

Virginia Injury Report

A Report on Poisonings in Virginia from 1999 – 2004 February 2007

From the desk of...

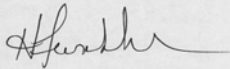
Dear Injury Prevention Advocate:

Of the almost 400,000 exposures reported to Virginia Poison Control Centers during 1999-2004, over half occurred among children 5 and younger. Poisoning continues to be a leading cause of injury related hospitalizations and death in Virginia and nationwide. In observance of National Poisoning Prevention Week (March 18-24, 2007) the Virginia Department of Health, Division of Injury and Violence Prevention has issued this report on poisoning.

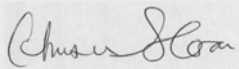
This is the first of a series of quarterly reports that will be issued by the Division of Injury and Violence Prevention focusing on leading mechanisms of injury and injury related death across the lifespan. Our hope is that by providing these reports to injury prevention advocates across the state the information will be useful in local prevention efforts and continue to bring attention to the public health issue of injury. This report and all future reports will be available for download at www.vahealth.org/civp.

Thank you for your work in preventing injury in your community.

Sincerely,



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Director of Unintentional Injury
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Data and Evaluation Coordinator*

Introduction

According to the Centers for Disease Control and Prevention (CDC) and the American Association of Poison Control Centers, poison exposure is defined as the ingestion of or contact with a substance capable of producing toxic effects. The definition goes on to further classify poisoning as a poison exposure that results in bodily harm.^{1,2}

In 2004 in the United States there were 30,308 deaths related to poisoning, accounting for approximately 38 deaths a day. Nationwide there were 857,687 non fatal poison related injuries cared for in U.S. hospital emergency departments. The rate of all poison related deaths has steadily increased in the United States from 7.08 per 100,000 in 1999 to 10.26 per 100,000 in 2004. Of particular concern is the increase in unintentional poisonings. A recent study conducted by the CDC found that unintentional mortality rates in the United States have increased every year from 1999 – 2004, resulting in a 62.5% increase during the five year period. This same study found a 62% increase among unintentional poisoning deaths in the state of Virginia over the same five year period. (MMWR)

This report examines Virginia poison related hospitalization discharge data, mortality data, and Virginia Poison Control Center data over a six year period from 1999 – 2004. Hospital discharge data were coded using ICD-9-CM E-codes recommended by State and Territorial Injury Prevention Director's Association (STIPDA).³ Mortality data was coded using ICD-10 code. This report uses the ICD-10 injury mortality framework developed by The International Collaborative Effort (ICE) on Injury Statistics, sponsored by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS).² All rates in this report are age adjusted using the 2000 U.S. Census population.

Case Briefs

Case One: Mistaking it for her eye drop medication, a 61 year old female put several drops of instant glue into her left eye. Her eyelids and lashes were immediately sealed shut by the adhesive. Attempts to rinse the eye were not successful. She eventually had the adhesive removed by an ophthalmologist and was treated for corneal injury. Two weeks later, her pain had resolved and she had normal vision.

Case Two: During a visit to a grandparent's home, a 2 year old female was discovered screaming and standing next to an open container of hair straightening lotion. Blisters were later noted on her lips, chin and hand. She refused to eat or drink anything. Examination at the hospital revealed superficial mucosal burns in the mouth and throat which slowly healed over the following ten days.

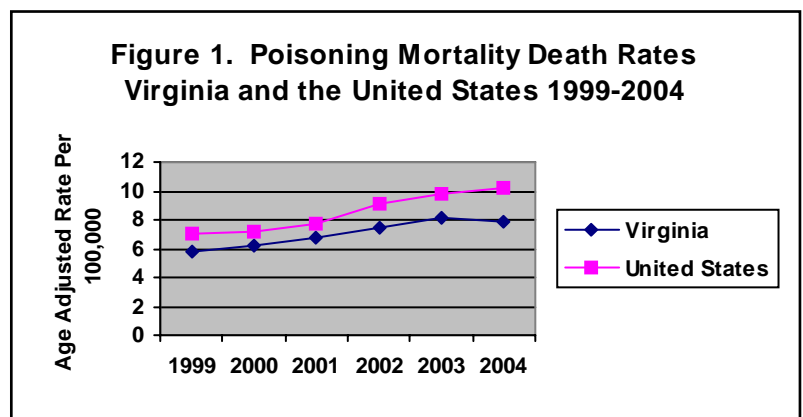
Case Three: A 25 year old male painter was working in a small unventilated room, applying a stain blocker to a large portion of the ceiling. After about twenty minutes, he began to experience nausea, extreme dizziness and a headache. Coworkers called the poison center, and were instructed to move the patient into fresh air immediately. His symptoms resolved within fifteen minutes and he was able to return to work.

Case Four: A 16 year old female ingested at least 30 tablets of acetaminophen at home after school. She was upset because of an incident with a friend earlier that day. She had no symptoms, and did not tell anyone about the ingestion until late that night, when she awoke her parents to report sudden abdominal pain and nausea. She arrived at the hospital approximately sixteen hours after the overdose. Her laboratory values indicated early liver failure. Despite receiving the antidote and aggressive treatment, she expired five days later from fulminant liver failure.

Case Five: A 42 year old male amateur snake collector was bitten on the hand while feeding his captive black Pakistani cobra (*Naja naja*). He was transported by helicopter from his rural home to a tertiary care center. The poison control center located the closest sources of antivenom for this exotic snake species, and arranged for a supply to be flown to Virginia from the Bronx Zoo in New York and the Florida Antivenom Bank in Miami. The patient received fifteen vials of the antivenom and recovered rapidly. He was discharged two days later.

Poison Mortality

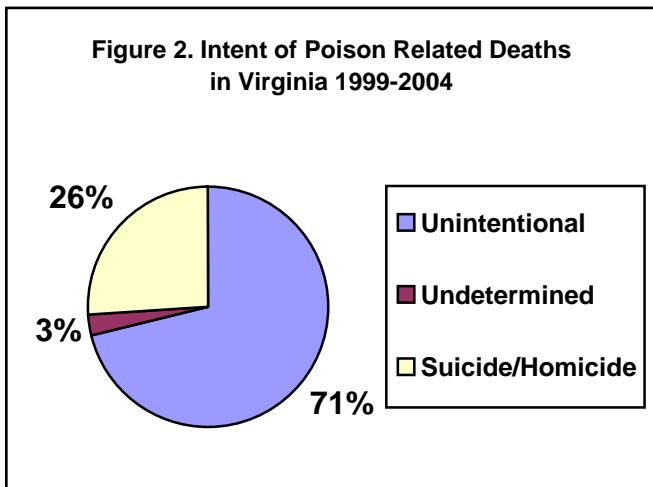
From 1999 to 2004, a total of 3,163 poisoning deaths occurred in Virginia. The age adjusted poisoning death rate increased steadily from 1999 until 2003, at which time the death rate reached 8.2 per 100,000. The rate then declined slightly in 2004 to 7.9 per 100,000. While Virginia death rates have remained below National rates, they have followed a similar pattern of increasing with the exception of the slight drop in 2004 (Figure 1).



Death rates in males increased over the course of the six year period from 7.9 in 1999 to 10.7 in 2004. Overall females had lower death rates than males, with the exception of 2000 and 2001. In those years females experienced a spike in death rates, with rates of 12.3 and 13.4 respectively. Both males and females 35-44 years old had higher rates than those of all other age groups throughout the six year period (Figure 2). Overall, for the six year period the male death rate (9.4) was 24% higher than the female death rate (7.6).

Whites had higher rates of poisoning death than their Black (5.9) and Hispanic (2.5) counterparts, with an overall rate of 8.04 per 100,000 for the time period. Mortality among whites was more than three times that of Hispanics with a race ratio of 3.2, while mortality among blacks was more than two times that of Hispanics with a race ratio of 2.4.

Unintentional Poison Mortality

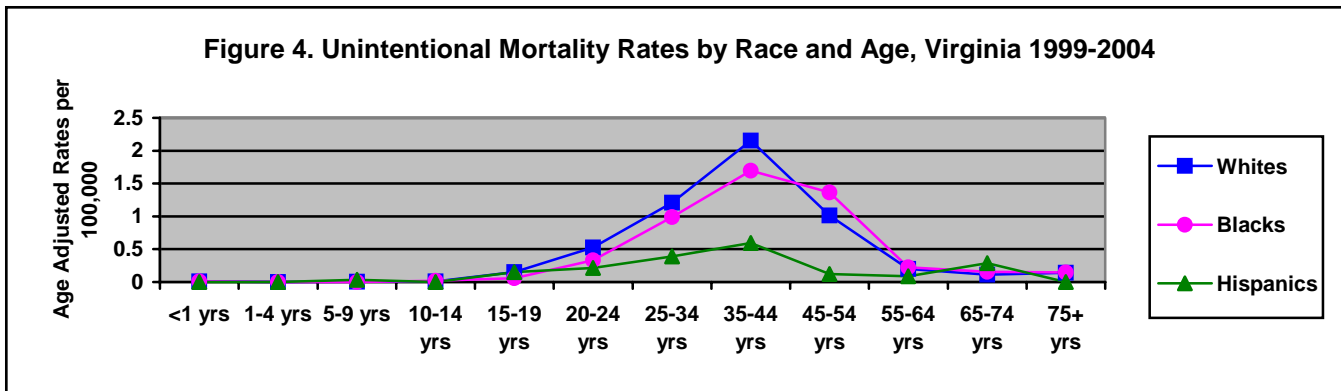
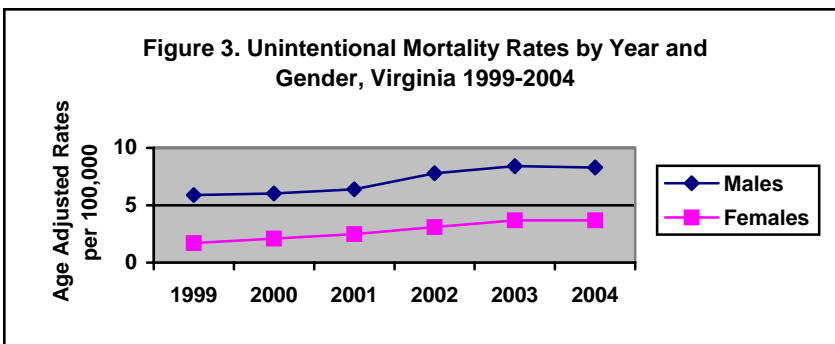


Over the six-year period, 71% of the 3,163 poisoning deaths were determined to be unintentional. Suicide and homicide accounted for 26% of the deaths, while the intent of the remaining 3% of deaths was undetermined (Figure 2). Similar to all poisoning death rates, there was a steady increase in unintentional poisoning deaths from 3.8 per 100,000 in 1999 to 6.0 per 100,000 in 2003; remaining constant through 2004.

The unintentional death rate for males increased from 5.9 to 8.3 per 100,000 population over the course of the six years. At the same time, rates for

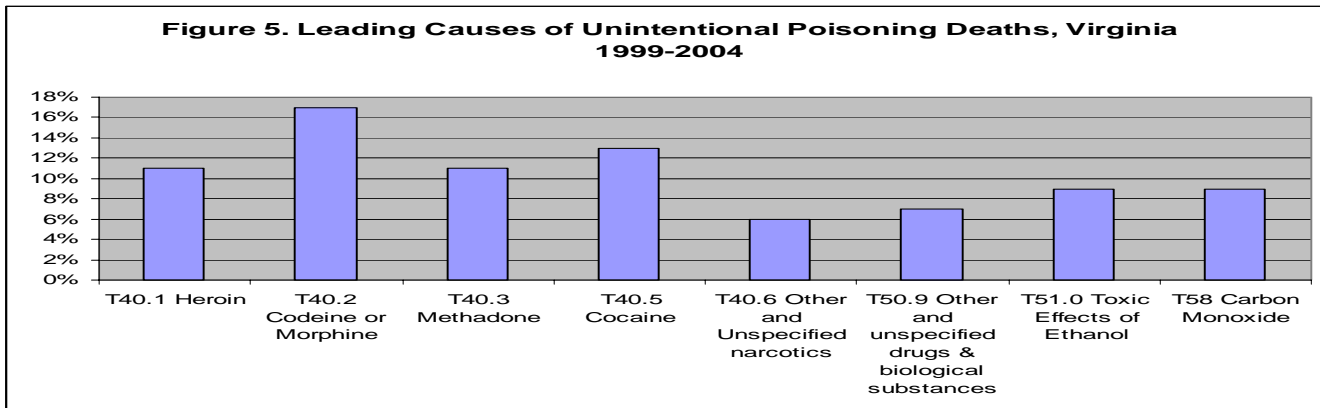
females increased from 1.7 to 3.7 per 100,000 population (Figure 3). The largest segments of the population affected by unintentional poisoning deaths for the period were males between the ages of 35-44, with a rate of 2.5 per 100,000.

Whites had higher unintentional death rates (5.5) than Blacks (4.9) or Hispanics (1.8). Mortality among whites was more than three times higher than that of Hispanics with a race ratio of 3.1, while mortality of blacks was more than two times higher than that of Hispanics with a race ratio of 2.7. As with all mortality deaths, whites had higher rates in all age categories except 45-54 and 65-74 year olds (Figure 4).



The leading causes of unintentional poisoning deaths for the time period were; Codeine/Morphine, Cocaine, Heroin, Methadone, Toxic Effects of Alcohol, Other unspecified drugs, medications, and biological substances, Other Narcotics, Alcohol, unspecified, and Carbon Monoxide (Figure 5). While rankings varied slightly, the same eight leading causes were identified for all mortality, unintentional mortality and hospitalizations during the six year period. When broken down by age groups, exposures that could be attributed to “controlled substances” (those seen in Figure 5) were

predominant among young and middle age adults. Young children and senior citizens predominantly experienced poisonings related to medications and gas/vapor exposure (i.e. carbon monoxide).

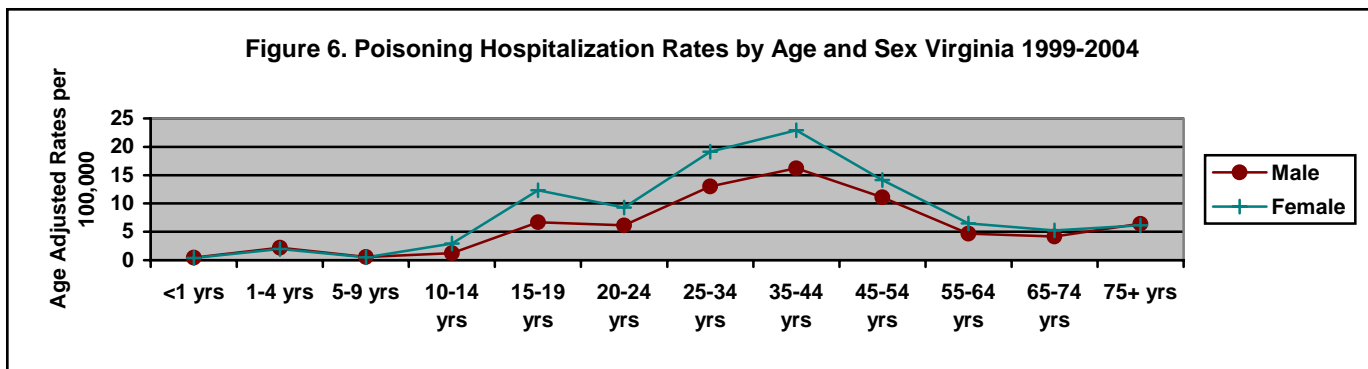


Poison Morbidity

During 1999-2004, there were 39,731 hospitalizations in Virginia with a poisoning related diagnosis. More than half (53%) of the poisoning hospitalizations were classified as self-inflicted, with 20% of cases not having an intent classification. 81% of cases were admitted through Emergency Departments with an additional 15% of cases admitted as referrals from other health care facilities. Of the 39,731 hospital discharges, 68% were discharged to their homes and 25% were transferred to other healthcare facilities. Admissions ranged from less than one day to 421 days, with 9% of patients being discharged in less than 24 hours and 32% of patients being admitted for one day. The average length of stay was 3.2 days.

From 1999 – 2004, the average poisoning hospitalization rate for Virginia was 91.4 per 100,000 a year. While males consistently had higher rates of poisoning mortality, females experienced higher rates of poisoning hospitalizations. Overall, for the six year period the rate among females (101.4) was 39% higher than the rate among males (72.8). As with mortality, the highest rates by age group were seen among the 35-44 year olds (Figure 6.).

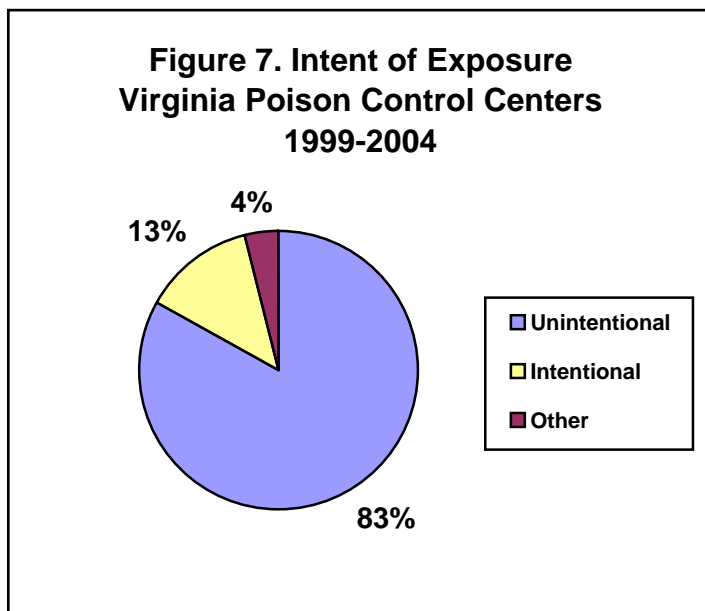
Whites had higher hospitalization rates (94.4) than Blacks (82.7) or Hispanics (30.5). Mortality among whites was more than three times higher than that of Hispanics with a race ratio of 3.1, while mortality of blacks was more than two times higher than that of Hispanics with a race ratio of 2.7.



Calls to Poison Control Centers

While children under 6 years of age were the least likely to be hospitalized or die from a poison exposure, nationally they accounted for approximately 51% of the more than 2 million calls to the 62 poison control centers in the United States⁴. In 2004, 93% of all reported poisoning cases occurred at a residence, with 3% occurring at a healthcare facility and 2% at a workplace. According to data collected by the American Association of Poison Control Centers, the most common chemicals involved in poisonings involving children younger than six years old were: cosmetics and personal care products (13.4%); cleaning agents (10%); analgesics (7.9%); and others such as vitamin and mineral supplements, cough and cold preparations, pesticides, and antihistamines.

Data was compiled from the three poison control centers serving Virginia over the period of 1999-2004; the Virginia Poison Center, Blue Ridge Poison Center, and the National Capital Poison Center. 51% (n=201,255) of exposures reported to the three Virginia Poison Control Centers from 1999-2004 occurred among children 5 and younger. The second highest amount of exposures occurred among those aged 20 to 39 accounting for 15% of exposures.



83.1% of all exposures were classified as unintentional (Figure 7). Unintentional poisonings far out numbered intentional, other, and unknown in every age group except 13-19 year olds. Among 13 to 19 year olds, 15,644 poisonings were classified as unintentional while 14,005 exposures were classified as intentional. Proportionally, intentional poisonings pose a greater problem amongst 13-19 years olds, accounting for 44.6% of their exposures, than any other age group. The most common route of exposure among the Virginia poison centers was ingestion/aspiration (78%, n=324,412) followed by dermal exposure (7.1%, n=29,249) and inhalation/nasal exposure (6.2%, n=25,714).

Prevention

Poisoning continues to have a significant public health impact on Virginians across the Commonwealth. Poisoning can be prevented. Health care agencies, safety advocates, and parents can all support a reduction in poisonings by:

- ❖ Putting the Poison Center phone number on or near every phone: 1-800-222-1222.
- ❖ Only taking medicine prescribed to you.
- ❖ Reading the label before giving medicine or using a household product. Turn on the light and put on your glasses if you need them to read.
- ❖ Taking medicine where children can't watch because they learn by imitating adults.
- ❖ Storing medications, cleaning products and other household chemicals away from children in locked cabinets.

- ❖ Using properly labeled and child resistant packaging.
- ❖ Disposing of old medication properly.
- ❖ Storing food and household products in different areas because it's easy to make a mistake.
- ❖ Keeping household products in their original containers.
- ❖ Not mixing household products together. You could make a poisonous gas.
- ❖ Encouraging age appropriate counseling and education by primary care providers.

Resources

Poison Prevention.org (<http://www.poisonprevention.org/>)

Virginia Poison Center (www.poison.vcu.edu) 1-800-222-1222

National Capital Poison Center (<http://www.poison.org/>) 1-800-222-1222

Blue Ridge Poison Center (<http://www.healthsystem.virginia.edu/internet/brpc/>) 1-800-222-1222

Division of Injury and Violence Prevention, Virginia Health Department
(<http://www.vahealth.org/civp/index.asp>)

Virginia Department of Mental Health, Mental Retardation and Substance Abuse (DMHMRSAS)
(<http://www.dmhmrzas.virginia.gov/>)

American Association of Poison Control Centers (<http://www.aapcc.org/>)

CDC Lead Poisoning Prevention Program (<http://www.cdc.gov/nceh/lead/default.htm>)

Home Safety Council (http://www.homesafetycouncil.org/safety_guide/safetyguide.aspx)

Data Limitations

There are a number of limitations regarding the surveillance of poisoning in Virginia. The counts of poisoning hospitalizations represent discharges not individuals. One individual may have been admitted and discharged from a hospital on several occasions throughout the period of study. Duplication of cases is also possible when including Poison Control Center call data as some calls result in a hospital discharge that will also be captured in the hospital discharge data. This same scenario is possible for mortality data as well.

As evidenced by the Virginia Poison Control Center's data, a large number of poison exposures are not captured by the hospitalization and mortality data sets. These data sets exclude poison exposures that did not result in a hospital admission or death (in particular, poison exposures in children less than six years old and exposures resulting from common household items). A more comprehensive surveillance system, that could include the Virginia Poison Control Centers, Emergency Medical Responders (EMS), and Emergency Room (ER) data, is needed to track and prevent poisoning in Virginia.

References

1. National Center for Injury Prevention and Control. Centers for Disease Control and Prevention. <http://www.cdc.gov/ncipc/factsheets/poisoning-overview.htm>
2. American Association of Poison Control Centers, 2004 Data Report http://www.poisonprevention.org/pdf/2004_Annual_Data_Report.pdf Accessed 07/24/2006.
3. Injury Surveillance Workgroup. *Consensus Recommendations for Using Hospital Discharge Data for Injury Surveillance*. Marietta (GA): State and Territorial Injury Prevention Directors Association; 2003.
4. International Collaborative Effort (ICE) on Injury Statistics. National Center for Health Statistics. Centers for Disease Control and Prevention. <http://www.cdc.gov/nchs/advice.htm>
5. WISQARS. Centers for Disease Control and Prevention. <http://www.cdc.gov/ncipc/wisqars/default.htm>

The Virginia Injury Report has been prepared by the Division of Injury and Violence Prevention, Virginia Department of Health with assistance from the Virginia Poison Center.

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