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Unintentional Poisoning Issue Brief

Unintentional Poisonings On The Rise

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Identifying a poison may seem like common sense; but often times, poisonings occur from a substance not traditionally thought to be a poison. According to the United States Department of Health and Human Services (HHS), a poison is anything that is capable of causing harm from being used by the wrong person, in the wrong way, or in the wrong amount.[1] Poisonings can occur through various types of exposure including: breathing in, ingesting, touching, or injecting a poisonous substance.[1] Unintentional poisonings occur when someone is harmed by a substance but was not expecting to be harmed (unlike intentional injuries such as suicides, assaults, and homicides). Unintentional poisonings in particular have become a large problem within the United States.

Picture from http://www.cdc.gov/injury/pressroom/story_archive/index.html

Each day, approximately 82 people are killed and over 1,900 are treated in emergency departments for unintentional poisonings.[2] In 2007, unintentional drug poisonings (composed largely of drug overdoses) became the leading cause of injury-related death in Ohio, overtaking motor vehicle crashes for the first time. The death rate attributed to unintentional drug poisonings increased 335 percent for Ohioans from 1999 to 2008. This was mainly due to increases in prescription drug overdoses.[3]

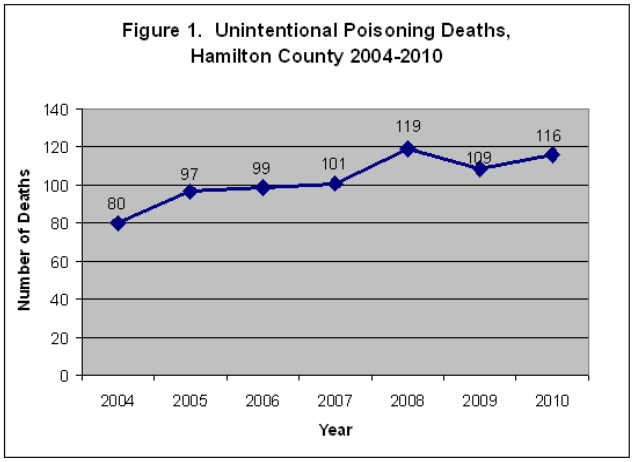
What Are The Common Causes Of Poisonings?

Table 1 lists common types of poisons as determined by the U.S. Department of Health and Human Services. Many of these poisons are common products that can be found in the home or workplace. As these potentially poisonous substances are so common in our daily lives, it is necessary to realize the risk of unintentional poisonings and to understand ways to prevent these injuries. The largest contributor to unintentional poisoning deaths is prescription drugs/medicines. The Centers for Disease Control and Prevention (CDC) states that in 2007, 93 percent of all the unintentional poisoning deaths in the United States were caused by drugs/medicines. Specifically, opioid pain medications (methadone, hydrocodone and oxycodone) were most commonly involved in these deaths.[2] Hamilton County also experienced a similarly high percentage (93.6 percent) of unintentional poisoning deaths due to drugs/medicines from 2004 to 2010. According to the CDC, nearly three of every four prescription drug overdoses are due to opioid pain medications (prescription painkillers) and in 2010, more than 12 million people reported using prescription painkillers without a valid prescription or in order to experience the feeling that they cause.[4]

Table 1. Common Types of Poisons

Prescription Medicines	Cleaning Products
Alcohol	Personal Care Products
Carbon Monoxide Gas	Automotive Chemicals
Illegal Drugs	Bites/Stings
Food Supplements	Hazardous Chemicals

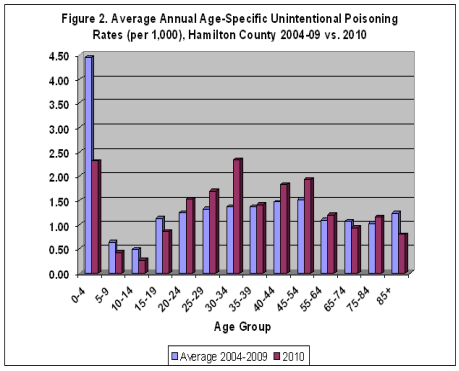
How Are Unintentional Poisonings Affecting Hamilton County?



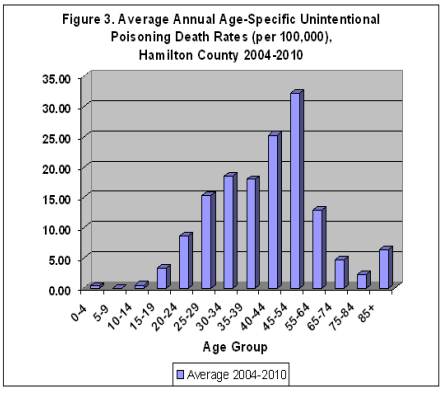
The rise in unintentional poisoning deaths across the nation and state can also be observed in Hamilton County. The number of deaths from unintentional poisonings has increased dramatically from 80 in 2004 to 116 in 2010, a 45 percent increase in only seven years. Over the course of thirteen years, 1997 to 2010, the number of unintentional poisoning deaths increased from 25 to 116; amounting to over a 400% increase. Figure 1 shows the number of unintentional poisoning deaths for each year from 2004 to 2010. According to the Web-based Injury Statistics Query and Reporting System (WISQARS) provided by the CDC, in 2005 the average cost from medical and work loss due to a single unintentional poisoning death in Ohio was $935,654.[5] In 2005, Hamilton County experienced 97 unintentional poisoning deaths, amounting to an estimated $90 million in medical costs and lost productivity. If the same average cost of a single unintentional poisoning death from 2005 was applied to the 721 deaths from 2004 to 2010, it would amount to nearly $675 million.

Who Is Most At Risk?

Age, race and sex are important factors to consider when characterizing injuries of Hamilton County residents. There was considerable variation in age-specific rates of unintentional poisonings in Hamilton County, suggesting that some groups are at higher risk. *All rates are presented on a per 1,000 or 100,000 residents basis.* Figure 2 displays the average annual rates (age-specific) for all Hamilton County unintentional poisonings from 2004 to 2010. These unintentional poisonings include emergency department visits (67.6 percent), hospitalizations (23.2 percent), and deaths (9.2 percent). The three age groups that had the highest unintentional poisoning rates and highest risks in 2010 were residents under five years of age (2.3 per 1,000), 30-34 years (2.3 per 1,000), and 45-54 years (1.9 per 1,000). From 2004-2010, residents less than five years of age experienced the most emergency department visits due to unintentional poisonings (1,262). Nearly two-thirds of these pediatric emergency department visits were caused by drugs and medicines. The greatest number of deaths (273) from 2004-2010 occurred within the 45-54 age group, aligning with national reports.[6] Not only did the 45-54 age group have the most unintentional poisoning deaths, but the group also had the highest average annual unintentional poisoning death rate as shown in Figure 3. When broken down on a treatment level basis from 2004-2010, black Hamilton County residents had higher average annual rates of hospitalizations (43.1 per 100,000) and emergency department visits (117.5 per 100,000) for unintentional poisonings than the rates among white residents (28.6 and 84.4 per 100,000, respectively). However, white residents had a higher death rate (13.8 per 100,000) from unintentional poisonings than the rate among black residents (11.4 per 100,000). Unintentional poisonings from 2004 to 2010 were distributed equally between the sexes (52.0 percent males and 48.0 percent females), but the death rate among male residents (18.1 per 100,000) was more than double the rate among female residents (7.9 per 100,000).



> *"Unintentional poisonings are the #1 reason for injury-related hospitalization in children 1-4 years of age at Cincinnati Children's Hospital."*
>
> *— Wendy J. Pomerantz, M.D., M.S.*
>
> *Cincinnati Children's Hospital Medical Center*



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Where Are The Unintentional Poisonings Occurring In Hamilton County?

Figure 4. Average Annual Unintentional Poisoning Death Rate by Place of Residence, Hamilton County 2004-2010

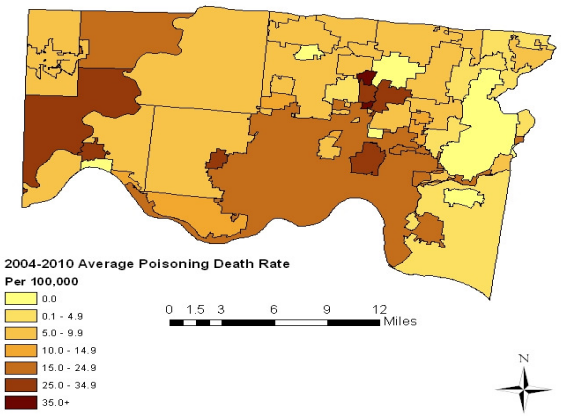
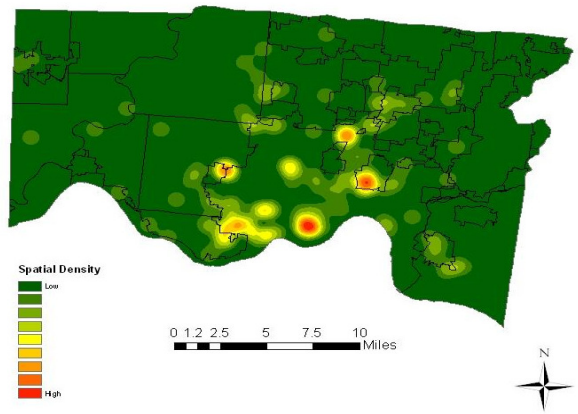


Figure 5. Spatial Density of Unintentional Poisoning Deaths by Place of Residence, Hamilton County 2010



A useful way of measuring where poisonings are occurring is by examining the unintentional poisoning rates for each municipality (i.e., city, village, or township) in Hamilton County. The five highest average annual unintentional poisoning rates during 2004-2010 in Hamilton County occurred in Arlington Heights (3.3 per 1,000), Lincoln Heights (3.0 per 1,000), Norwood (2.3 per 1,000), Addyston (2.2 per 1,000), and Lockland (2.2 per 1,000). The five lowest average annual unintentional poisoning rates (per 1,000 residents) during 2004-2010 in Hamilton County were in Wyoming (0.5), Evendale (0.5), Madeira (0.6), Indian Hill (0.7), and Symmes Township (0.7). When determining which areas within Hamilton County were most affected by unintentional poisonings, it is also important to consider the death rates and spatial clustering of deaths. Death rates allow us to compare the burden of unintentional poisoning deaths between Hamilton County municipalities. Figure 4 shows the average annual unintentional poisoning death rate for municipalities within Hamilton County from 2004-2010. The municipalities that had the highest average annual death rate per 100,000 residents from 2004-2010 were Arlington Heights (54.2), Lincoln Heights (36.4), Reading (32.2), Cheviot (31.7), and Whitewater Township (31.0). The spatial density map, Figure 5, allows for a geographical assessment of where unintentional poisoning deaths were highly concentrated. In Figure 5, areas that approach a red color were areas with a high density of unintentional poisoning deaths; whereas, green areas indicate a relatively low density of unintentional poisoning deaths. From Figure 5, it can be determined that highly concentrated areas of unintentional poisoning deaths existed within the City of Cincinnati and the City of Norwood.

Where Does Public Health Get The Data?

The data used in this report were gathered from the Hamilton County Injury Surveillance System (HCISS). The HCISS is a collaborative surveillance effort led by Hamilton County Public Health and supported by our local hospitals, the Hamilton County Coroner's Office, and the Greater Cincinnati Health Council. Data on non-fatal, unintentional poisonings were obtained from local hospitals systems and represent emergency department visits and hospitalizations (inpatients); data on fatal, unintentional poisonings were obtained from the Hamilton County Coroner's Office. Figure 6 shows the breakdown of unintentional poisonings as reported through the HCISS. The bottom layer, emergency department visits, represents the least severe injuries, yet the largest number of patients; the next two layers, hospitalizations and deaths, represent the most severe, costly injuries to residents of Hamilton County. An unknown number of unintentional poisonings could not be identified in the HCISS, because these individuals did not seek medical care.

Figure 6: Unintentional Poisoning Injury Pyramid, 2004-2010

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How We Can Prevent Unintentional Poisonings?

There are many simple ways to prevent unintentional poisonings from occurring. As children under five are one of the high risk groups, it is important to take preventive measures to keep poisons away from children. According to the American Association of Poison Control Centers (AAPCC), one way to prevent potential poison exposure is to keep all chemicals, cleaners, medicines and other poisons out of the reach and sight of children. AAPCC also advises the use of locks on cabinets and drawers that contain these substances. Additionally, keeping pills in child-proof bottles and not leaving prescription medicines on the counter or in reach of children will help prevent unintentional poisonings[7]. The AAPCC also has recommendations to reduce poisonings in adults. One practice to help prevent unintentional poisonings is to never mix household chemicals together, as this can create dangerous gases. Never share your prescription medicines with friends, family or acquaintances and be sure to dispose of medications properly. This will reduce the amount of prescription medicines/drugs available for uses other than medicinal purposes. Checking with your doctor about drug interactions can also help reduce unintentional poisonings. It is pertinent to always be sure to follow the directions that are associated with medicines to reduce the likelihood of harmful side effects.[7]

"The best way to prevent an unintentional ingestion to children <5 years of age is to lock up and store medicines, household cleaners, and pesticides out of a child's reach."

- Mike Gittelman MD, FAAP

Cincinnati Children's Hospital Medical Center

Healthy People 2020 Goals

The Healthy People 2020 goals were released in December 2010. Healthy People is a government organization that sets forth 10-year national objectives for improving the health of all Americans.[8] Specific targets for poisoning injuries are given by the Injury and Violence Prevention (IVP) goals 9.3, 9.4, and 10. Table 2 describes what these goals are and shows where Hamilton County stands in terms of reaching those goals as of 2010. In 2010 Hamilton County did not meet either of the two goals that are related to unintentional and undetermined poisoning deaths (IVP 9.3, 9.4). The 2010 unintentional/undetermined poisoning death rates for all residents and for residents 35-54 years in Hamilton County were 15.1 and 35.4, respectively. These rates are much greater than the current national goals of 11.1 deaths per 100,000 for all ages and 21.6 deaths per 100,000 for ages 35-54. Conversely, in 2010 Hamilton County was below the Healthy People 2020 goal of 304.4 nonfatal poisonings per 100,000 (264.6). While Hamilton County is not meeting all the goals, it is possible to make some positive changes in regard to unintentional poisonings. The use of the aforementioned prevention methods and awareness by Hamilton County residents will help in alleviating the burden of unintentional poisonings on the community.

Table 2. Healthy People 2020 Goals

Goal	Hamilton County
IVP 9.3: Maintain the baseline rate of 11.1 deaths per 100,000 for unintentional and undetermined poisonings.	15.1 deaths per 100,000
IVP 9.4: Maintain the baseline rate of 21.6 deaths per 100,000 for unintentional and undetermined poisonings for the 35-54 year old age group.	35.4 deaths per 100,000
IVP 10: Maintain the baseline rate of 304.4 nonfatal poisonings per 100,000.	264.6 poisonings per 100,000

Concerns about poisons or drugs? Contact the Cincinnati Drug and Poison Information Center (513.636.5111) or the American Association of Poison Control Centers (1.800.222.1222)

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