

DROWNING

DESCRIPTION:

Drowning occurs when breathing is impaired because water or another liquid blocks a person's airway.



Washington State Goal Statement

To decrease deaths and hospitalizations due to unintentional drowning

National Healthy People 2020 Objectives

- Reduce unintentional drowning deaths from 1.2 per 100,000 in 2007 to 1.1 deaths per 100,000.

Statement of the Problem in Washington State

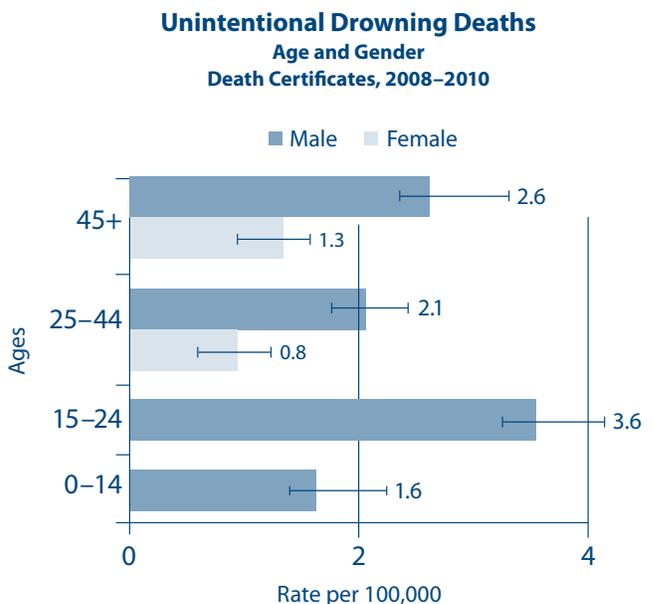
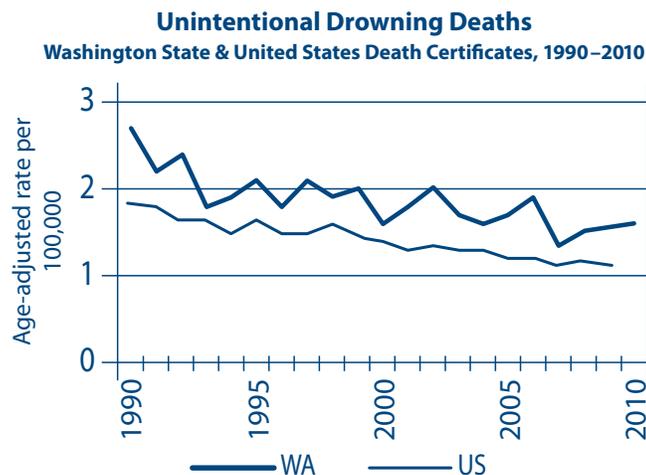
Some of the most popular pastimes in Washington State are swimming, boating, and other forms of water recreation. In some circumstances, these activities can prove dangerous and fatal. Drowning is a complex injury issue. There is no single safety device that protects against all types of drowning. Understanding and practicing the "four wisdoms" are critical for water safety. They are: supervision, environment, gear, and education.

Washington State Data

Washington's unintentional drowning rates are higher than the national rate. However, over the past 28 years, drowning rates in Washington have steadily declined. In the latest data available from 2010, the unintentional drowning rate in Washington State was 1.6 per 100,000. There were 133 Washington State residents who died from unintentional drowning, including 17 boating-related drowning deaths.

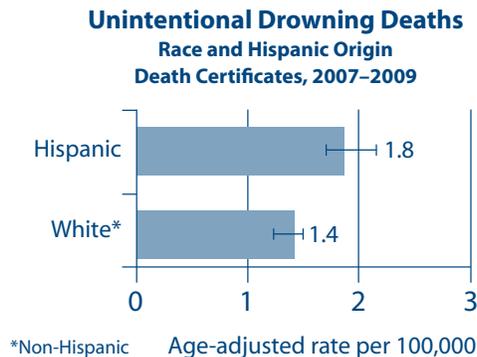
Age and Gender

From 2008–2010, males in the state were more likely to die from drowning than females. The highest death rates were for males between the ages of 15–24 years. Females younger than 25 had fewer than 20 deaths. The chart does not include them.



Race and Ethnicity

In Washington State during 2007–2009, African Americans, American Indians and Alaska Natives, Asian, and Pacific Islanders had fewer than 20 drowning deaths. The chart below does not include these groups. No racial group with stable death rates had death rates different from whites. The relationship of race, Hispanic origin, poverty, and education on drowning rates has not been widely researched.



Washington State Child Death Review Data

From 1999–2007, state residents between the ages of 0–17 accounted for 197 unintentional drowning deaths. Local child death review teams in the state completed 139 (67.1 percent) reviews of those 197 deaths.¹ Insights from these reviews include:

- 70 percent of the deaths occurred in open water (in a lake, river, pond, creek, or in the Puget Sound).
- 23 percent of the deaths occurred in a bathtub, a hot tub, a swimming pool, or a wading pool.
- Infants were most likely to drown in a bathtub.
- About 49 percent of children ages 1–4 drowned in open water.
- Most of the swimming pool deaths occurred in the 1–4 age group.
- 89 percent of the drowning deaths of older children and adolescents occurred in open water.
- A lifeguard was present in four of the drowning deaths.
- Only five children were noted to be wearing a life jacket at the time of their drowning.
- 85 percent of these deaths were preventable.

Healthy Youth Survey Data

In the 2010 Washington State Healthy Youth Survey, 52 percent of the Grade 8 students, 41 percent of the Grade 10 students, and 36 percent of the Grade 12 students said they always wear a life jacket when boating.

Emergency Department Visits and Cost Data

For every child 14 years and younger who dies from drowning, seven children get emergency department care for nonfatal submersion. More than half of these children are either hospitalized or are transferred to another facility.² Nonfatal drownings can cause brain damage with long-term disabilities that include memory problems, learning disabilities, or permanent loss of basic functioning. The cost of one fatal drowning event, including direct costs and lost productivity, has been estimated at \$1.1 million in 2011 dollars.³

Risk and Protective Factors for Children

Nationally, infants under age one most often drown in bathtubs, buckets, or toilets.⁴ Children can drown in as little as an inch of water. Therefore, they are at risk of drowning in bathtubs, buckets, diaper pails, toilets, and in other places where minimal water has accumulated. Many infants who die in a bathtub are not supervised. Nationally, since 1983, there have been at least 104 deaths and 162 nonfatal incidents involving baby bath seats.⁵ Among 1–4 year olds, most drownings occur in residential swimming pools.⁴

In public swimming areas, one in five parents falsely believes that when lifeguards are present, the lifeguard is the main person responsible for supervising children in the water. In reality, the typical lifeguard-to-swimmer ratio at public swimming areas may be as high as 25 swimmers per lifeguard.⁶

Seizures. For persons with seizure disorders, drowning is the most common cause of unintentional injury death. The bathtub is the site with the highest drowning risk.⁷

Alcohol. Alcohol use is involved in about 25 percent – 50 percent of adolescent and adult deaths associated with water recreation.^{8,9} Alcohol influences balance, coordination, and judgment. Sun exposure, wave action, and heat heighten alcohol's effects.¹⁰

Boating. Washington State has one of the highest numbers of registered boats in the nation. Boating carries risks for injury. The 2010 U.S. Coast Guard national report show that in the United States:

- There were 4,967 boating incidents.
- There were 3,474 boating injuries.
- The fatality rate was 5.4 deaths per 100,000 registered recreational vessels.
- Almost three-fourths of all fatal boating deaths were due to drowning; of those, 88 percent were not wearing a life jacket.

- Twenty-one children under age thirteen lost their lives while boating in 2010; 42 percent of them drowned.

It is estimated that 85 percent of Washington State's boating-related drowning deaths could have been prevented if the person had been wearing a life jacket. In 2011, alcohol was involved in about 20 percent of all reported boating fatalities.¹¹ In Washington in 2011, there were 15 boating-related deaths and 54 injuries reported to U.S. Coast Guard.

Recreational boats must carry one appropriately-sized, U.S. Coast Guard approved life jacket for each person onboard. The life jackets must be accessible and in good condition. Children under age 13 must wear child-sized life jackets. Parents of children who do not always wear life jackets commonly cite their own proximity to the child and to the life jacket, and the child's swimming ability as common reasons for not requiring their child to wear a life jacket.

Children reported that they did not wear life jackets for the following reasons:

- They could swim (29 percent)
- They could grab the life jacket quickly if they needed it (27 percent)
- There was no life jacket available (18 percent)⁶

Young children should wear life jackets whenever they are around deep water, such as on a dock or on a beach. The majority of drowning incidents occur from small water craft. Washington State's Boating Safety Regulation states; children 12 years of age and under are required to wear U.S. Coast Guard-approved life jackets on boats less than 19 feet. The injury prevention community recommends that all passengers and operators wear life jackets on boats, canoes, kayaks, and on rafts less than 16 feet.

Recommended Strategies

Evidence-Based Strategies

Provide education and enforcement to reducing drownings⁹

Enforce the International Building Code Appendix G 3109.4 for Washington State. This requires the fencing of residential pools, and a self-closing/self-latching gate. Studies show that pool fencing significantly reduces the risk of drowning. Isolation fencing, specifically around the pool, is better than perimeter fencing, which allows access to the pool through the home.¹² Studies also show that passing legislation requiring the use of fencing is not enough to reduce drownings; the legislation must be enforced and adults must supervise children.⁷

Provide information on pool safety, barriers, and supervision when selling and installing pools, work with the building industry to enforce Appendix G of the International Residential Building Codes for Washington State.

Promising or Experimental Strategies

Increase life jacket use in boats, and while swimming in open water where no lifeguard is present (for example, in lakes and rivers)

- Promote life jacket use among non-boat owners.
- Start and maintain life jacket loaning programs.
- Use incentives and discount coupons for life jackets.

Swimming lessons for young children

Formal swimming lessons and water-safety skills training can start at a young age. In fact, the American Academy of Pediatrics supports swimming lessons for children as young as one year of age. The decision to begin swimming lessons should be based on the individual child's exposure to water, emotional maturity, physical limitations, and health concerns.¹³ Participation in formal swimming lessons may reduce the risk of drowning by as much as 88 percent among young children aged 1 to 4 years,¹⁴ who are at highest risk of drowning.

Two additional case-control studies showed that swimming lessons may reduce drowning risk in children 1–4 years old.¹³ It is unclear from these studies if there are certain aspects of swimming instruction or water-survival skills that might be most beneficial. Although swimming lessons might reduce drowning risk, they would not “drown-proof” a child.

Increase community awareness

Funding is needed for effective public education and media campaigns. Focus strategies on high-risk groups, especially young men ages 15 to 24.

Messages should highlight the following drowning risk factors and prevention/safety strategies:

- Use universal signage to warn of drowning risks.
- Seek physically safe water environments. This means:
 - Know the water. The state’s lakes and rivers are cold, even in the summer, and currents are strong enough to overwhelm even the strongest swimmers.
 - Check water conditions, never dive or jump into unfamiliar or shallow water, and swim in designated areas only.
- Publicize life guarded areas and where life jacket loan programs are located.
- Publicize drownings and near drownings, and what lead to them – always include a prevention message.
- Children and adolescents need good supervision in or near the water. Good supervision means:
 - Constant observation by a sober adult
 - Staying within arms-reach of children
 - Having the capacity to carry out a quick rescue

- Use messages that combine learning to swim with life jacket use.
- Emphasize parent role modeling of life jacket use.
- Use messages that combine learning to swim with open water survival skills.

Decrease the use of alcohol while boating

- Strengthen and enforce current boating-under-the-influence regulations

Encourage policies and regulations that emphasize water safety

- Continue to implement boating regulations and mandatory boater education that focus on water safety and drowning prevention.
- Continue to implement state and local board of health pool, spa, water park, and bathing beach policies and regulations. Review and update as necessary.
- Improve safety at public bathing beaches by providing safety signage.

Support standardized drowning death investigation procedures and improve data collection efforts

- Investigate and track cases, and provide funding for data collection, analysis, and training. Well-developed state and local systems, such as the child death review, Washington Trauma Registry, death investigation reports, and other sources are needed to investigate and analyze data to prevent future tragedies.

For More Information

Washington State

Drowning Prevention and Water Safety Information, prepared by the Washington State Drowning Prevention Network and Seattle Children’s Hospital
www.seattlechildrens.org/dp/

Harborview Injury Prevention & Research Center, Best Practices
www.hiprc.org

Washington State Department of Health, Health of Washington State. Drowning Chapter
www.doh.wa.gov/HWS

Washington State Parks and Recreation Commission, Boating Safety Program
www.parks.wa.gov/boating

National/International

Australian Water Safety Council
www.watersafety.com.au

Centers for Disease Control and Prevention
www.cdc.gov/injury/

Child Safety Europe
www.childsafetyeurope.org

National Safe Boating Council
www.safeboatingcouncil.org

Safe Kids USA
www.safekids.org

Endnotes

- ¹ Washington State Department of Health, Child Death Review Database, Maternal and Child Health Assessment, includes deaths reviewed as of June 2006.
- ² Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, "Web-based Injury Statistics Query and Reporting System (WISQARS)," www.cdc.gov/injury/wisqars/index.html, accessed February 27, 2012.
- ³ C. Branch, Ph.D., "Lifeguard Effectiveness: A Report of the Working Group," 2004.
- ⁴ B.A. Brenner, et al., "Where children drown," *Pediatrics*, 1995, Vol. 108, No. 1, pp. 85-90.
- ⁵ National Safe Kids Campaign, "Drowning Fact Sheet," 2005.
- ⁶ B.E. Cody, et al., "Clear Danger: A National Study of Childhood Drowning and Related Attitudes and Behaviors," 2004.
- ⁷ L. Quan, et al., "Interventions to prevent drowning," 2006 cited by L. Doll, et al. (eds.), *Handbook of injury and violence prevention*, Springer, New York, 2006.
- ⁸ J. Howland and R. Hingson, "Alcohol as a risk factor for drowning: A review of the literature, 1950-1985," *Accidents Analysis and Prevention*, 1988, Vol. 20, No. 1, pp. 19-25.
- ⁹ J. Howland, et al., "Alcohol as a risk factor for drowning and other aquatic injuries," 1995, cited by R.R. Watson (ed.), *Alcohol and Accidents. Drugs and alcohol abuse reviews*, Vol.7, Humana Press, Totowa, New Jersey.
- ¹⁰ G.S. Smith and J.F. Kraus, "Alcohol and residential, recreational, and occupational injuries: A review of the epidemiologic evidence," *Annual Review of Public Health*, 1988, Vol. 9, pp. 99-121.
- ¹¹ U.S. Coast Guard, "Recreational Boating Statistics 2011," www.uscgboating.org/statistics/accident_statistics.aspx, accessed on June 10, 2012.
- ¹² D.C. Thompson and F.P. Rivara, "Pool fencing for preventing drowning in children," *Cochrane Database of Systemic Reviews*, 2000.
- ¹³ J. Weiss, American Academy of Pediatrics Committee on Injury, Violence, and Poison Prevention, "Prevention of Drowning," www.pediatrics.org/cgi/doi/10.1542/peds.2010-1265, accessed on September 17, 2012 or *Pediatrics*, Vol. 126, pp. 253-262.
- ¹⁴ R.A. Brenner, et al., "Association between swimming lessons and drowning in childhood: A case-control study," *Archives of Pediatrics & Adolescent Medicine*, 2009, Vol. 163, No. 3, pp. 203-210.