

POISONING

An 18 month old boy drank tire cleaner from an unmarked container. He died later that same day. A 15 year old boy suffered a cardiac arrest after taking 5 "hits" of butane to get high. He could not be resuscitated. A 75 year old man ingested an unknown amount of acetaminophen in a suicide attempt. Two days later he went to a local emergency room with abdominal pain and was found to be in liver failure. He died 8 days later.

Defining The Problem

A poison is anything that someone eats, drinks, breaths in, or gets in their eyes or on their skin that can cause illness or death; poisons can be solids, liquids, gases, or aerosols.¹ Poisonings may be intentional or unintentional. Poisoning may be chronic or acute. Examples of acute poisonings include unintentional ingestions in toddlers, suicide attempts by poisoning in young adults, and unintentional drug overdose by a substance abuser. Examples of chronic poisonings include chronic lead poisoning by children living in old houses, chronic alcoholism, and chronic pesticide exposure in farm workers. This report will focus on acute poisoning as much is already being done in Ohio with regard to chronic poisoning.

Goals

Reduce death caused by poisoning.

<i>HP 2010 Goal</i>	<i>1.5 per 100,000</i>
OH 1999	5.2
US 1998	6.8

Reduce nonfatal poisonings.

<i>HP 2010 Goal</i>	<i>292 per 100,000</i>
OH 1998	identify baseline
US 1998	348.4

*Data Sources: Healthy People 2010
Ohio Child Protective Services*

Data

Poisonings are a significant cause of injuries and deaths in the United States (U.S.) and in Ohio. They are the third leading cause of unintentional injury deaths as well as suicide deaths in Ohio and the entire U.S. (See Appendix 1) In addition, in the U.S., nonfatal poisonings are among the top 20 causes of injuries for every age group. (See Appendix 2) Most poisonings can be prevented.

In 2000, poison control centers in the United States reported nearly 2.2 million poison exposures, 475,000 people were treated in health care facilities for poison exposure, and 920 exposures resulted in death. Most poisoning deaths are caused by pharmaceutical products, alcohol, gases and fumes, household products, and chemicals.²

National Data Sources:

National Vital Statistics System (NVSS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), National Hospital Ambulatory Medical Care Survey (NHAMCS), American Association of Poison Control Centers AAPCC

State Data Sources:

Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Central Ohio Poison Center, Cincinnati Drug and Poison Information Center, Greater Cleveland Poison Control Center, Hospital Discharge Data available through Ohio Hospital Association, Emergency Medical Services Data, and poisoning-specific data (drugs and alcohol) from the Youth Risk Behavior Survey (YRBS).



Costs & Consequences

National:

The total annual cost of poisoning-related injury and death exceeds \$7.6 billion among children aged 14 years and under. Children aged 4 years and under account for \$5.1 billion, or two-thirds, of these costs. Medical expenses associated with a poisoning exposure average \$925 per case. The average cost of inpatient hospital treatment for a poisoning exposure is \$8,700.³ Between 1996 and 1998, poisoning resulted in 1,252,904 years of potential life lost in the U.S.⁴

State:

For Ohio residents 0-24 years of age, between 1993 and 1997, the total monetary cost of fatal injuries due to poisonings, including lifetime productivity loss, medical, legal, and administrative costs, was \$20,877,871.⁵ Between 1996 and 1998, poisoning resulted in 32,635 years of potential life lost in Ohio.⁴

Risk Factors

- Children are at significantly greater risk from poisoning death and exposure than adults because children are more likely to ingest potentially harmful chemicals. In 2000, more than 1.1 million unintentional poisonings among children aged 5 years and younger were reported to the American Association of Poison Control Centers (AAPCC) Toxic Exposure Surveillance System (TESS)² Of all poisoning exposures, 52.7% occurred among children younger than 6 years of age.² In addition, 26 children aged 12 years and younger died from poisoning; 20 of these children were less than 6 years of age.
- Among children aged 5 years and younger, more than 50% of poisoning exposures come from nonpharmaceutical products such as cosmetics, cleaning substances, plants, foreign bodies, toys, pesticides, and art supplies. The rest come from pharmaceuticals.² Immediately calling a poison control center may reduce the likelihood of severe poisoning, decrease the cost of a poisoning incident, and prevent the need for a hospital emergency department (ED) visit.
- Both adolescents and seniors are at risk for both intentional and unintentional poisoning as well. Intentional poisonings among the adolescent and young adult populations are prominent, especially among females. In 2000, 65% of poisonings in people greater than 19 years of age were intentional.² Ninety four percent of adolescent deaths and 79% of adult deaths were intentional.²
- Seniors are also not immune to poisonings. They may ingest poisons intentionally as a suicide attempt or they may become poisoned unintentionally with their own prescription medications.
- Being in an unsupervised home setting is another important risks factor for poisonings; more than 90% of poison exposures occur at a residence.²
- Abuse of substances such as drugs and alcohol puts one at risk for both intentional and unintentional poisoning, e.g. overdose.



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Policy Issues

National Legislation:

The Poison Prevention Packaging Act of 1970 authorizes the U.S. Consumer Product Safety Commission to require the use of child-resistant packaging for toxic substances used in and around the home (such as aspirin, prescription drugs, and household chemical products like drain cleaners, automobile antifreeze, and turpentine). Child-resistant packaging are containers that the majority of children under five years of age cannot open within a set period of time.

The Poison Center Enhancement and Awareness Act of 2000 provided \$20 million in FY 2001 to enhance poison prevention and treatment services. These funds support the national education and awareness campaign and evaluate its effectiveness in increasing the number of U.S. residents who call the toll-free poison control number. Another priority is developing uniform patient-management guidelines for poison control centers to ensure that all callers receive consistent, accurate guidance and information. In addition, further work is needed to enhance poison control centers' capacity for early detection and reporting of clusters of toxic exposures.²

Public Law 87-319 authorizes the President of the United States to annually designate the third week in March as National Poison Prevention Week. The purpose of this law, signed in September, 1961, was for local communities to raise awareness of the dangers of unintentional poisonings and to take steps to prevent their occurrence.

State Legislation:

Ohio Revised Code (ORC):

3701.20 Poison control network established: The director of health shall establish, promote, and maintain the Ohio poison control network; designate regions within the network; and designate poison prevention and treatment centers within each region in order to reduce the mortality resulting from and the expenditures incurred because of accidental, homicidal, suicidal, occupational, or environmental poisoning, educate the public and health care professionals concerning the prevention and treatment of exposure to poison, and organize poison prevention and treatment activities on a regional basis to avoid duplication and waste.

3701.25 Occupational diseases; report by physician to department of health: Every physician attending on or called in to visit a patient whom he believes to be suffering from poisoning from lead, cadmium, phosphorus, arsenic, brass, wood alcohol, mercury, or their compounds, or from anthrax or from compressed air illness and such other occupational diseases and ailments as the Department of Health shall require to be reported, shall within forty-eight hours from the time of first attending such patient send to the Director of Health a report.

Ohio Administrative Code (OAC)

3701-67-01 Definitions for Child Fatality Review, poisoning is an example of a "cause of death".

Existing Programs

National:

Nationwide toll-free number for poison control.
(1-800-222-1222)

Campaign to raise awareness of poison control services.

State:

Central Ohio Poison Center:

The Central Ohio Poison Center provides the people of Central and Southeastern Ohio with state-of-the-art poison prevention, assessment, and treatment. The Central Ohio Poison Center handles more than 40,000 poison exposure calls annually. Nurses and pharmacists, specially trained and certified in poisoning treatment, staff the Poison Center, supervised by a Board-Certified Medical Toxicologist. The Poison Center's services are used by the public, medical professionals (in pre-hospital, hospital and community practice), industry and human service agencies. The Central Ohio Poison Center's **Be Poison Smart!**[™] Program provides poison prevention education to healthcare providers, students, parents and the general public in cooperation with agencies such as the Ohio Department of Health, Head Start and the Ohio Hospital Association.

Cincinnati Drug and Poison Information Center:

Cincinnati Drug & Poison Information Center is highly involved in working with the community. Their primary goals are to help prevent poison or drug exposures from becoming life threatening and to decrease the incidence of drug abuse, chemical dependency and misuse. They focus on education/distribution of carbon monoxide (CO) detectors, toxicovigilance (a concept that allows them to alert the community to new patterns or trends that are potentially toxic in order to prevent future risks), and inhalation abuse prevention. The Prevention Research Unit (PRU) at Cincinnati Drug & Poison Information Center implements programs that promote healthy drug free lifestyles. The services provided are designed to impact various segments of the community at large, wherever high-risk populations are located. Some of the particular services provided by the PRU include: Responding To Every Adolescents Cry For Help (Reach), Nomad (No More Alcohol And Drugs) Mobile Prevention Project, and the Tobacco Intervention/Prevention Project (TIPP)

Greater Cleveland Poison Control Center:

The Greater Cleveland Poison Control Center is the State of Ohio designated Poison Prevention & Treatment Center for Northeast Ohio. Information covering the management of poisoning is provided by specially trained drug & poison information technicians with a follow-up system to monitor the patient outcomes. Informational materials & educational programs are also available.

Ohio Statewide Programs:

The three poison control centers (see Appendix 3), which all report to the AAPCC TESS, are working together as the Ohio Poison Control Collaborative (OPCC). The OPCC recently received a grant from the Health Resources Services Administration, MCH Bureau, to standardize poison prevention education provided throughout Ohio. The funds will be utilized to develop the "Be Poison Smart" program as this standard.

In addition to the above programs, there are numerous programs in Ohio that address other causes of acute and chronic poisonings such as lead poisoning, alcohol abuse, suicide attempts by poisoning and substance abuse.



Recommendations to Prevent Poisoning

Improve surveillance

1. Create a statewide surveillance system and database for poisoning-related exposures, hospitalizations, and deaths.
 - Data sources should include the 3 regional poison control centers, hospital discharge data (OHA), and vital statistics death records (ODH).
 - Ideally, all hospitals and coroners in Ohio would be required to report all poisoning exposures to one of the Ohio poison control centers.
 - The surveillance system should include deaths, hospitalizations, emergency department visits, and all ingestion occurrences reported to Ohio Poison Control Centers.

Target resources toward high-risk groups

2. Implement a statewide education and awareness program (*Be Poison Smart™*) to prevent poisoning among children younger than 5 years, and evaluate its effectiveness.
3. Implement a statewide education and awareness program to prevent suicide and suicide attempts by poisoning among adolescents and young adults, and evaluate its effectiveness.
4. Require stronger explicit warnings on packages of over-the-counter medications that can result in serious side-effects when taken in an overdose, and evaluate the effectiveness of this intervention.

5. Implement a statewide education and awareness program to prevent both intentional and unintentional toxic ingestion among elders, and evaluate its effectiveness.

Empower communities

6. Create a permanent and stable funding mechanism to support the operational costs of the 3 regional poison control centers in Ohio. These poison control centers should report all cases to the Ohio statewide poison surveillance system and to the Toxic Exposure Surveillance System of the American Association of Poison Control Centers.
7. Implement a statewide program to raise public awareness of the national toll free telephone number, 1-800-222-1222, for reaching the nearest poison control center.
8. Implement regulations and building codes requiring carbon monoxide detectors in residences.
9. Encourage development of safety caps for medication containers that are harder for young children to open, yet easier for elders to open. Once developed, require their use in Ohio.

Possible Funding Sources

- Funding through hospitals that use poison control centers, ideally, all hospitals in Ohio, perhaps tied to a mandatory reporting system.
- Funding through the Environmental Protection Agency for work-related and pesticide poisonings.
- Funding through insurance companies. Ideally, insurance companies could give consumers a break on their insurance if homes were made safer and poisoning risk was reduced. If less poisonings occurred, insurance companies would save money on emergency department visits and hospitalizations. This money could be use to fund programs and evaluate their effectiveness.

References:

1. American Association of Poison Control Centers. <http://www.aapcc.org/> (accessed June 25, 2002).
2. Litovitz TL, Klein-Schwartz W, White S, et al. 2000 annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. *American Journal of Emergency Medicine* 19(5):337-347, 2001.
3. National Center for Injury Prevention and Control. *Injury Fact Book 2001-2002*. Atlanta, GA: Centers for Disease Control and Prevention; 2001.
4. NCHS National Vital Statistics System for numbers of deaths, U.S. Bureau of Census for population estimates. Statistics compiled using WISQARS™ produced by the Office of Statistics and Programming, NCIPC, CDC.
5. Children' Safety Network National Injury Data Technical Assistance Center: Ohio Injury Information. "Injury Mortality Matrix, Summary: birth through 24 years of age". [Online] Available: <http://www.injuryprevention.org/info/data/oh.htm> (accessed August, 2002).
6. National Center for Injury Prevention and Control, Centers for Disease Prevention. "State Injury Profile for Ohio". [Online] Available: http://www.cdc.gov/ncipc/StateProfiles/sip_oh.pdf

Ohio Poison Centers

CENTRAL OHIO POISON CENTER

700 Children's Drive, Room L032
Columbus OH 43205

Emergency Phone: 1-800-222-1222; (614) 228-2272 (TTY)

Administrative Phone: (614) 722-2635

FAX: (614) 221-2672

Website: http://www.columbuschildrens.com/locator/sprofile.cfm?Service_ID=118&condition=#Services Available

CINCINNATI DRUG & POISON INFORMATION CENTER

REGIONAL POISON CONTROL SYSTEM

3333 Burnet Ave.
Vernon Place - 3rd Floor
Cincinnati, OH 45229

Emergency Phone: 1-800-222-1222

Administrative Phone: (513) 636-5063

FAX: (513) 636-5069

Website: www.cincinnatichildrens.org/dpic/

GREATER CLEVELAND POISON CONTROL CENTER

11100 Euclid Avenue
Cleveland, OH 44106-6010

Emergency Phone: 1-800-222-1222

Administrative Phone: (216) 844-1573

FAX: (216) 844-3242 (Poison Center)

Alternate FAX: (216) 844-5122 (Director)

Website: n/a

National

Total Population: 1996-1998 Deaths, 1997 Nonfatal Poisonings (unless noted)	Poisoning Deaths	Nonfatal Poisonings
	Rate per 100,000	Rate per 100,000
TOTAL	6.6	348.4
Race and ethnicity		
Black or African American	7.9	464.5
White	6.6	340.6
Gender		
Female	3.9	410.9
Male	9.3	281.6
Education level (aged 25 to 64 years)		
Less than high school	18.5 (1998)	DNC
High school graduate	15.2 (1998)	DNC
At least some college	6.2 (1998)	DNC
Select poisonings (nonfatal poisonings not age adjusted)		
Unintentional	3.8	268.0 (1996)
Suicides	1.9	63.0 (1996)
Children aged 4 years and under	0.4	460.0
Seniors aged 65 years and over	4.2	DNC

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.
Note: Rates are age adjusted to the year 2000 standard population.

Ohio

Total Population, 1999	Poisoning Deaths
	Rate per 100,000
TOTAL	5.2
Race and ethnicity	
Black or African American	8.7
White	4.8
Gender	
Female	3.5
Male	7.1
Education level (aged 25 to 64 years)	
Less than high school	DNC
High school graduate	DNC
At least some college	DNC
Select poisoning deaths	
Suicides	1.5
Unintentional deaths	3.2
Children aged 4 years and under	0.8
Seniors aged 65 years and older	4.5

DNA = Data have not been analyzed. DNC = Data are not collected. DSU = Data are statistically unreliable.

Note: Rates are age adjusted to the year 2000 standard population.