Drowning and Near Drowning

In June 2002, The Columbus Dispatch reported three separate, tragic cases of young children who died as a result of drowning. Each child wandered away from their house and drowned in a residential pool. These deaths did not have to occur. In July, 2002 five adults in their twenties decided to swim at a public beach that was closed because of poor swimming conditions, even after being warned by a city employee against swimming. The beach was open only for sunbathing and having a picnic. Four of these adults drowned in an attempt to rescue the other adult who had been knocked down by high waves and was being swept out by the current.

Defining The Problem

Drowning is always fatal. It is any death from asphyxiation within 24 hours of submersion in liquid, most often water. Near-drowning is sometimes fatal. It is any case of submersion where the individual survives for at least twenty four hours (1)

Goal

Reduce incidence of drowning.

HP 2010 Goal	0.9 per 100,000
OH 1998	0.9
US 1998	1.6

Data source: National Vital Statistics System (NVSS), CDC, NCHS, CPSC.

Reduce incidence of near-drowning.
Baseline data not available.

Data

For every child who drowns, another four children are hospitalized for near drowning. For every near drowning-related hospital admission, another four children receive treatment in an emergency room (3). Of the children admitted for a near drowning, 15% die and another 20% suffer severe, permanent neurological disability (3).

In 1998, 4,406 people drowned across the United States, including 1,003 children younger than age fifteen (2).

Ohio Data

While Ohio is not one of the states with the highest rate of drowning, it is not immune to drowning. From 1998 to 2000, 307 drowning deaths occurred in Ohio, a rate of 0.9 per 100,000 Ohioans (6). Credible data on the number of Ohio near-drownings is not available. However, applying national estimates of the ratio of near drownings to drowning deaths, it is projected that approximately 4,912 near drowning cases occurred in Ohio between 1998 and 2000.

Ohio's drowning rate has fallen during the 1990s. Between 1992 and 1994 Ohio had 349 drownings (1.1 per 100,000). This number declined to 319 fatalities between 1995 and 1997 (1.0 per 100,000) and 307 deaths in the most recent three-year period (6).

Ohio's drowning rate differs by age group. Drowning risk is highest for children age 1 to 4 (2.5 per 100,000), followed by infants (1.6 per 100,000), adolescents and young adults age 15 to 24 (1.1 per 100,000) and persons over age 85 (1.0 per 100,000) (6)

The rate of drowning is also higher among Ohio's African-American and Hispanic populations. This rate is twice as high for African Americans than whites (1.6 per 100,000 versus 0.8 per 100,000) (6). For Hispanics, Ohio's drowning rate was 1.3 per 100,000 compared to 0.9 per 100,000 for non-Hispanics (6).

For every child who drowns, another four children are hospitalized for near drowning. Of these children, 15% die and another 20% suffer severe, permanent neurological disability.

Boating is associated with 15-20% of Ohio's drownings each year. For the last three years, 84% of people who died as a result of boating incident died from drowning (16 people in 2001, 21 people in 2000, and 16 people in 1999). (7) Nearly 70% of the people who died in boating incidents were not wearing a personal flotation device (7).

Alcohol was a contributing factor among a majority of these boating-related drownings. In 2001, alcohol was found to be involved in over half (9 of 16) of the deaths. (7)

In Ohio during 2001, alcohol was involved in over half of boating-related drownings.

The rate of drowning varies among Ohio's counties. The ten counties with Ohio's highest rate of drowning between 1998 and 2000 were Noble (11.3 per 100,000), Paulding (3.3 per 100,000), Logan (2.9 per 100,000), Holmes (2.6 per 100,000), Defiance (2.5 per 100,000), Ashtabula and Morgan (2.3 per 100,000), Monroe (2.2 per 100,000), Harrison (2.1 per 100,000), and Jackson (2.0 per 100,000) (6).

Costs & Consequences

Drowning and near drowning entail economic, as well as, personal costs. The total annual national costs of drownings and near-drownings among children under age 15 is approximately $6.2 billion, with children under age 5 accounting for 61% of these costs or $3.8 billion (3).

According to the Children's Safety Network National Injury Data Technical Assistance Center, drowning and near drowning of Ohioans from infants to age 24 cost Ohio $47.8 million between 1993 and 1997.

Existing Programs

Ohio Department of Natural Resources
http://www.ohiodnr.com/watercraft/

The Drowning Prevention Foundation
http://drownprevention.com/home.html

Stay on Top of It: Drowning Prevention and Water Safety Information
http://www.seattlechildrens.org/DP/default.htm

American Red Cross
http://www.redcross.org/services/hss/tips/healthtips/safetywater.html

Risk Factors

The risk of drowning for some populations, especially young children and males of all ages, is greater than others:

- Drowning was the second leading cause of injury-related death for children aged 1 through 14 years of age in the United States in 1998. (2)
- Drowning is often the leading cause of fatal farm injuries for persons less than 20 years of age. (4)
- Males comprised 81% of people who drowned in the United States in 1998. (2)
- African Americans are more likely to drown than whites, with an age-adjusted rate that is 1.6 times higher than for whites overall and 2.5 times higher for black children ages 5 through 19. (2)

The leading risk factors associated with drowning differ among age groups. For children age 5 years and younger, bathtubs, large buckets containing standing liquid, and swimming pools provide the greatest hazards for drowning. In analyzing cases of drowning and near drowning for young children, researchers have found that:

- A swimming pool is 14 times more likely than a motor vehicle to be involved in the death of a child under age 5. (3)
- Bathtubs are involved in upwards of 50% of all childhood drownings. (3)
- Large buckets containing standing liquid pose a significant threat to toddlers. According to the Foundation for Aquatic Injury Prevention, large buckets have accounted for 88% of drowning among children ages 7 to 15 months since 1984. (3)

Residential swimming pools are a clear and preventable drowning risk, especially for young children. A review of drowning data finds that:

- Among children under age 5, annually there are approximately 375 residential pool drownings and 2,900 near-drownings. (3)
- More than one half of residential pool drownings occur at the child's home and another one-third at the home of a friend, relative, or neighbor. (3)
- The majority of children who drown in swimming pools had been missing less than five minutes and were in the care of one or both parents at the time of the drowning. (3)

Water recreation activities, especially boating and diving, provide the main drowning risk for adolescents and adults. Use of alcohol plays a critical role in a good portion of these incidents. A review of drowning data for these age groups finds that:

- Most deaths involving diving occur among persons aged 15 to 39 years, with the largest proportion (14.8 percent) occurring among persons aged 30 to 39 years. (2)
- Alcohol use is associated with between 25 and 50% of the drowning deaths tied to water recreation for adults and adolescents and up to 50% of drownings among adolescent boys. (2)

Policy Issues

Ohio has pursued several strategies to reduce the risk of drowning and near drowning. Through statute Ohio has primarily focused on reducing the risk of drowning associated with boating. These efforts include:

- ORC 1547.25 requires persons operating any watercraft to have personal flotation devices on board.
- ORC 1547.24 requires children less than 10 years of age to wear a personal flotation device if they are on any watercraft that is less than 18 feet long.
- ORC 1547.18 requires any person being towed by a watercraft to wear a personal flotation device.
- ORC Code prohibits operating watercraft while under the influence of drugs or alcohol. A person is in violation with a concentration of .08 or greater Blood Alcohol Content (BAC).

Ohio has also enacted laws regulating public swimming pools.

- Sections of the Ohio Revised Code establish regulatory requirements for public swimming pools including rules around four sided fencing and the presence of life guards.

Ohio does not have requirements for four-sided fencing of residential swimming pools.

Ohio currently does not have requirements for fencing of residential swimming pools.

Strategies to Prevent Drowning and Near Drowning

Because there are no national or state surveillance systems that track events of drowning and near drowning, limited information is known about the circumstances surrounding drowning and near drowning cases. However, there are some measures that clearly reduce the risk of drowning and near drowning occurring, including:

- Installing four-sided fencing around pools. This significantly reduces the risk of drowning and near drowning by at least 50%. It is a demonstrated effective environmental prevention strategy to reduce drowning in children ages one to four (9, 5)
- Immediately removing standing liquid in large buckets or other containers.
- Wearing a personal flotation device. This significantly reduces the risk of drowning and near drowning during boating accidents.
- Eliminating or controlling the use of alcohol around water activities, especially during the operation of watercraft.
- Carefully supervising young children near or in any body of water. Swimming lessons do not eliminate the threat of drowning. About 25% of young drowning victims had taken swimming lessons. These lessons may not eliminate panic from ensuing during a drowning or near drowning situation (5)
- Avoiding the use of child bathtub seats.
- Pediatrician/physician counseling to families on the risks associated with drowning and near drowning. This counseling needs to be appropriate for the age of the children, dealing with the different risks of drowning and near drowning associated with different ages of children.
- Providing water safety training to children and adults.
- Training parents in CPR and bystander first aid.

Recommendations to Prevent Drowning and Near Drowning

Improve Surveillance

1. Create a statewide surveillance system and database for drowning-related emergency department visits, hospitalizations and deaths. Data source should include EMS data, hospital discharge data, and vital statistics death records.

Legislative Initiatives

2. Enact state legislation based on the American Academy of Pediatrics' Residential Swimming Pool Safety Act to include the following:
   - Require four sided fencing on all new residential swimming pool construction
   - Require four sided fencing be added to all existing residential swimming pools at the time of sale of the house
   - Provide a onetime tax credit of $100 to add four-sided fencing to any existing residential swimming pool
3. Expand existing state legislation to require that all persons riding in a boat, regardless of age, wear a personal flotation device.
4. Increase enforcement of alcohol/drug use laws among watercraft operators.

Expand training

4. Promote and facilitate CPR training for all parents.
5. Promote water safety training, including swimming lessons, for all Ohioans, especially those in high risk communities.

Target resources toward high risk groups

6. Target education and outreach programs to counties with high rates of drowning.
7. Identify and focus on high-risk communities/populations.
8. Implement a statewide education and awareness program to prevent unintentional drownings, particularly aimed at children younger than 5 years of age and adolescents, and evaluate its effectiveness.
   - Develop drowning prevention materials for new parents and encourage hospitals to distribute this information when discharging newborns.
   - Develop drowning prevention materials for child care centers and schools to share with students and caregivers.
   - Remind Ohio physicians to counsel parents and children on issues of water safety and the risks of drowning and near-drowning.
   - Develop drowning prevention materials for adolescents, emphasizing the link between alcohol and drowning risk.

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Total Population, 1998	**Drownings** Rate per 100,000
TOTAL	1.6
Race and ethnicity	
American Indian or Alaska Native	3.1
Asian or Pacific Islander	1.5
Asian	DNC
Native Hawaiian and other Pacific Islander	DNC
Black or African American	2.3
White	1.5
Hispanic or Latino	1.5
Cuban	DSU
Mexican	1.5
Puerto Rican	1.0
Not Hispanic or Latino	1.6
Black or African American	2.4
White	1.5
Gender	
Female	0.6
Male	2.7
Education level (aged 25 to 64 years)	
Less than high school	2.6
High school graduate	1.7
At least some college	0.9
Geographic location	
Urban (metropolitan statistical area)	1.4
Rural (nonmetropolitan statistical area)	2.1
Select populations	
Males aged 15 to 34 years (not age adjusted)	3.4
Black or African American males	4.2
Age groups	
Children aged 4 years and younger (not age adjusted)	2.9
Adolescents aged 10 to 14 years	1.0
Adolescents aged 15 to 19 years	2.2
Young adults aged 20 to 24 years	2.2

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