

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 2010 Objectives

- Reduce unintentional drowning deaths from 1.6 per 100,000 in 1998 to 0.9 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 issue. There is no single safety device that works in all drowning cases. Understanding and practicing the four wisdoms are critical for water safety: supervision, environment, gear, and education.

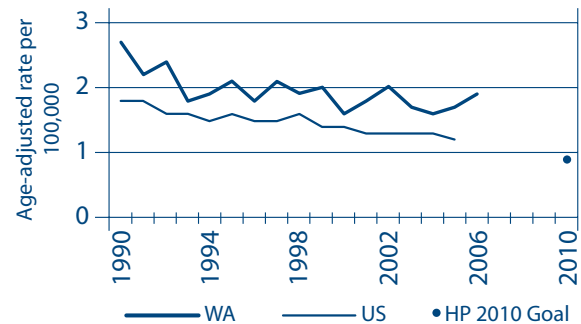
Washington State Data

Washington State unintentional drowning rates are higher than the national rate. However, over the past 17 years, drowning rates in Washington State have steadily declined. In the latest data available in 2006, the unintentional drowning rate in Washington State was 1.9 per 100,000. There were 123 state residents who died from unintentional drowning, including 16 boating-related drowning deaths.

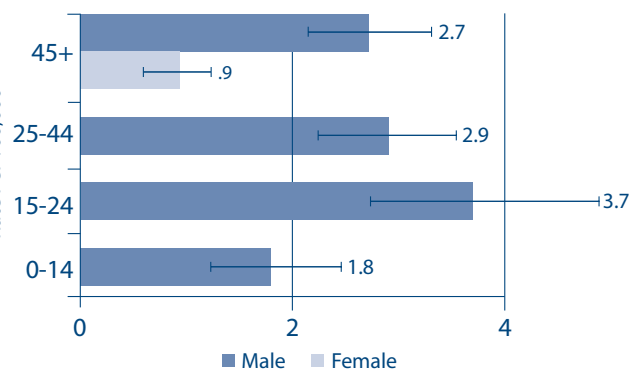
Age and Gender

From 2004-2006, males in the state were more likely to die from drowning. The highest death rates were for males age 15-24 years old. Females younger than 45 had fewer than 20 deaths. The chart does not include them.

Unintentional Drowning Deaths
Washington State & United States Death Certificates, 1990-2006



Unintentional Drowning Deaths
Age and Gender
Death Certificates, 2004-2006



Race and Ethnicity

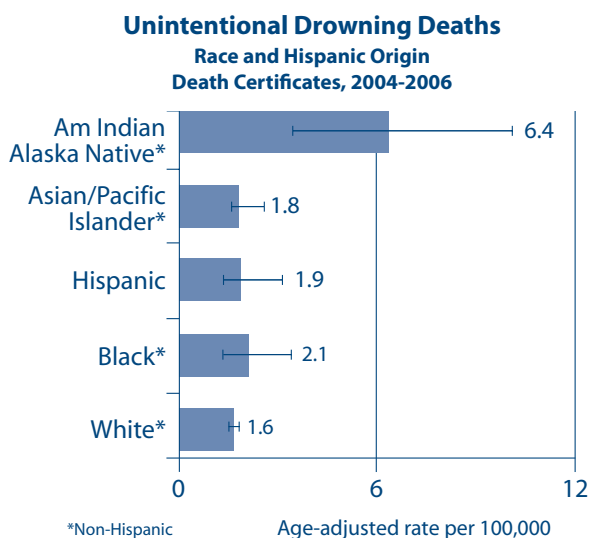
In Washington State in 2002-2006, American Indians and Alaska Natives had the highest age-adjusted unintentional drowning death rate. A national study found that black males 5- to 24-years-old had much higher risks for drowning in swimming pools. The higher risk remained after taking income into account.¹

Washington State Child Death Review Data

From 1999-2003, state residents ages 0-17 accounted for 125 unintentional drowning deaths or drowning deaths with an undetermined manner. Local Child Death Review Teams in the state completed 93 (74%) reviews of those 125 deaths.² Insights from this include:

- 73% of the deaths occurred in open water (in a lake, river, pond, creek, or in the Puget Sound).
- 27% of the deaths occurred in a bathtub, a hot tub, a swimming pool or a wading pool.
- Infants were more likely to drown in a bathtub.
- About 50% of children ages 1-4 drowned in open water. Most of the swimming pool deaths occurred in this age group.
- 90% of the drowning deaths of older children and adolescents occurred in open water.

Local child death review teams concluded that 85% of these deaths were preventable.



Healthy Youth Survey Data

In the 2006 Washington State Healthy Youth Survey 39% of the Grade 8 students, 30% of the Grade 10 students and 25% of the Grade 12 students said they always wear a life jacket when boating.

Emergency Department Visits and Cost Data

Nationally, for every child 14 years and younger who dies from drowning, five children receive emergency department care for nonfatal drowning injuries. More than 55% of these children require hospitalization.³ Nonfatal drownings can cause brain damage with long-term disabilities that include memory problems, learning disabilities, or permanent loss of basic functioning. The comprehensive cost of one fatal

drowning event can range from \$700,000 to \$2.8 million.⁴ For all unintentional injuries among children, drowning is the most expensive, at \$21,000 per victim.⁵

Risk and Protective Factors

Any body of water. Nationally, infants under age one most often drown in bathtubs, buckets, or toilets.⁶ Children can drown in as little as one 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.⁷

Swimming pools. These are a special hazard for unsupervised 1- to 4-year-olds. Nationally, among this age group, most drownings occur in residential swimming pools.⁶ Most young children who drowned in pools were:

- Last seen in the home.
- Had been out of sight less than five minutes.
- Were in the care of one or both parents at the time.⁷

Inadequate supervision. One in five parents believe that when lifeguards are present, the lifeguard is the main person responsible for supervising children in the water. However, the typical lifeguard-to-swimmer ratio at public swimming areas may be as high as 25 swimmers per lifeguard.⁸

Seizures. Persons with seizure disorders have a higher risk of drowning and dying from drowning. Drowning is the most common cause of unintentional injury death. The bathtub is the site of the highest drowning risk.⁹

Alcohol. Alcohol use is involved in about 25% to 50% of adolescent and adult deaths associated with water recreation.^{10, 11, 12} Alcohol influences balance, coordination, and judgment. Sun exposure, wave action, and heat heighten alcohol's effects.¹³

Boating. Boating carries risks for injury. The 2006 U.S. Coast Guard national report show that in the United States there were:

- 4,967 boating accidents.
- 3,474 boating injuries.
- 710 died in boating accidents.

Life jacket use. Among those who drowned, 90% were not wearing life jackets. It is estimated that 85% of boating-related drowning incidents could have been prevented if the victim had been wearing a life jacket.

Alcohol was involved in about 33% of all reported boating fatalities.¹⁴ In Washington from 2003-2005, there were an average of 17 boating-related deaths per year. This is about double the rate national rate.¹⁵ Six drownings involved commercial fisherman during these three years. In 2000, a Washington State survey of 7,729 persons in small boats showed that 74% of school age children and 17% of older teens and adults wore a life jacket.¹⁶

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 need to 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%).
- They could grab the life jacket quickly if they needed it (27%).
- There was no life jacket available (18%).⁸

Young children should wear life jackets whenever they are around deep water, such as on a dock or on a beach. The great majority of drowning incidents occur in small watercraft, less than 19 feet. 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, and on rafts that are less than 19 feet.

Recommended Strategies

Evidence-Based Strategies

Provide education and enforcement to reducing drownings⁹

Enforce the newly adopted International Building Code Appendix G 3109.4 for Washington State. This requires the fencing of residential pools. Studies show that four-sided pool fencing with a self-closing, self-latching gate significantly reduces the risk of drowning. Four-sided fencing specifically around the pool is superior to perimeter fencing, which allows access to the pool through the home. Studies also show that passing of legislation requiring the use of fencing is not enough to reduce drownings; the legislation should be enforced.

Provide information on pool safety, barriers, guidelines for entrapment and entanglement hazards, 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 a life jacket loaner program.

- Use incentives and discount coupons for life jackets.
- Promote mandatory boater education courses.

Increase community awareness

Funding is needed for effective public education and media campaigns, including outreach to non-English speaking and culturally diverse communities. Focus strategies on high-risk groups, including:

- Children.
- Young men ages 15 to 24.
- Boating and fishing enthusiasts.

Use coalitions and partnerships to implement programs. Messages should highlight the following drowning risk factors and prevention/safety strategies:

- Increase awareness of drownings, contributing factors, and prevention.
- Emphasize parent role modeling of life jacket use.
- Use messages that combine learning to swim with life jacket use.
- Publicize lifeguarded areas.
- Promote learning to swim and swim lessons that include open water and water survival skills.
- Use universal signage to warn of drowning risks.
- Educate on the need to choose physically safe water environments. Users need to:

- 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. Stay out of coastal waters with rip currents.
- Check water conditions, never dive or jump into unfamiliar or shallow water, and swim in designated areas only.
- Educate on what is good supervision. Good supervision means:
 - Swimming in a lifeguarded area, if possible
 - Constant observation.
 - Staying within arms-reach of children.
 - Having the capacity to affect a quick rescue.

Decrease the use of alcohol while boating

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

Promote lifeguards for high use areas

Encourage policies and regulations that emphasize water safety

- Continue to implement boating regulations 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 consistent signage.

Support standardized drowning death investigation procedures and improve data collection efforts

To investigate and track cases, provide funding, training, and well-developed state and local systems, such as the Child Death Review.

For More Information

Washington State

Child Death Review State Committee Recommendations on Child Drowning Prevention prepared by the Washington State Department of Health, June, 2004
www.doh.wa.gov/cfh/CDR/cdr_data.htm

Childhood Drowning Deaths in Washington State, May, 2003, prepared by the Washington State Department of Health for the Washington State Drowning Prevention Coalition
www.seattlechildrens.org/dp/pdf/drown_deaths_wa.pdf

Drowning Facts, prepared by Seattle King & County Public Health
www.seattlechildrens.org/dp/pdf/drowning_fact_sheet.pdf

Drowning Prevention and Water Safety Information, prepared by the Washington State Drowning Prevention Network and Seattle Children's Hospital & Regional Medical Center
www.seattlechildrens.org/dp

Harborview Injury Prevention & Research Center, Best Practices
<http://depts.washington.edu/hiprc/practices/topic/drowning/fencing.html>

Loss Prevention Review Team, Drowning Prevention, prepared by Washington State Parks and Recreation Commission
 Washington State Department of Health Injury & Violence

Prevention Program, Washington State Childhood Injury Report, 2004
www.doh.wa.gov/hsqa/emstrauma/injury/pubs/wscir/default.htm

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

Washington State Drowning Prevention Network
www.drowning-prevention.org

National

Activities to Promote Water Safety Awareness, developed by the Virginia Water Safety Coalition
www.watersafety.org

Centers for Disease Control and Prevention, Fact sheet on drowning
www.cdc.gov/ncipc/factsheets/drown.htm

Clear Danger: A National Study of Childhood Drowning and Related Attitudes and Behaviors
www.usa.safekids.org/NSKW.cfm

Research Report - Pool and Spa Drowning: A National Study of Drain Entrapment and Pool Safety Measures
www.usa.safekids.org/water/documents/PoolSpaDrowning.pdf.U.S.

Coast Guard-Boating Safety
www.uscgboating.org

Endnotes

- ¹ Saluja, G., Brenner, R. A., Trumble, A. C., Smith, G. S., Schroeder, T. & Cox, C. (2006). Swimming pool drownings among U. S. residents aged 5-24 years: understanding racial/ethnic disparities. *American Journal of Public Health*, 96, 728-733.
- ² *Washington State Child Death Review Database, Washington State Department of Health, Maternal and Child Health Assessment. Includes deaths reviewed as of June 2006.*
- ³ Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS). (2005) [cited 2006 April 11]. Available from www.cdc.gov/ncipc/wisqars.
- ⁴ C. Branch, Ph.D. (May, 2004). Lifeguard Effectiveness: A Report of the Working Group, National Safety Council, Division of Unintentional Injury Prevention, Centers for Disease Control and Prevention. This figure does not include indemnity costs. The amounts for non-fatal drowning are higher, as medical care over a lifetime is then included.
- ⁵ Miller, T., Romano, E. O. & Spicer, R. S. (Spring 2000). The Cost of Childhood Unintentional Injuries and the Value of Prevention. *The Future of Children*, 10(1), 137-163. Retrieved June 21, 2007 from www.futureofchildren.org/usr_doc/vol10no1Art6.pdf.
- ⁶ Brenner R.A., Trumble A.C., Smith G.S., Kessler, E.P. & Overpeck, M. D. (2001). Where children drown. United States, 1995. *Pediatrics*, 108(1), 85-90.
- ⁷ National Safe Kids Campaign (NSKC) Drowning Fact Sheet (2005). Washington (D.C.): NSK.
- ⁸ Cody, B.E., Quraishi, A.Y., Dastur, M.C., Mickalide, A.D. (2004). Clear danger: A national study of childhood drowning and related attitudes and behaviors. *Washington (D.C.): National SAFE KIDS Campaign*, www.usa.safekids.org/NSKW.cfm.
- ⁹ Quan, L., Bennett, E. & Branche, C. (2006). Interventions to prevent drowning. In Doll, L., Bonzo, S., Mercy, J., Sleet, D., (Eds). *Handbook of injury and violence prevention*. New York: Springer.
- ¹⁰ Howland, J. & Hingson, R. (1988). Alcohol as a risk factor for drownings: A review of the literature (1950–1985). *Accidents Analysis and Prevention*, 20(1), 19-25.
- ¹¹ Howland, J., Mangione, T., Hingson, R., Smith, G., Bell, N. (1995). Alcohol as a risk factor for drowning and other aquatic injuries. In Watson, R.R., editor, *Alcohol and accidents. Drug and alcohol abuse reviews*, Vol. 7, Totowa (N.J.): Humana Press, Inc.
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- ¹⁴ U.S. Coast Guard, Department of Homeland Security. (2007). *Boating Statistics* [online]. Retrieved April 10, 2008 from www.uscgboating.org/statistics/Boating_Statistics_2006.pdf.
- ¹⁵ Centers for Disease Control and Prevention, National Centers for Injury Prevention and Control. (2007). Web-based injury statistics query and reporting system (WISQARS). 2004 data. Retrieved August 22, 2007 from www.cdc.gov/ncipc/wisqars.
- ¹⁶ Children's Hospital & Regional Medical Center and Washington State Department of Health, Office of Emergency Medical and Trauma Prevention. (2000). *Personal Flotation Device Observation Study*.
- ¹⁷ Thompson, D.C. & Rivara, F.P. (2000). Pool fencing for preventing drowning in children (CD001047). *Cochrane Database of Systemic Reviews*.