

# DROWNING PREVENTION RESEARCH PRIORITIES

## Problem Description

Each year over 4,000 people die from unintentional drowning in the United States. Drowning is a leading cause of death among children. More children aged 1 to 4 years die from drowning than any other cause. For children aged 5 to 14 years, drowning is the second leading cause of unintentional injury death. For every child under the age of 18 who dies from drowning, another seven children visit an emergency department for nonfatal drowning. Nonfatal drowning injuries can cause serious outcomes such as brain damage and long-term disability.

Some racial and ethnic groups are disproportionately impacted by drowning. Among persons under the age of 30, non-Hispanic American Indian and Alaska Native persons have fatal drowning rates two times higher than non-Hispanic White persons. Non-Hispanic Black or African American persons in this age group have fatal drowning rates 1.5 times higher than non-Hispanic White persons.

There are multiple factors that might contribute to increased risk of drowning including not being able to swim, lack of close and constant supervision when children are in or near water, missing or ineffective pool fencing, not wearing lifejackets when boating or among weaker swimmers in natural water, and drinking alcohol while participating in water recreation activities. Drowning risk might also be impacted by other social, cultural, and/or structural risk factors. To prevent drowning deaths and decrease disparities, more research is needed to describe risk factors for fatal and nonfatal drowning, identify effective strategies to prevent drowning, and engage persons at highest risk of drowning to increase access to and participation in effective drowning prevention activities.

## Research Gaps and Priorities



Describe the **risk and protective factors** associated with fatal and non-fatal drowning with an emphasis on persons who may be disproportionately affected.

From 1999 to 2019, overall drowning death rates consistently decreased. However, racial and ethnic disparities in drowning deaths among people less than 30 years of age persist and may be increasing for some groups. For example, disparities in drowning rates for non-Hispanic Black or African American persons compared to White persons significantly increased from 2005 to 2019, and rates in this group increased by 24% from 2019 to 2020. To understand what is causing racial and ethnic disparities in drowning rates and to prevent future drowning, data to describe risk factors and circumstances of fatal and non-fatal drowning are needed. Analysis of these data can provide insight as to how risk factors differ among groups.

<https://www.cdc.gov/injury/researchpriorities>



Centers for Disease Control and Prevention  
National Center for Injury Prevention and Control

The following research questions are posed to guide research aimed at identifying risk and protective factors associated with drowning with an emphasis on persons who are disproportionately affected:

- What is the usefulness of existing data sources for reporting the burden, circumstances, and risk and protective factors related to drowning?
- How can innovative techniques (e.g., data linkage, machine learning) be employed to improve drowning surveillance and improve our understanding of the circumstances of drowning?
- How can analytic tools (e.g., the social vulnerability index) be employed to improve our understanding of drowning risk factors?
- What risk and protective factors are related to differences in drowning rates among different groups (e.g., racial and ethnic minority groups, people with lower incomes, children with autism spectrum disorder, people living with disabilities)?

Understanding risk and protective factors related to drowning will help us to identify effective interventions to reduce the burden of unintentional drowning.



### Identify and evaluate **effective strategies** to prevent drowning among persons who are at increased risk of drowning.

Promising drowning prevention strategies include learning basic swimming and water safety skills, installing barriers (e.g., four-sided pool fences that completely surround pools), closely supervising children at all times when in or near water, and wearing lifejackets at all times when boating or among weaker swimmers when swimming in natural water settings (e.g., lakes, oceans). Groups at increased risk of drowning include children aged 1 to 4 years, non-Hispanic American Indian or Alaska Native persons, non-Hispanic Black or African American persons, and persons with certain conditions (e.g., epilepsy, autism spectrum disorder). However, little research exists examining the most effective ways to implement drowning prevention strategies and the facilitators and barriers to implementing these strategies among persons and communities at highest risk of drowning.

Key research questions include:

- How can basic swimming and water safety skills most efficiently and effectively be taught to children and youth (including young children aged 1 to 4 years)?
- What are the most effective ways to increase adoption of environmental and equipment-related drowning prevention strategies (e.g., pool fencing, lifejacket use, lifeguard supervision) and what policies may be effective at supporting these measures?
- What individual, relationship, community, and societal factors serve as barriers and facilitators to willingness to adopt drowning prevention strategies (e.g., basic swimming and water safety skills, pool fencing, lifejacket use), especially among disproportionately affected persons?

Identifying effective ways to implement and to increase access to and uptake of drowning prevention strategies is necessary to reduce the burden of drowning.



### Identify how to effectively and equitably implement **basic swimming and water safety skills training** among persons at increased risk of drowning.

Learning basic swimming and water safety skills is an effective way to reduce drowning. However, disparities in swimming ability among some racial and ethnic groups have been identified. To reduce drowning and decrease

disparities, it is critical to develop strategies to engage populations at an increased risk of drowning in basic swimming and water safety skills training programs.

To better engage persons at increased risk of drowning in these programs, the following research questions should be addressed:

- What are the barriers (including historical context and structural and cultural considerations) to accessing basic swimming and water safety skills programs for persons at an increased risk of drowning, and how can these barriers be overcome for effective program implementation?
- What are the most effective ways to encourage youth and parents/guardians who are at an increased risk of drowning to participate in basic swimming and water safety skills training?
- How can partnerships be leveraged to scale up basic swimming and water safety skills training programs among persons at increased risk of drowning?

Understanding how to engage populations most at risk of drowning and how to remove barriers to participation in basic swim and water safety programs has the potential to reduce the burden of drowning in the United States.