

## 2009 Annual Data Report

### A message from the Medical Director

The Regional Center for Poison control and Prevention Serving Massachusetts and Rhode Island provides a critical public service – the management and treatment of poisoning exposures. This year we helped over 58,000 individuals and healthcare providers understand and treat poison exposures, ranging from the simple to the life-threatening.

Our services are confidential and we are focused on exceptional patient care and customer service. Highly trained poison specialists are available to help answer questions 24 hours a day, 7 days a week at no charge. Not only do we offer reassurance to parents of children who have gotten into too much toothpaste, or share our knowledge with elderly callers who have concerns about their medications, but we also offer our expertise in clinical consults to medical professionals throughout both states on complicated medical cases.

The Poison Center is also a cost saving mechanism for the treatment and triage of poison exposures. Over 75% of all cases in Massachusetts are successfully treated at the site of the exposure – thereby eliminating the need for those callers to seek care at their local emergency department.

It is unknown who and when we will help next, but we do know that poisonings happen – and we are always committed and prepared to react appropriately. We are charged to meet the challenges of the year ahead as we grow stronger as an organization in our work to serve the public and healthcare professionals of Massachusetts and Rhode Island.

The Poison Center recognizes that poisonings are a preventable injury. In response, the Poison Center's public education committee continues its work to reduce both unintentional and intentional poisonings through prevention education and public awareness of the Center's services.

I hope you'll find our 2009 annual report useful, as a tool to better understand who we are, and what we are able to do for the people of our region.

Michele Burns Ewald, MD  
Medical Director

## Executive Report

2009 was an active year for the Regional Center for Poison Control and Prevention Serving Massachusetts and Rhode Island.

- In 2009, the Poison Center managed 58,064 poison exposure and general information calls, which translates to almost 160 calls every day.
- 11,658 of the exposure calls, often from hospital healthcare professionals, required repeated follow up communication to provide the appropriate care and management of the patient.
- Over 75 physicians, nurses, and pharmacists were trained in the discipline of Toxicology and Pharmacology so that the care of future poisoned patients is ensured.

The Poison Center remains an important element in both the public safety and health systems of Massachusetts and Rhode Island by reducing the number, severity and frequency of both intentional and unintentional poisoning exposures. The Center works closely with the Departments of Health in both states to educate and inform the public with targeted direct education and outreach regarding the preventability of poisonings, with various media campaigns, and other advertising opportunities. Every month between 15,000 and 25,000 educational materials are distributed to the public including such items as phone stickers, magnets, and informational brochures advertising the toll-free emergency hotline phone number, **(800) 222-1222**.

The Center continues to be a resource to federal, state and local officials in the identification and management of biological as well as chemical exposures. In addition, the Center participates in local and nationwide toxicology surveillance systems targeting the early identification of a potential toxic exposure. In tandem with the Massachusetts Department of Public Health and the Rhode Island Department of Health, we are continuously working to define and increase our capabilities and technologies. As such, the MA & RI Regional Center for Poison Control and Prevention is prepared to play a vital role in any potential large or small scale emergency. The Center's staff is committed to continually enhancing their knowledge base with subsequent growth and presence in the emergency preparedness arena.

As national security continues to be of foremost concern, the Center's resources remain a vital part of the public health response to chemical and biological terrorism threats as well as health outbreak management. Accordingly, all segments of the population, including the general public, law enforcement, legislative bodies, first responders, health care providers, and public health specialists have utilized the poison control center as an emergency preparedness resource. The Center participates in Epi-X, and the National Poison Data System, both of which are monitored by the CDC for potential early detection of a mass toxic exposure or bioterrorism response.

Locally, the Center provides its resources for regional exercises that test emergency protocols and identify gaps in preparedness. We remain committed to maintaining a level of excellence in emergency preparedness and continually train our health care professionals in such areas of pandemic medication management and biological warfare issues so that they can function as a knowledge base resource in a time of need.

This report provides information on the demographics and substances involved in poisonings as reported to the Center during 2009, as well as the treatments and outcomes of these cases.

### Services:

- Emergency Hotline for Public # **(800) 222-1222**
- Telephone Consult Service for Health Care Facilities
- Children's Hospital Boston In-Patient Toxicology Service
- Beth Israel Deaconess Medical Center Consult Toxicology Service
- Harvard Medical Toxicology Fellowship

- Public Education and Outreach
- Professional Education
- Data Analysis
- Clinical Research

Please visit our website at [www.maripoisoncenter.org](http://www.maripoisoncenter.org) for additional information.

**Mission:**

The mission of the Regional Center for Poison Control and Prevention is to provide assistance and expertise in the medical diagnosis, management and prevention of poisonings involving the people of Massachusetts and Rhode Island.

By maintaining its excellent standard of care in both clinical research and professional development, the Center continually strives to improve the quality of medical care given to its patients.

In addition, the Center develops and implements public education and information campaigns to prevent injuries due to intentional and unintentional poisonings.

**What is a poisoning?**

A poisoning is caused by any substance that has a toxic, or damaging, effect to the tissues and/or systems of the body upon exposure. Exposures can occur through ingestion, inhalation or through dermal and ocular contact.

Any substance may become a poison if used incorrectly, or in the wrong amount, or by a person with a particular sensitivity to the product. Common poisons include household products, industrial and environmental chemicals, medications (prescription, over-the-counter, veterinary, herbal), illicit drugs, and bites and stings.

**Whom do we serve and why do they call?**

In 2009, the Center managed a total of 58,064 incoming calls, including 51,771 exposure calls and 6,293 information calls.

Type of Call	2003	2004	2005	2006	2007	2008	2009
Information	15,859	12,705	12,179	11,096	10,416	9,638	6,293
Exposure to Poison	52,739	53,880	53,031	51,693	50,839	52,340	51,771
Total	68,598	66,585	65,210	62,789	61,255	61,978	58,064

The total population for the region served by the Center is 7,397,416 residents, according to the 2000 Census data. The population of Massachusetts is 6,349,097 (86%) and Rhode Island is 1,048,319 (14%).

Type of Call - Massachusetts	2003	2004	2005	2006	2007	2008	2009
Information	12,653	10,301	10,238	9,397	8,777	7,795	7,491
Exposure to Poison	48,874	45,106	44,687	43,292	42,231	43,230	42,237
Total	56,526	55,407	54,925	52,689	51,008	51,025	49,727

Type of Call - Rhode Island	2003	2004	2005	2006	2007	2008	2009
Information	2,954	2,159	1,774	1,455	1,252	1,311	1,415
Exposure to Poison	7,415	7,703	7,790	7,585	7,481	7,748	8,093

Total	10,369	9,862	9,564	9,040	8,733	9,059	9,508
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### Where do poisonings happen?

Of the 51,771 exposure calls managed in 2009 by the Poison Center, 39,636 calls (77%) were exposures that took place in a home residence; the remaining 12,135 calls (23%) occurred in other locations including schools, workplaces and other public areas.

### Where do our calls come from?

Of the 51,771 exposure calls managed in 2009 by the Poison Center, 39,636 (77%) of the total exposure calls came from a home residence, 8,787 (18%) came from health care facilities or medical professionals, and the remaining 3,348 (5%) come from various other sources such as public area schools or workplaces.

Residence Calls	77%
HCF Calls	18%
Other Calls	5%

### Where are these poisonings managed?

In 2009, the majority of the poison exposure calls 39,636 (77%) were managed on-site and did not require treatment at a healthcare facility.

Management Site	2009
Onsite	39,056
HCF	11,658
Unknown	251
Refused	167

Of interest are those calls that were managed at a health care facility but resulted in the patient being treated and released. While it is unclear whether a pre-hospital call could have prevented the trip to the emergency room, there is a clear potential cost savings that exists if the Poison Center is involved prior to the hospital.

Treated and released	4,848	41%
Admitted: Critical	1,972	17%
Admitted: Non-critical	1,527	13%
Admitted: Psychiatric	814	7%
Lost to follow-up	2,499	21%

### Who are the poisoned?

In 2009, as in previous years, calls were split equally between males and females. Of the exposure calls received, gender was recorded for 51,253 (99%) of calls in 2009.

Gender	2009	MA	RI	Other
Male Exposure	24,865	21,293	3,896	676
Female Exposure	26,706	21,769	4,175	762
Unknown	200	175	22	3
TOTAL	51,771	42,237	8,093	1,441

The general age of the caller was captured for 51,571 (99.6%) of cases. Over 51% (26,526) of the exposure calls involved children 5 years of age and younger. Specifically, the greatest number of exposure calls in any single age category involved two-year-olds; 9,553 calls for this age group were received, representing over 18% of the exposure calls. Overall, the distribution of the age or gender has not changed in recent years.

AGE	TOTAL	MA	RI	Other
<1	2,550	2,092	367	91
1	7,521	6,166	1,125	230
2	9,343	7,666	1,378	299
3	4,128	3,395	625	108
4	1,811	1,499	263	49
5	1,123	938	160	25
6-12	3,636	3,226	529	81
13-19	2,854	3,238	541	75
20-29	3,540	2,802	597	141
30-39	2,805	2,234	500	71
40-49	3,268	2,584	633	51
50-59	2,255	1,783	427	45
60-70	1,308	1,066	214	28
70+	1,767	1,359	380	28
Unknown Child	106	88	11	7
Unknown Adult over 20	2,394	1,962	323	109

#### What are the most common agents of poisonings?

Products involved in poisonings are regularly divided into drug and non-drug categories. The percentage of calls and products in each category has remained consistent over the past several years.

Category: Non Drug	Exposure Calls	%
Cosmetics/personal care products		10%
Cleaning substances (household)		10%
Foreign bodies/toys/miscellaneous		5%
Alcohols		4%
Plants		3%
Other		68%
<b>Total</b>		

#### Top Five Substances Most Frequently in Non-Drug Related Poison Exposures - 2009

Substance	Most Common Products
Cosmetics/personal care products	Creams, lotions, make-up, toothpaste, deodorant, mouthwash, nail products, hair care products, perfume, soap
Cleaning substances (household)	Bleach, household cleaners, dishwasher/laundry detergents, disinfectants, ammonia
Foreign bodies/toys	Silica gel, bubbles, thermometers, glow products, toys
Alcohols	Alcoholic beverages, rubbing alcohol
Plants	Gastrointestinal irritants, Toxic/Non-toxic Species

The top five non-drug agents most commonly involved in poisonings are detailed below. Other common agents include alcohol, arts/crafts/office supplies, chemicals, food products, and hydrocarbons.

Category: Drug	Exposure Calls	%
Analgesics	7,025	21
Sedative/hypnotics/antipsychotics	3,709	11
Topical preparations	2,507	11
Antidepressants	2,551	8
Cold and cough preparations	3,533	8
Other	13,481	41
<b>Total</b>	<b>32,806</b>	

#### Top Five Substances Most Frequently in Drug Related Poison Exposures - 2008

Substances	Most Common Products
Analgesics	Ibuprofen, Acetaminophen, Opioids, Aspirin, Naproxen
Sedative/hypnotics/antipsychotics	Benzodiazepines, Atypical Antipsychotics, Lithium
Topical preparations	Diaper Rash Products, Topical Steroids, Hydrogen Peroxide
Antidepressants	Serotonin ReUptake Inhibitors, Trazodone, Amitriptyline
Cold and cough preparations	Dextromethorphan, Non-Opioid Preparations

In 2009, drug substances were a reported agent in 32,806 exposure calls. Analgesics, such as acetaminophen, continue to be the most commonly reported drug agent involved in poison exposures. Appendix C provides a more detailed analysis of the most common substances reported in exposure calls for both drug and non-drug categories.

#### What was the intent related to the poisoning?

The majority of poison exposures in 2009 were recorded as unintentional. Of the 51,771 exposure calls, 7,558 (12%) that were classified as intentional poisonings; of those 5,032 (67%) were recorded as suspected suicides managed by the Center.

Suspected suicide	5,032
Misuse	879
Abuse	1,146
Unknown	449

#### What was the result of the poisoning?

Of the 51,711 exposure calls recoded in 2009, 39,260 (76%) cases did not require follow-up by the Poison Center staff because the exposure was judged to cause only minimal effect or to be a non-toxic event. 2,466 (5%) cases could not be followed.

Cases Not Followed	N = 39,059
Minimal Effect	33,246
Judged Nontoxic	6,016
Unable to follow	2,466

In 2009, 10,114 (19%) poison exposures were followed to determine the medical outcome of the poisoning. Below are the results for those cases by category of medical outcome.

Definition of Medical Outcomes	2009
Minor Effect: The patient exhibited some symptoms as a result of the exposure, but they were minimally bothersome to the patient.	2,803

	The patient has returned to a pre-exposure state of well being and has no residual disability or disfigurement.	
Moderate Effect:	The patient exhibited symptoms as a result of the exposure that were more pronounced, more prolonged or more of a systemic nature than minor symptoms.	3,033
Major Effect	The patient exhibited symptoms as a result of the exposure. The symptoms were life-threatening or resulted in significant residual disability or disfigurement.	750
Death	The patient died as a result of the exposure or as a direct complication of the exposure which was unlikely to have occurred had the toxic exposure not preceded the complication. Only included are those deaths that are probably or undoubtedly related to the exposure.	28
Unrelated Effect	Based upon all information available, the exposure was probably not responsible for the effect(s).	534
No effect	The patient developed no symptoms as a result of the exposure.	2,898

### Summary of death cases

The deaths listed below are those cases reported to the Poison Center by health care facilities for the management of a suspected poisoning that resulted in a fatal outcome. In those cases where several substances were ingested, the cause of death was determined by the substance deemed to have had the most toxic effect.

Age	Male	Female	Substances
0-5	0	0	-
6-12	0	0	-
13-19	0	1	Unknown Drug
20-29	1	0	Metformin, citalopram, carbamazepine
30-39	7	2	Acetaminophen, diphenhydramine, clonidine, potassium cyanide, diltiazem, methadone, quetiapine, alprazolam, opiates, ethanol
40-49	3	1	Acetaminophen, ibuprofen, methadone, buprenorphine, benzodiazepines, tizanidine, amitriptyline, trazodone, warfarin, ethanol, Unknown Drug
50-59	1	5	Acetaminophen, aspirin, propoxyphene, benzodiazepines, desipramine, imipramine, ethylene glycol, carbon monoxide
60-69	4	1	Acetaminophen, aspirin, quetiapine, fluoxetine, diltiazem, lithium carbonate
70-79	0	0	-
80-100		2	Digoxin, Diltiazem
<b>Total</b>	<b>16</b>	<b>12</b>	

Category	%
Acetaminophen	18%
Antidepressant	18%
Toxic alcohol	11%
Cardiovascular	14%



Drugs of abuse	10%
Misc/Unknown	29%

The relatively small number of deaths reported to the Poison Center does not accurately represent the true significance of poisonings as a cause of acute injury and death in the region. In fact, poisonings are the leading cause of injury death in Massachusetts, surpassing motor vehicle occupant deaths by a factor of 2 to 3. In 2008, there were over 900 poisoning deaths among Massachusetts residents.

Many cases of poison fatalities are never reported to the poison center. Law enforcement, first responders, medical examiners, or other health care professionals who have initial contact with poisoned patients, may not call the center to report the poisoning when treatment advice is not required or when the patient is determined to be dead on arrival.

### Most Common Substances by Category 2009

The following tables describe the incidence of the most common exposures reported to the Center, divided by pharmaceutical (drug) and non-pharmaceutical (non-drug) substances and by frequency of the most common substances within each category. For each substance listed, both the number of cases in which it was involved and the percentage of all substance exposures are listed.

<b>Calls for All Substances, Non Drug, Top 5</b>	<b>Total</b>
<b>Cosmetics/personal care products</b>	
Dental care products	837
Hair care products	418
Mouthwash	511
Nail products	445
Cleansing/Lotions/Deodorant	2,063
<b>Category TOTAL</b>	<b>4,274</b>
<b>Cleaning substances (household)</b>	
Dishwasher detergents	350
Bleaches	637
Household Cleansers	2,040
Laundry	420
Miscellaneous cleaners	689
<b>Category TOTAL</b>	<b>4,136</b>
<b>Foreign bodies/toys/miscellaneous</b>	
Desiccant	719
Glow product	614
Toy	215
Thermometers/Mercury	100
Other	1,584
<b>Category TOTAL</b>	<b>3,232</b>

Alcohols



	Ethanol: beverage	1,124
	Ethanol: other	758
	Isopropanol	163
	Other	155
	<b>Category TOTAL</b>	<b>2,200</b>
<b>Plants</b>		
	Gastrointestinal irritant	243
	Non-toxic	210
	Toxic	885
	Other	438
	<b>Category TOTAL</b>	<b>1,776</b>
	<b>Other</b>	<b>11,560</b>
<b>Total Non Drug</b>		<b>27,178</b>

#### Calls for All Substances, Drug, Top 5

##### Analgesics

Acetaminophen	3,392
Aspirin	401
Opioids	1,525
Ibuprofen	2,066
Naproxen	200
Other	959
<b>Category TOTAL</b>	<b>8,523</b>

##### Sedative/hypnotics/antipsychotics

Atypical antipsychotic	1,180
Benzodiazepine	1,180
Other	696
<b>Category TOTAL</b>	<b>3,709</b>

##### Topical preparations

Diaper care/rash product	1,099
Topical steroid	280
Hydrogen Peroxide	263
Other	865
<b>Category TOTAL</b>	<b>2,507</b>

##### Antidepressants

Amitriptyline	127
Lithium	192
Serotonin ReUptake Inhibitor	1050
Trazodone	423
Other	759
<b>Category TOTAL</b>	<b>2,551</b>

**Cold and cough preparations**

Dextromethorphan	1,028
Without opioid	468
Other	144

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<b>Category TOTAL</b>	<b>1,640</b>
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<b>Other</b>	<b>13,878</b>
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<b>Total Drug</b>	<b>32,808</b>
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