

Drowning

Written by Nicole Imerman
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"Water touches every aspect of children's lives. They need it to grow, they are comforted by it, they are cleaned and cooled by it – and without it they cannot survive. Water to most children means fun, play and adventure – in a pool, pond, lake or simply in the road following a rain storm. Water, though, can be dangerous " (WHO: 1994).

When a child inhales water, their airway is submerged in water and breathing is impaired. This event is known as a **drowning** or "near-drowning".

A baby or child can drown in as little as 2.5cm of water because this is enough to cover their nose and mouth. Children can drown if they slip into a pool, pond or bath. Older children may face difficulties if they are swimming in open water that is very cold and turbulent.

When we are enjoying time on the beach or around the pool, injuries aren't the first thing on our minds; but three children die every day as a result of drowning. Drowning is the leading cause of unintentional death and disability in children between the ages of 1 and 4. Drowning can occur quickly and silently. Drowning accidents are an emergency and require swift action.

Definition:

Drowning is a fatality caused by a lack of oxygen within 24 hours of a drowning accident. The incident is referred to as a "near-drowning" if someone lives for 24 hours or more, after a drowning accident, whether the person survives or not.

Symptoms:

People rescued from drowning may have varying symptoms, ranging from anxiety to near-death.

They may be alert, drowsy or unconscious

Some people may be unable to breathe while others may gasp for breath, vomit, cough or wheeze

Breathing problems may occur up to hours after a drowning incident

Due to too little oxygen in the blood, the skin may look blue or "cyanotic"

Body temperature may drop due to cold water exposure, resulting in hypothermia

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The swallowing of large quantities of water may result in an electrolyte imbalance

Causes:

If you are under water for long enough, your lungs fill with water and oxygen is unable to travel to the blood. A lack of oxygen in the blood, due to accidental suffocation in water, can cause brain damage and death.

Water in the lungs is damaging and can lead to inflammation. The effects of contaminated water (bacteria, algae, sand, dirt, chemicals or vomit) are even worse.

Fresh water has a more detrimental effect than salt water because it causes more severe injury to the lungs

Babies can drown in a sink or bathtub. Most drowning among preschool children occurs in pools.

Diagnosis:

Your doctor will diagnose a drowning injury on the basis of the event, a person's symptoms and their findings following a physical examination.

Tests that may assist in the diagnostic process include:

Oximetry, which measures the amount of oxygen in the blood

Chest x-rays, to establish if the lungs are damaged and the severity of the problem

Additional x-rays to look for broken bones, especially of the skull or spine

CT or MRI scans to look for internal injuries or damage to the brain, spine or other organs

Risk factors:

Globally children under the age of 5 have the highest drowning risk

Adolescents between 15 and 19 years of age also have high rates

Boys are twice as likely to drown as girls

In children under the age of 1, the highest risk factor is being left in the bath unattended

There is a strong association between drowning and poverty, as well as parents' educational level, the number of children in a family and ethnicity. This may be linked to differences in swimming ability and experiences in the water, a lack of opportunities to learn to swim and a lack of supervision in high-risk environments

Drowning is more common in densely populated, low-income communities where there is a high exposure to open water

A lack of available and accessible safety equipment (e.g. life jacket)

Travelling on unsafe water transport (e.g. an overcrowded ferry)

The use of drugs or alcohol prior to the incident

Living in an area that has cataclysmic flooding or tsunamis

Vacationing in unfamiliar surroundings

Not knowing how to swim

Poor access to or the lack of immediate resuscitation

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Treatment:

Drowning victims need CPR immediately, before the paramedics arrive. Administering CPR can prevent brain damage and be the difference between life and death.

What you can do to help your child:

Remove your child from the water. Carry him with his head lower than his chest. This helps prevent the inhalation of water. If water gushes from his mouth, allow it to drain spontaneously. Do not try force water from his stomach. This may produce vomiting and there is the risk of this being inhaled too.

Dry your child as quickly as possible. One of the aims is to increase body temperature. If the water was particularly cold, you may need to treat your child for hyperthermia (this occurs when body temperature drops below 35°C).

Signs of hypothermia include; shivering, cold, pale, dry skin, listlessness or confusion, slow, shallow breathing, weakened pulse and failing consciousness.

Medical attention is essential, even if your child seems to have recovered. The inhaled water can irritate the lungs and cause them to swell at a later stage.

If your child is *unconscious*, lay him on a rug or coat and cover him with a dry towel or blanket. Be sure to support your child's neck and spine. Check his airways and breathing, and look for signs of circulation. Place your ear next to your child's mouth and nose. Do you feel air on your check? Is his chest rising and falling? Be prepared to administer CPR, in the form of rescue breaths, if your child does not have a pulse. You may find it difficult to get air into your child's lungs, due to the water he has inhaled and the coldness of his body. Try remaining calm, breath slowly and firmly in your efforts to make his chest rise (see our first aid videos on how to perform [CPR](#))

If your child is unconscious but is still breathing, place him in the recovery position.
Call an ambulance immediately

A narrow, flexible tube, known as a nasogastric tube, may need to be placed through the nose to the stomach. This may be necessary if your child has swallowed a great deal of water.

Warming treatments may be required, to prevent further damage to the body, if your child has been submerged in cold water and their body temperature has dropped. Depending on the degree of hyperthermia, warming methods may include the provision of properly insulated dry clothing and moving your child to a warm environment, placing a hot water bottle in the armpits and groin (do not place on the arms or legs as this can have a detrimental effect), or providing warm liquids. In more severe cases, the use of intravenous warmed fluids may be required. Extracorporeal rewarming such as via a heart lung machine, is the fastest method for treating severe hypothermia

A narrow tube may be placed in the large airways of the lungs to keep them from collapsing and to allow for mechanical ventilation if required. This procedure is known as endotracheal intubation.

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Prevention

Parents can play a key role in preventing their children from drowning by:

Learning life saving skills. We should all know the basics of swimming, from floating to moving through the water, as well as CPR.

Enroll your child in swimming classes

Fencing off swimming pools, with a four-sided insulation fence, which has self-closing and self-latching gates. This keeps children away from swimming areas, when they shouldn't be near the water and separates the pool, from the house and play area.

Smaller inflatable or portable pools can be emptied and placed away after use

Cover wells and rain water collection sites (e.g. cisterns and barrels) with heavy grills

Make sure your child uses a life jacket when they are near or in natural bodies of water, such as rivers, lakes or the ocean, even if they know how to swim. Weaker swimmers should use a life jacket or armbands, in and around the pool area too.

Be on the look out when your child is in or near water, this includes bathtubs. Avoid any distracting activities such as talking on the phone, reading a book or playing a game.

Actively supervising your child when they are near water, means staying alert and not assuming that someone else is looking out for your child.

If there are several adults present and children swimming, it is recommended that adults use a water watcher card, to designate an adult as the water watcher and prevent gaps in supervision.

Outcomes

The outcome of a drowning can be fatal. In most countries, drowning is the third leading cause of unintentional deaths in children and adolescents between 0-19. For parents and family members the loss of a child or sibling is devastating.

At least 5% of children who are admitted to hospital for a drowning accident have significant neurological damage. This has lifelong economic, health and psychosocial consequences for victims, their families and caregivers. Financially these injuries caused by near-drowning are estimated to have the highest lifetime cost of any injury type.

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