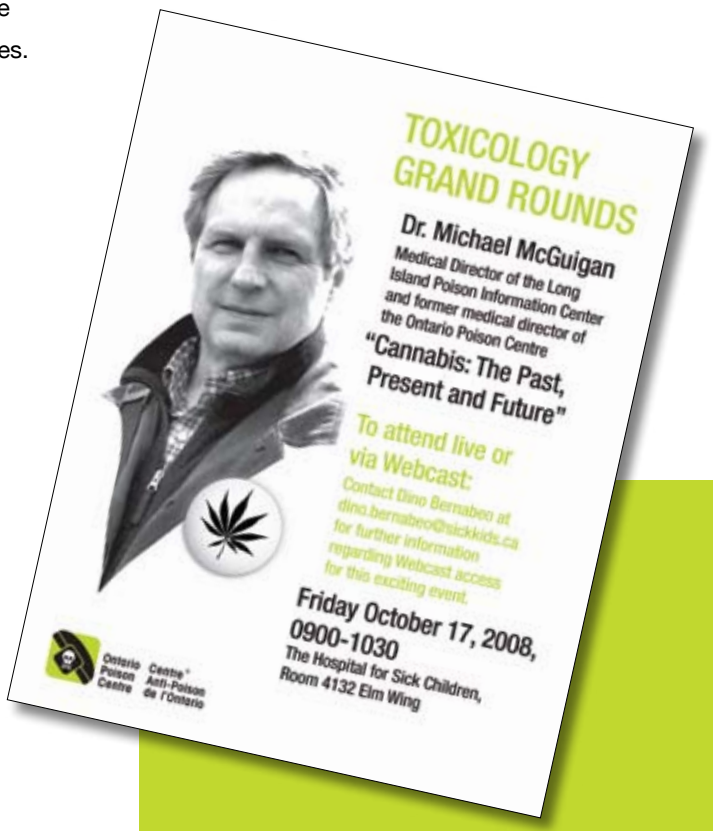
Marco L. A. Sivilotti MD, MSc, FRCP(C), FACEP, FACMT

The OPC is supported by a group of board certified medical toxicologists who provide physician consultations when the care of a poisoned patient is beyond the scope of practice of the Poison Specialists.
They also participate in the toxicology education and research at the OPC.

Mycology Consultant

James Scott BSc, PhD, ARMCCM

The mycology consultant is an Associate Professor in the Division of Occupational and Environmental Health at the Dalla Lana School of Public Health, University of Toronto. He provides mycological consultation to the OPC, collaborating with the interprofessional team in the management of mushroom exposures.



Education

The medical staff have appointments in the Faculty of Medicine at the University of Toronto and have affiliations with the Division of Clinical Pharmacology and Toxicology. In 2008, seventeen physician electives and one fellowship trainee rotated through the OPC.

Other learning opportunities include weekly interprofessional case rounds with participation by the Medical Director, consultant toxicologists, Advanced Nursing Practice Educator, Fellows and Poison Specialists.

The OPC has also offered observational experiences for pharmacy, medical, and nursing students. In 2008 the OPC offered a 12 week placement for a Ryerson nursing student in his final year of study. The focus was on poison prevention and outreach education in the community, which culminated in the development of a transportable booth display to be used at various community safety events.

In 2008, seventeen physician electives and one fellowship trainee rotated through the OPC.

The medical, nursing and pharmacy staff of the OPC continue to present at various conferences and other educational events in order to provide toxicology education to our health-care professional colleagues throughout Ontario.

A school teacher calls the OPC looking for poison information to teach her class. The Advanced Nursing Practice Educator spends time reviewing appropriate teaching messages and strategies with her. Poison prevention materials and activity sheets are mailed to the school for the children.

Distance Education Project

As the OPC was in the process of developing the satellite site at Montfort Hospital in Ottawa it was faced with the challenge of providing orientation to new staff hired to work at a distant location. In response to this challenge, a team at the OPC received a generous grant from The Change Foundation and the Government of Ontario to investigate web-based distance education strategies.

Using web-based technologies, the project team developed a blended learning solution that addressed many of the educational needs of the Centre.

Orientation

The orientation phase of the project involved a blended learning solution that included a series of computer-based, self-directed learning modules, traditional classroom style lectures using webcasting technology, and on-site preceptored shifts with a senior colleague.

Ongoing Education

Through the use of web-based technology, weekly interprofessional Toxicology Rounds are now broadcast over the web. Staff are able to participate in these rounds while working at the Montfort site as well as at home.

Using web-based technologies, the project team developed a blended learning solution…

Community of Practice

A monthly speaker series has been introduced, where respected experts from around the world are brought in to present on topics relating to toxicology. These grand rounds presentations are also broadcast via the web, with participants logging in from across Canada. Through this vehicle, a community of practice is developing; bringing those whose practice directly involves the poisoned patient closer together.

An RN calls the OPC about two teens in the Emergency Department (ED) that were brought in by police after ingesting plant seeds in an attempt to get “high”. They are extremely agitated, hallucinating, combative and seizing. The Poison Specialist recommends that an antidote may be indicated and consults with the physician on-call. The antidote is recommended and information is provided regarding antidote dosage and potential side effects. The teenagers remain in critical care for 48 hours until their symptoms improve.

Statistics

The OPC responded to 60,013 calls in 2008. In addition, the OPC completed 42,241 follow-up calls. Follow-up calls are intended to assess the effectiveness of treatment and the need to alter treatment recommendations, as well as to determine the medical outcome of the poison exposure. Including follow-up calls, the OPC managed a total of 102,254 calls.

Why do individuals call the OPC?

- 52,519 (88%) call about a human poison exposure
- 7,494 (12%) call for information

Exposures may involve substances that have been swallowed or ingested, splashed on the skin or in the eyes, inhaled, injected, or as a result of a bite or sting. Calls for information include questions about poison prevention and medication safety.

Poison Exposures versus Poisonings

Not all calls to the OPC involve a serious poisoning. Many calls may involve an exposure to a product or substance that is considered minimally toxic or involve an amount that is considered non-toxic. In many cases these patients do not develop symptoms of poisoning. OPC data, therefore, refers to all poison exposures regardless of the severity of symptoms and outcome.

Site of the caller

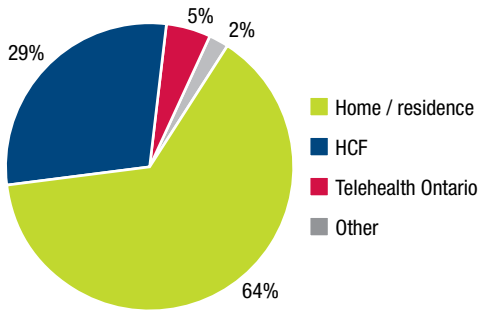
The majority of the calls 38,291 (64%) were made by members of the public from their home or another private residence.

As many as 17,437 calls (29%) were placed by a health-care professional at a health-care facility (HCF) seeking advice on how to treat a poisoned patient. These health-care professionals call from various sites ranging from academic health science centres, to community hospitals, emergency clinics and family physician offices, to remote hospitals or nursing stations. Our Poison Specialists are prepared to provide advice to any health-care professional regardless of the resources available at the caller's organization.

Telehealth Ontario referred 2,863 calls (5%) to the OPC for advice from a qualified Poison Specialist.

The remaining calls originated from other sites including schools, workplaces, pharmacies, nursing homes, restaurants or other public areas.

Caller site



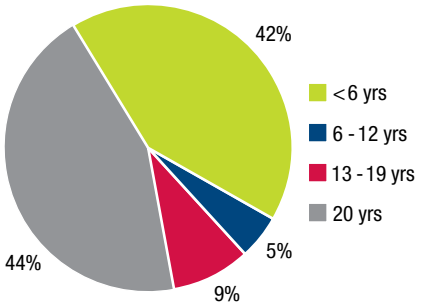
A gentleman calls the OPC after using bleach and toilet bowl cleaner together. He inhaled the fumes and is now coughing, short of breath and having difficulty speaking. The Poison Specialist explains that a toxic gas has been created by mixing these two products together. The caller is advised to call 911 for immediate assistance.

Statistics continued

Who is exposed?

Of the 52,519 poison exposures, 22,334 (42%) involved children younger than six years old; 2,393 (5%) occurred in children six to 12 years old; 4,690 (9%) occurred in teenagers and young adults, ages 13 to 19 years; and 22,978 (44%) occurred in adults 20 years and older and the remaining cases had no age related information.

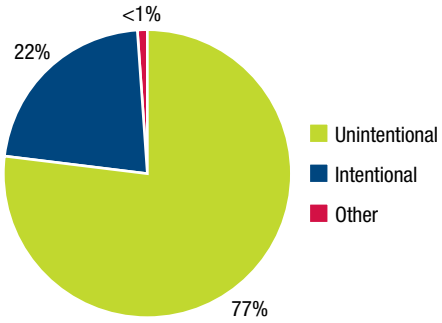
Age of Human Exposures



Why do poison exposures occur?

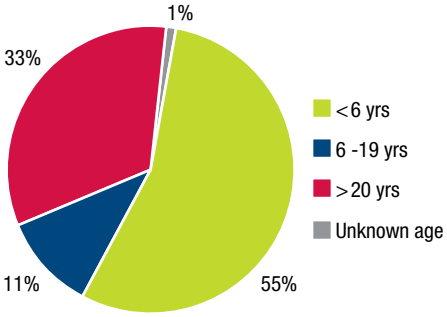
Unintentional exposures accounted for 40,204 (77%) poison exposures reported to the OPC. Unintentional exposures are generally unplanned events that are predictable and preventable. In 2008, 4,317 (8%) of all exposures were directly related to errors that occurred while taking or administering medicine.

Reason for exposures



Of the unintentional exposures reported to the OPC 22,266 (55%) involved children less than six years of age, 4,320 (11%) occurred in children between the ages of six and nineteen and 13,151 (33%) involved adults 20 years and older. These numbers highlight the need for poison prevention education in all age groups.

Unintentional exposures



Intentional exposures including suicide attempts, substance abuse and misuse of products, accounted for 11,924 (22%) poison exposures reported to the OPC.

Unintentional exposures are generally unplanned events that are predictable and preventable.

What are the common substances of exposures?

Common substances of exposure include both pharmaceutical and non-pharmaceutical agents. Pharmaceutical substances include prescription and non-prescription medicines including vitamins, herbal and homeopathic medicines. Examples of non-pharmaceutical substances include chemicals, plants, and alcohol.

By utilizing poison exposure data health policy analysts can evaluate the effectiveness of health promotion strategies. For instance, since Health Canada first recommended restrictions on the routine administration of cough and cold products in children, in 2007, the incidence of exposures to these substances in children has significantly decreased.

Top 10 substances involved in all human exposures

Substance/s	Examples
Pain medicines	acetaminophen, aspirin, ibuprofen
Sleeping pills and anti-anxiety medicines	diazepam, lorazepam, quetiapine
Household cleaning products	bleach, cleaners, detergents, disinfectants
Antidepressant medicines	amitriptyline, bupropion, paroxetine, sertraline
Personal care products	creams, deodorants, mouthwash, perfumes, soaps
Alcohols	alcoholic beverages, ethanol, isopropanol, methanol
Foreign bodies	glass, silica gel, thermometers, toys
Cardiovascular (heart) medicines	atenolol, atoravastatin, enalapril, verapamil, digoxin
Antihistamines	cimetidine, diphenhydramine, hydroxyzine
Cold and cough medicines	chlorpheniramine, dextromethorphan, pseudoephedrine

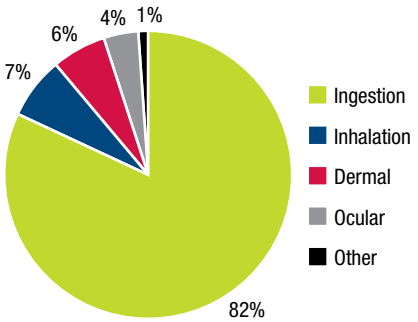
Top 10 substances involved in exposures in children <6 years old

Substance/s	Examples
Household cleaning products	bleach, cleaners, detergents, disinfectants
Pain medicines	acetaminophen, aspirin, ibuprofen
Personal care products	creams, deodorants, perfumes, soaps, toothpaste
Foreign bodies	glass, silica gel, thermometers, toys
Topical products (for external use)	diaper cream, steroid creams, hydrogen peroxide
Vitamins	child and adult multivitamins
Plants	bittersweet, calla lily, dieffenbachia, jimson weed
Cold and cough medicines	chlorpheniramine, dextromethorphan, pseudoephedrine
Pesticides	insect repellants with DEET, rodenticides, moth balls
Gastrointestinal (stomach) medicines	antacids, laxatives, proton pump inhibitors

Statistics continued

What are common routes of exposure?
Ingestion is the most common route of exposure. Other common routes include inhalation, dermal and ocular exposures. The remaining one percent of exposures occur via various other routes.

Route of exposure



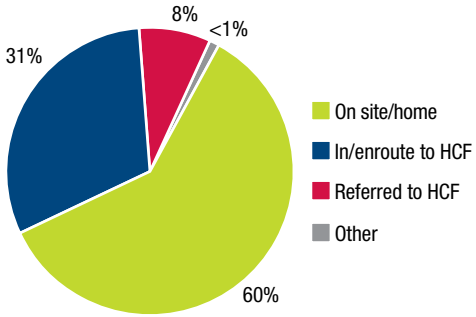
Where do poison exposures occur?
Most poison exposures 50,825 (97%) occurred in the individuals own home or home of a friend or relative. The workplace was the site of 936 (2%) exposures while 302 (<1%) exposures took place at a school.

Where are poison exposures treated?
The majority of exposures 31,637, (60%) were managed at the site of the exposure (usually a home) with the expert advice and support provided by one of our Poison Specialists.

The OPC provides a vital public service by preventing unnecessary emergency department visits thereby saving significant health-care dollars.

20,732 (39%) poison exposures reported to the OPC were treated in a HCF. In 16,534 (31%) of the exposures, the patient had arrived at or was already en route to a HCF, at the time the OPC was called. In 4,198 (8%) exposures the OPC referred the patient to a HCF.

Treatment site



The OPC provides a vital public service by preventing unnecessary emergency department visits thereby saving significant health-care dollars.

What was the outcome of the poison exposures?
As part of the standard of care the Poison Specialists determine the impact of the exposure on the patient. This maybe accomplished through subsequent follow-up calls to determine the known medical outcome or it maybe extrapolated using the Poison Specialist's expert clinical judgment.

The OPC was consulted on 69 patients who went on to die during their hospitalization. The majority of deaths (62) were directly related to their exposure. The remaining seven patients had underlying medical conditions and happened to be on medications from which they were having toxic effects. In these latter cases, the medication may have been contributory, but not solely responsible for the death.

Of the 62 patients who died as a consequence of their exposure, some were found in cardiac arrest were resuscitated but succumbed later. Some presented to hospital too late for any treatment to be effective and others died despite optimal medical care. Except for two patients who died because of carbon monoxide exposures, including one toddler, the majority of those who died had intentionally taken the substance that led to their death. In many cases, this was due to drug abusing behaviour (one methamphetamine, five cocaine and six opioid deaths). In other cases, death resulted from inadvertent overuse of a medication. Deaths occurred, in descending order, from analgesics, drugs of abuse, psychiatric medications, cardiac medications and a potpourri of other chemicals and medications.

Medical Outcome	Number of Exposures	Percentage	Medical Outcome Definition
Exposures with a known medical outcome			
No effect	3,205	6.1	No symptoms developed
Minor effect	4,223	8.1	Minimal symptoms occurred that resolved quickly
Moderate effect	3,185	6.1	Symptoms developed that required some form of medical treatment
Major effect	680	1.3	Life threatening symptoms developed or the symptoms resulted in permanent disability
Death	69	0.1	Death
Medical outcome based on clinical judgment			
Non toxic	7,143	13.6	Substance, route or amount of the substance involved was not likely to cause symptoms
Minimally toxic	30,269	57.7	Substance or amount of the substance expected to cause minimal symptoms
Potentially Toxic	3,342	6.4	Unable to follow to determine outcome of the exposure

Ontario Poison Centre Data

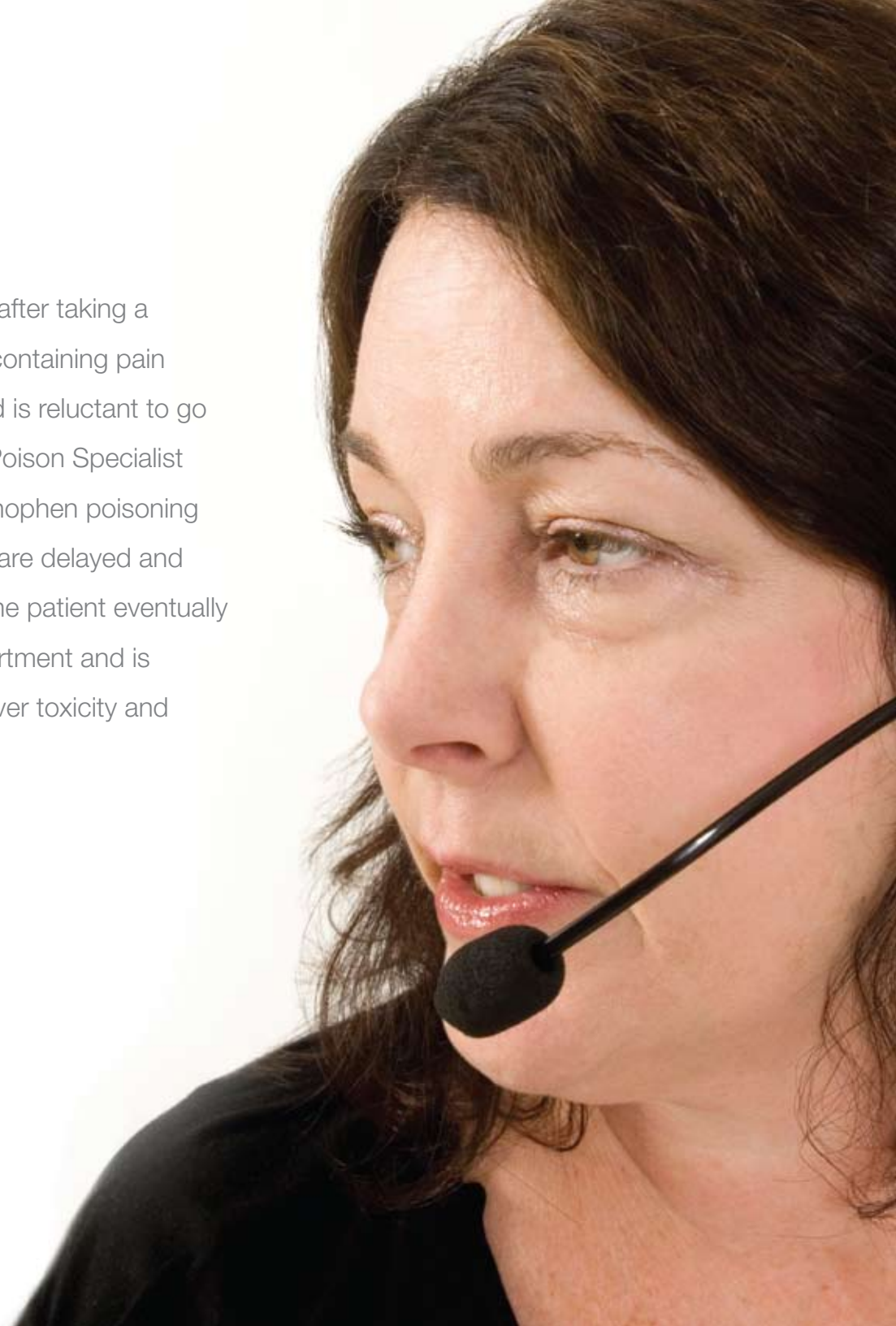
Data collected by the OPC conforms to the AAPCC's National Poison Data System coding uniformity standards. Ontario poison incidence data can be compared to the larger American database and other provincial statistics (in provinces where statistics are available). OPC data is collected by Poison Specialists during initial telephone consultations and follow-up calls.

OPC data can be useful to both government and health agencies to determine the full impact of poison exposures and to develop important health promotion initiatives. The OPC advocates for mandatory reporting of all poisonings to ensure better understanding of the true scope of the problem. Although some provincial data is available, a national Canadian database is non-existent. A Canadian database with real-time surveillance and reporting capabilities would facilitate national strategies to respond to "cluster" events or national trends.

OPC data can be utilized to monitor trends and publish alerts in order to prevent potential exposures and deaths; to monitor the effectiveness of health promotion campaigns (example, the use of cough and cold medicines in children), to carry out post-marketing surveillance of new pharmaceutical products, to scrutinize the safety of similar products and packaging, as well as to meet mandatory provincial reporting requirements.

Data can be purchased by contacting the manager of the OPC. Revenues generated by the purchase of OPC data assists with educational and health promotion initiatives.

An adolescent female calls the OPC after taking a large amount of an acetaminophen-containing pain medicine. She has no symptoms and is reluctant to go to the emergency department. The Poison Specialist spends time explaining that acetaminophen poisoning is extremely serious, that symptoms are delayed and immediate treatment is necessary. The patient eventually agrees to go to the emergency department and is treated with an antidote preventing liver toxicity and possible death.



Acknowledgements

The Ontario Poison Centre has a number of informal affiliations with organizations and individuals who support the work of the centre. We would like to thank the following for their ongoing contributions:

Dr. Bob Johnson
Curator of Amphibians and Reptiles, Toronto Zoo

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Consultant Biochemist

Andrew Lentini
Curatorial keeper, Amphibians and Reptiles, Toronto Zoo

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Director, Clinical Services, Montfort Hospital

Tom Mason
Curator of Invertebrates and Birds, Toronto Zoo

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Occupational Health Physician

Trace Elements Laboratory
London Health Sciences Centre and St. Joseph's Health Care London

Dr. Zul Verjee
Clinical Biochemist, Paediatric Laboratory Medicine, The Hospital for Sick Children

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[1]Bronstein, AC, Spyker, DA, Cantilena, LR, Green, JL, Rumack, BH, and Heard, SE. (2008). 2007 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 25th Annual Report. Clinical Toxicology, 46, 927-1057.