# Drowning

Fact sheet N°347
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## Key facts

- Drowning is the 3rd leading cause of unintentional injury death worldwide, accounting for 7% of all injury-related deaths.
- There are an estimated 372 000 annual drowning deaths worldwide.
- Global estimates may significantly underestimate the actual public health problem related to drowning.
- Children, males and individuals with increased access to water are most at risk of drowning.

Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid; outcomes are classified as death, morbidity and no morbidity.

## Scope of the problem

In 2012, an estimated 372 000 people died from drowning, making drowning a major public health problem worldwide. Injuries account for over 9% of total global mortality. Drowning is the 3rd leading cause of unintentional injury death, accounting for 7% of all injury-related deaths.

The global burden and death from drowning is found in all economies and regions, however:

- low- and middle-income countries account for 91% of unintentional drowning deaths;
- over half of the world's drowning occurs in the WHO Western Pacific Region and WHO South-East Asia Region;
- drowning death rates are highest in the WHO African Region, and are 10-13 times higher than those seen in the United Kingdom or Germany respectively.

Despite limited data, several studies reveal information on the cost impact of drowning. In the United States of America, 45% of drowning deaths are among the most economically active segment of the population. Coastal drowning in the United States alone accounts for US$ 273 million each year in direct and indirect costs. In Australia and Canada, the total annual cost of drowning injury is US$ 85.5 million and US$ 173 million respectively.

There is a wide range of uncertainty around the estimate of global drowning deaths. Official data categorization methods for drowning exclude intentional drowning deaths (suicide or homicide) and drowning deaths caused by flood disasters and water transport incidents.

Data from high-income countries suggest these categorization methods result in significant underrepresentation of the full drowning toll by up to 50% in some high-income countries. Non-fatal drowning statistics in many countries are not readily available or are unreliable.

## Risk factors

#### Age

Age is one of the major risk factors for drowning. This relationship is often associated with a lapse in supervision. Globally, the highest drowning rates are among children 1-4 years, followed by children 5-9 years. In the WHO Western Pacific Region children aged 5-14 years die more frequently from drowning than any other cause.

Child drowning statistics from a number of countries are particularly revealing:

- Drowning is one of the top 5 causes of death for people aged 1-14 years for 48 of 85 countries with data meeting inclusion criteria[1].
- Australia: drowning is the leading cause of unintentional injury death in children aged 1-3 years.
- Bangladesh: drowning accounts for 43% of all deaths in children aged 1-4 years.
- China: drowning is the leading cause of injury death in children aged 1-14 years.
- United States: drowning is the second leading cause of unintentional injury death in children aged 1-14 years.

#### Gender

Males are especially at risk of drowning, with twice the overall mortality rate of females. They are more likely to be hospitalized than females for non-fatal drowning. Studies suggest that the higher drowning rates among males are due to increased exposure to water and riskier behaviour such as swimming alone, drinking alcohol before swimming alone and boating.

#### Access to water

Increased access to water is another risk factor for drowning. Individuals with occupations such as commercial fishing or fishing for subsistence, using small boats in low-income countries are more prone to drowning. Children who live near open water sources, such as ditches, ponds, irrigation channels, or pools are especially at risk.

#### Flood disasters

Drowning accounts for 75% of deaths in flood disasters. Flood disasters are becoming more frequent and this trend is expected to continue. Drowning risks increase with floods particularly in low- and middle-income countries where people live in flood prone areas and the ability to warn, evacuate, or protect communities from floods is weak or only just developing.

#### Travelling on water

Daily commuting and journeys made by migrants or asylum seekers often take place on overcrowded, unsafe vessels lacking safety equipment or are operated by personnel untrained in dealing with transport incidents or navigation. Personnel under the influence of alcohol or drugs are also a risk.

#### Other risk factors

There are other factors that are associated with an increased risk of drowning, such as:

- lower socioeconomic status, being a member of an ethnic minority, lack of higher education, and rural populations all tend to be associated, although this association can vary across countries;
- infants left unsupervised or alone with another child around water;
- alcohol use, near or in the water;
- medical conditions, such as epilepsy;
- tourists unfamiliar with local water risks and features;

## Prevention

There are many actions to prevent drowning. Installing barriers (e.g. covering wells, using doorway barriers and playpens, fencing swimming pools etc.) to control access to water hazards, or removing water hazards entirely greatly reduces water hazard exposure and risk.

Community-based, supervised child care for pre-school children can reduce drowning risk and has other proven health benefits. Teaching school-age children basic swimming, water safety and safe rescue skills is another approach. But these efforts must be undertaken with an emphasis on safety, and an overall risk management that includes a safety-tested curricula, a safe training area, screening and student selection, and student-instructor ratios established for safety.

Effective policies and legislation are also important for drowning prevention. Setting and enforcing safe boating, shipping and ferry regulations is an important part of improving safety on the water and preventing drowning. Building resilience to flooding and managing flood risks through better disaster preparedness planning, land use planning, and early warning systems can prevent drowning during flood disasters.

Developing a national water safety strategy can raise awareness of safety around water, build consensus around solutions, provide strategic direction and a framework to guide multisectoral action and allow for monitoring and evaluation of efforts.

## WHO response

WHO released the "Global report on drowning: preventing a leading killer" in November 2014. This is the first time WHO has developed a report dedicated exclusively to drowning. The report points out that drowning has been highly overlooked to date, and that a great deal more should be

done by governments and the research and policy communities to prioritize drowning prevention and its integration with other public health agendas.

The "Global report on drowning" provides recommendations to governments to tailor and implement effective drowning prevention programmes to their settings, improve data about drowning, and develop national water safety plans. The report also points out the multisectoral nature of drowning and calls for greater coordination and collaboration among UN agencies, governments, key NGOs and academic institutions to prevent drowning.

At country level, WHO has worked with Ministries of Health in some low- and middle-income countries to prevent drowning through the use of barriers controlling access to water and the establishment of day care centres for pre-school children. In addition, WHO has also funded research in low-income countries exploring priority questions related to drowning prevention. At a regional level, WHO organizes training programmes and convenes workshops to draw together representatives of governments, NGOs and UN agencies working on drowning prevention.

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[1] Mortality data for countries were considered if they met the following criteria: estimated coverage of national deaths of 70% or more; ill-defined causes of death less than 20%; 10 or more deaths in the 1–14 year old age group; and data available from 2007 or later.