CONDITION

Non-fatal drowning

Non-fatal drowning is breathing impairment caused by being under or covered by water without dying.

WHAT IT IS
Breathing impairment after being under or covered by liquid

BODY SYSTEM
Lungs, heart and circulation, and nervous system

MAIN SYMPTOMS
Cough, breathing difficulty, unusual sleepiness, confusion

WHAT CAUSES IT
Liquid interfering with breathing during submersion or immersion

HOW IT IS DIAGNOSED
History, examination, and blood oxygen measurement

MAIN TREATMENT
Rescue breathing, oxygen support, warming, and monitoring

CAN IT BE CURED?
Sometimes - full recovery after prompt rescue and support

IS IT AN EMERGENCY?
Yes - breathing impairment after submersion needs urgent care

LONG-TERM OUTLOOK
Often full recovery; severe oxygen loss can cause disability

Overview

Non-fatal drowning happens when being under water, or having the face covered by water, interferes with breathing but does not cause death. It can occur in any liquid, including pools, baths, rivers, lakes, and the sea.

The main danger is lack of oxygen. Water reaching the airway can cause coughing, airway closure, and inflammation in the lungs. This may reduce the amount of oxygen reaching the brain and other organs.

Some people recover fully after a short event. Others need oxygen, breathing support, or intensive care. The outcome is influenced by how long breathing was affected, how quickly rescue and resuscitation began, water temperature, injuries, and the person's health before the event.

Terms such as "dry drowning," "secondary drowning," and "near-drowning" are outdated and can be misleading. The accepted term is drowning, with the outcome described as fatal or non-fatal. A brief splash followed by a few coughs that stop quickly, without ongoing breathing or behavior changes, is not necessarily non-fatal drowning.

Symptoms

Symptoms can begin in the water or soon after rescue. They may include:

A person who is not breathing normally after rescue is in cardiac arrest or close to it and needs immediate resuscitation.

Milder symptoms can still matter. Someone may initially be awake and talking but have an ongoing cough, rapid breathing, low oxygen, or unusual tiredness. These symptoms need prompt medical assessment because lung inflammation can worsen during the first several hours.

- Persistent or worsening cough
- Fast, difficult, or noisy breathing
- Chest discomfort
- Blue, grey, or unusually pale lips or skin
- Foamy fluid around the mouth or nose
- Unusual sleepiness, confusion, irritability, or weakness
- Vomiting
- Loss of consciousness or seizures

Causes and risk factors

Drowning begins when liquid blocks normal breathing. A person may hold their breath at first, then inhale liquid as oxygen levels fall. Even a small amount of inhaled water can irritate the lungs and interfere with oxygen transfer.

Factors that can make drowning more likely include:

Drowning is not inherited. However, some inherited heart rhythm conditions or seizure disorders can increase the risk of losing consciousness in water.

Fresh water and salt water affect the lungs in slightly different ways, but this does not change

the essential first aid: restore breathing and oxygen as quickly as possible.

- Limited swimming ability or unexpected deep water
- Missing or inadequate barriers around pools
- Gaps in close, attentive supervision of young children
- Alcohol or drug use around water
- Boating without a suitable life jacket
- Strong currents, waves, cold water, or sudden changes in depth
- Seizures, fainting, heart rhythm problems, or low blood sugar
- Diving injuries or other trauma
- Breath-holding contests or deliberate hyperventilation before swimming
- Floods and unsafe water crossings

Diagnosis

Non-fatal drowning is diagnosed from what happened, the person's symptoms, and a medical examination. There is no single test that proves or rules it out.

A clinician will assess breathing, heart rate, alertness, body temperature, and injuries. A pulse oximeter, usually placed on a finger, estimates the oxygen level in the blood. Repeated measurements may be needed because one normal reading does not explain every symptom.

A chest X-ray may be used when there are breathing symptoms, low oxygen levels, or concern about lung injury. Early X-ray findings do not always match how serious the condition will become.

People with more severe symptoms may have blood tests, an arterial blood gas to measure oxygen and acidity, or imaging for suspected head, neck, or other injuries. An electrocardiogram may be used if a heart problem could have caused the event.

The assessment may also look for an underlying cause, such as a seizure, fainting episode, heart rhythm problem, or injury.

Treatment and management

The first priority is a safe rescue. A rescuer should not enter dangerous water without training or suitable equipment. Emergency services should be called as soon as possible.

If the person is not breathing normally after removal from the water, rescue breaths and cardiopulmonary resuscitation, or CPR, should begin according to the rescuer's training and emergency call-handler instructions. An automated external defibrillator should be used when available.

Abdominal thrusts should not be used to "drain" water from the lungs. They delay ventilation and may cause vomiting. If vomiting occurs, the airway should be cleared so breathing support can continue.

A person who is breathing but not fully alert may be placed on their side while the airway is kept open, unless a serious spinal injury is suspected. Wet clothing should be removed when practical, and the person should be protected from further cooling.

In hospital, treatment is based on oxygen levels and breathing effort. It may include:

Antibiotics like amoxicillin or doxycycline are not routinely given after drowning. They may be considered if infection develops or if the person was exposed to heavily contaminated water. Steroids and medicines intended to remove fluid from the lungs are not routine drowning treatments.

- Supplemental oxygen
- Non-invasive breathing support through a tight-fitting mask
- A breathing tube and mechanical ventilation for severe respiratory failure
- Careful warming for hypothermia
- Treatment of injuries or the medical problem that led to drowning
- Monitoring until breathing, alertness, and oxygen levels remain normal

Complications

The most important complication is ongoing lung injury. In severe cases, this can develop into acute respiratory distress syndrome, or ARDS, in which inflamed lungs cannot deliver enough oxygen to the body.

A prolonged lack of oxygen can injure the brain. Possible effects include problems with movement, memory, concentration, behavior, or consciousness. The heart, kidneys, and other organs may also be affected after severe oxygen loss.

Other possible complications include:

Complications are more likely after a long submersion, delayed resuscitation, cardiac arrest, or continued low oxygen levels.

- Hypothermia, meaning a dangerously low body temperature
- Pneumonia, particularly after contaminated-water exposure
- Vomit entering the lungs
- Head, neck, or spinal injuries
- Psychological distress after the event

Prevention

Non-fatal drowning is often preventable, although no measure can remove all risk. Prevention works best when several protective steps are used together.

Young children need close, continuous supervision around baths, pools, ponds, and other water. The supervising adult should stay within reach and avoid distractions. Home pools should have a four-sided fence that separates the pool from the house and yard, with a self-closing, self-latching gate.

Other protective measures include:

People with seizures, fainting, diabetes, or heart conditions may need condition-specific water-safety planning. Swimming with an informed companion and following advice about safe activities may reduce risk.

- Learning swimming and water-survival skills
- Wearing a properly fitted life jacket when boating or near open water
- Avoiding alcohol and drugs before swimming or supervising others
- Swimming in designated areas with lifeguards when possible
- Checking weather, currents, depth, and water temperature
- Avoiding swimming alone
- Covering or emptying containers that can hold water around young children
- Learning CPR, especially for people who supervise children or water activities

Living with it and what to expect

Many people with brief breathing impairment recover completely after rescue, observation, and any needed oxygen. Once symptoms have resolved and a medical assessment is reassuring, there may be no lasting physical limits.

Recovery after a more serious event can take weeks or months. Tiredness, reduced exercise tolerance, poor sleep, cough, or chest discomfort may improve gradually. Follow-up can include checks of lung function, oxygen levels, and the condition that may have contributed to the event.

After severe oxygen loss, rehabilitation may involve physical therapy, speech and language therapy, occupational therapy, or support with memory and learning. Some effects may become clearer after returning to school or work.

Fear of water, anxiety, nightmares, or repeated memories of the event can affect survivors, relatives, and rescuers. These reactions may settle with time, but ongoing distress can be discussed with a healthcare professional.

Future water activity is often possible after recovery. The safest timing and level of activity will reflect any remaining lung, brain, heart, or seizure-related concerns.

When to get medical help

Call emergency services immediately if a person has been rescued from water and:

Begin CPR if the person is not breathing normally, following emergency call-handler instructions.

Prompt medical assessment is also appropriate after any event involving clear breathing impairment, even if the person seems to improve. Do not assume that sleepiness is simply due to exhaustion if it is unusual or the person is difficult to wake.

After discharge, seek urgent reassessment for worsening cough, fast or labored breathing, chest pain, fever, confusion, unusual sleepiness, or blue or grey skin.

Routine follow-up may be useful after a severe event, ongoing fatigue or breathing problems, emotional distress, or concern that a seizure, heart problem, or fainting episode caused the incident.

- Is not breathing normally
- Is unconscious, confused, or difficult to wake
- Has blue, grey, or very pale lips or skin
- Has severe or worsening breathing difficulty
- Has a persistent cough with breathing changes
- Has a seizure

- May have a head, neck, or diving injury

Common questions

Can someone drown hours or days after leaving the water?

Drowning does not suddenly begin days after a person has been completely well. Lung irritation from an actual drowning event can worsen during the first several hours, which is why ongoing cough, breathing difficulty, or unusual behavior needs prompt assessment. New symptoms days later still need medical attention, but another cause may be responsible.

Does non-fatal mean there was no damage?

No. "Non-fatal" only means the person survived. Some people have no lasting effects, while others develop lung injury, brain injury, or other complications.

How long should someone be watched after a water incident?

The appropriate observation period is based on symptoms, oxygen levels, examination findings, and response to treatment. Someone assessed in hospital should remain for the period recommended by the clinical team. At home, new or worsening breathing or behavior changes require urgent help.

Is salt-water drowning worse than fresh-water drowning?

Both can cause dangerous oxygen loss and lung inflammation. The practical response is the same: safe rescue, rescue breathing or CPR when needed, and prompt medical assessment for symptoms.

Are antibiotics needed after swallowing or inhaling water?

Not routinely. Antibiotics do not prevent most complications after drowning. They may be used if an infection develops or exposure involved heavily contaminated water.

Can a person make a full recovery?

Yes. Full recovery is common after a brief event with rapid rescue and normal oxygen levels afterward. A longer period without oxygen can lead to lasting effects, so each person's recovery is assessed individually.

Sources

- World Health Organization. Drowning fact sheet

- American Heart Association and American Academy of Pediatrics. 2024 Focused Update on Special Circumstances: Resuscitation Following Drowning
- Szpilman D, Bierens JJLM, Handley AJ, Orlowski JP. "Drowning." New England Journal of Medicine . 2012;366:2102-2110.
- Schmidt AC, Sempsrott JR, Hawkins SC, Arastu AS, Cushing TA, Auerbach PS. "Wilderness Medical Society Clinical Practice Guidelines for the Treatment and Prevention of Drowning: 2019 Update." Wilderness & Environmental Medicine . 2019;30(4S):S70-S86.
- Royal Children's Hospital Melbourne. Clinical Practice Guideline: Drowning
- Centers for Disease Control and Prevention. Preventing Drowning