

DROWNING



« DROWNING IS A RESPIRATORY FAILURE RESULTING FROM SUBMERSION OR IMMERSION IN LIQUID. » (WHO, 2005)

This definition implies that there is a presence of liquid at the entrance of the victim's airways that stops them from breathing air. In such a situation, the victim can survive or die; in both cases, they have suffered from drowning. **Fatal drowning, non-fatal drowning and non-fatal drowning with morbidity** are the three recognized terms used to differentiate the types of drowning. It goes without saying that the identification of the type of drowning always happens after the event, during a variable time period.

Note that according to this definition, the “liquid” might be something other than water.

IMMERSION OR SUBMERSION

Immersion happens when a part of the person's body is covered in water. For drowning to occur, the face or airways must usually be immersed.

Submersion happens when a person's whole body, including airways, is completely under the water.

FATAL DROWNING

A victim of fatal drowning dies because of submersion or immersion in liquid. More often than not, a victim of fatal drowning dies shortly after the incident. However, fatal drowning also applies to a victim who dies of complications directly or indirectly related to the drowning, many weeks and even many months after the incident. For example, after a drowning, a victim can develop a pneumonia that will ultimately cause their death. This drowning will thus be considered fatal. There is no time limit between the drowning and the death, so long as there is a clear link between the cause and the effect.

NON-FATAL DROWNING WITH OR WITHOUT MORBIDITY

A victim can escape drowning unscathed. They could go back to their normal state, without any morbidity. Unfortunately, certain victims of non-fatal drowning can suffer from permanent morbidity that can have consequences on their health, to various degrees and which can evolve over time.

THE PROCESS OF DROWNING

REMEMBER!

Aspirating water, which can contain substances that are potentially irritating or susceptible of causing infections, can damage the respiratory system and lead to uncomfortable respiratory symptoms.

When respiratory symptoms appear, it is important for the victim to be evaluated in a medical center and to receive appropriate care as needed, because certain symptoms can lead to death.

In the case of a conscious person, whether the drowning is fatal or not, it usually begins with a phase of panic and voluntary alteration of the normal respiratory rhythm (the victim holds their breath), as well as vigorous efforts to stay above the water's surface. The person then runs the risk of slowly tiring themselves or will make reflex inhaling efforts (involuntary) which will cause either aspiration of liquid or a laryngospasm (contraction of the muscles of the larynx) which happens naturally and unconsciously when a liquid touches the lower airways.

If there is aspiration of a liquid, said liquid may contribute to the modification of normal pulmonary function (dilution of surfactant, diminution of pulmonary compliance, apparition of intra-pulmonary shunt and ventilation-perfusion anomaly). Contrarily to ideas conveyed for many years, the distinction between fresh water and salt water drowning is obsolete, especially for survivors, since it has been demonstrated that victims of non-fatal drownings very rarely aspirate more than 3-4cc/kg of liquid, and significant physiological modifications (variations of plasmatic osmolarity and electrolytic values) only occur when aspirating 11 to 22 cc/kg of fresh or salt water.

In the end, whether it is through liquid aspiration or through laryngospasms, the lack of oxygen to the lungs translates into hypoxemia, i.e. a decrease in the oxygen levels in the blood, which will result in a lack of oxygen to the cells of the organism, known as cellular hypoxia. As for the organs affected during drowning, cerebral hypoxia is often the major factor which will largely determine the victim's future health condition.

When a person is unconscious before entering the water, the same process applies, with the exception of the initial agitation and conscious modification of the breath.

*The distinction between “wet drowning” and “dry drowning” has been abandoned for many years.

TREATING A DROWNING VICTIM

A victim can be rescued at any moment of the drowning process. The treatment must always be directed depending on the primary evaluation of the victim. For example, a respiratory difficulty can require immediate assistance, ranging from oxygen administration to resuscitation maneuvers (starting with ventilations). Any delay before the management of the victim increases the complications and morbidities primarily related to oxygen starvation (hypoxia) of the different organs (brain, heart, etc.).

Information gathered at the place of the incident is extremely important to adequately treat the victim and to predict the development of their condition. This information will also be used for statistics during the writing of the annual drowning report.

HISTORY OF THE TERMINOLOGY

The new definition of drowning, adopted during the first global conference for drowning in 2002, allows, among other things, to better compile statistics concerning drowning around the world.

In the past, the term drowning was used to refer only to deaths by drowning. Now it also applies to victims who have survived a submersion or immersion incident in liquid.

The terms “dry drowning”, “wet drowning”, “passive drowning”, “active drowning”, “silent drowning”, “near-drownings” and “secondary drowning” have since been abandoned. (Magazine Alerte, hiver 2008)

TYPICAL VICTIM PROFILE

Age and gender are part of the risk factors for drowning. In Quebec, men are six times more likely to die from drowning than women (from 2007 to 2011).

Other factors contributing to drowning:

- Easy access to water (non-secure pool, lake, river, reservoir)
- Lack of personal floatation device (PFD)
- Low swimming skills or overestimation of abilities
- Risky behaviours (e.g. dangerous boat driving)
- Intoxication (alcohol, drugs)
- Inadequate adult supervision
- Exposure to water and/or hypothermia

DID YOU KNOW?

It only takes a few seconds for someone to drown.

DID YOU KNOW?

In Canada, the annual economic cost of lives lost from drowning is about 173 million USD. (WHO, 2014)

TO KNOW MORE

The World Health Organization published, in November 2014, the very first [Global report on drowning](#). The complete report is available on the Web in many different languages.

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