

# Deaths on board: medical and legal implications for the maritime physician

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## ABSTRACT

*When death at sea occurs many people are implicated. The assignees of victims often look for detailed circumstances of deaths at sea, and the doctor, besides his preventative role, has to certify the death on board and try to determine the circumstances with a view to a legal investigation if it proves necessary. In this work are presented the main causes, facts, and characteristics of human deaths at sea, and the responsibility of the ship's doctor in case of death on board.*

**Key words:** death, sea, maritime medicine, legal, physician

## INTRODUCTION

Death has for a long time been accepted in the maritime environment as a fatality which is always present amongst men working at sea. Accepted by professionals as a “risk of the job” from which very few individuals could escape, it has unfortunately been written in many tragic stories, telling of long-term dangerous navigation. However, dying on a boat is a fate that seems avoidable in numerous cases. In this paper, we will first focus on the special characteristics of deaths on board by mentioning not only their causes but also the moment when they happened and the activities during which they occurred. It is especially important to include these details in the framework of a medico-legal investigation as well as in the later action aimed at prevention. We also indicate the importance of the role of the ship's doctor, who could be requested to certify these events on board.

## CASUAL AND FACTUAL CHARACTERISTICS OF HUMAN DEATHS ON BOARD

Deaths occur at sea in particular circumstances: they can be associated with an internal cause of the individual or more frequently with an external cause (accidents due to a human failure, the boat, or the weather conditions). Concerning the moment of death, it appears to be an important part in the description of these circumstances as we always try to know emotionally as well as legally what the activity of the individual was when he or she died.

## CAUSES OF DEATH AT SEA

Regarding the causes of death occurring at sea, two different factors must be described as present in the process of dying: the internal and the external causes in a particular case. The internal causes correspond to the final evolution of a sickness that is not directly linked to any external fac-



tor. These diseases will occur, develop themselves, affect the defensive abilities of the individuals, and then eventually overwhelm them.

The external causes represent all the environmental factors that are at the origin of serious and irreversible alterations in the health of human beings in general, in a more violent way than the internal causes.

Classifying these mechanisms in such a categorical way is not easy as sometimes the said mechanisms interfere and thus make determination of the cause of death very imprecise.

### Death due to an Internal Causes

From a legal and medical point of view, looking at the body, the death of a person can be pronounced only in case of brain death [1]. So, deprivation of the oxygen brought to the brain by vascular route, or the consequences of a disease leading to irreversible destruction of brain cells are the mechanisms of cerebral death from an internal cause. Therefore, cardiovascular diseases are internal fatal causes.

Thanks to different studies concerning the internal causes of death on board, it seems that the maritime population is comparable to any other working population on land. Indeed, most of the ailments concern cardiovascular accidents, in particular ischaemic cardiopathy including coronary thrombosis, diseases which represent the most frequent mortality causes on land in a similar way [2–9]. However, the difficulties in diagnosing and treating them on board significantly increase the risk of death among seafarers. A relatively surprising fact is their frequent appearance in moments of rest. This could be explained by the late reports to the ship's captain outside working hours because, during intense professional activity on board, seafarers are often highly involved right until the end of their task and do not want to stop.

In the description of the causes of death at sea, several facts should be noted: there are few deaths due to chronic diseases; moreover, in numerous cases we cannot find the exact cause of the fatal sickness, and the internal factors often seem to be implied in external factors. The “healthy worker effect” certainly explains the logical appearance of acute or sub-acute diseases on board for seafarers with chronic diseases such as cancer or serious endocrinopathies, who stay on land to be treated and do not have permission to continue their work at sea after medical examination. On the other hand, cardiovascular, digestive, or infectious diseases can develop during sea voyages without any previous signs and symptoms, and may be not diagnosed at the time of medical examination on land.

Deaths due to internal causes often seem to be linked with external causes. Regarding cardiovascular diseases, three important risk factors from an external origin exist on

board: nicotine addiction, fatty food, and stressful professional factors. If we search for the causes of infectious diseases, the contamination occurs externally for most respiratory, skin, or digestive infectious agents. Therefore, it is sometimes difficult to differentiate these two major causes. Nevertheless, in some cases, deaths due to external causes are obvious through easily identifiable circumstances and the evidence collected.

### Deaths due to External Causes

The external causes of death are mainly: trauma, falling overboard leading to drowning, and, more rarely, poisoning, suicide, and even homicide [5, 10–17].

The maritime environment presents many health and life risks to seafarers; their fatal injuries are often reported.

## FACT CHARACTERISTICS OF HUMAN DEATHS ON BOARD

### Deaths during Professional Activities

A maritime work accident can thus be classified as:

- an accident: a violent and sudden action from an external cause that, while at work, is the cause of a body lesion;
- the lesion of the body can be an injury resulting from the action of a machine, a tool, or, more generally, an object on board. However, it can also result from the working environment of the seafarer (the effect of noise, cold, heat, light, chemical agents), when a certain origin and time of injury can be attributed to the lesion;
- a relationship between the accident and the job.

Therefore, a death from an external cause, during a professional activity, corresponds to this definition. So, in other terms, a sudden death from an external cause between the boarding and the disembarkation of the seafarer is a maritime working accident until proven otherwise. Therefore, the designation “MWA” is used in sectors like fishing, the merchant navy, professional sport (sailing, water sports with mechanical propulsion, scuba diving), or passenger transportation. One particularity lies in the fact that the person will be taken charge of from departure of the ship until the body is taken to land. The final evolution of occupational diseases is also considered as a sea event to be taken charge of by the ship. As far as fatal working maritime accidents are concerned, military professionals, who can die in missions or during wars, prove to be more at risk than other seafarers. The maritime specificity means any death that occurs off-duty but on board is a maritime working accident if it presents the external characteristics that we have seen.

Among deaths from internal causes, a disease leading to brain damage will be taken charge of on the ship but will be qualified as a disease while navigating [18].

Depending on the conditions of contract, insurance coverage for merchant seafarers sometimes refers to events occurring on shore in foreign countries, when on tours of duty.

### Deaths occurring during non-professional activities

Different cases can be considered, for instance fatal accidents connected with hobbies.

Every year, in summer in particular, many holidaymakers die in sailing or motor boating accidents.

It is right to consider the cases of professional sportsmen outside competition. They can train at sea and be the victim of a fatal accident. The management of such cases which occur during training partly falls within the competence of the federation in which this activity is practised, in this case the national sailing and water sports federation.

Fatal accidents of stowaways, boat people, or people smuggling goods or drugs occur at sea. Cases of death during these kind of activities are investigated under the code of criminal procedure, as well as all acts of piracy where determining the precise circumstances of the death, including the criminal part or the part not played by the dead person, will lead the legal authorities to find the guilty party [19–22].

## THE SHIP'S DOCTOR AND CASES OF DEATH ON BOARD

When a seafarer or passenger dies on board, even if the ship is in the waters under the law of the coastal state (different from the state of the ship), that is to say interior waters, territorial waters, or an exclusive economic area, he or she will be submitted to the laws of the state of the ship. As long as he or she did not commit any violations of the laws governing the coastal waters, the body is taken charge of by the authorities on board (the captain), and the transportation of the dead body is organized to the country of origin of the seafarer or passenger. Sometimes, assistance is required from the coastal state, which is stated in article 27 of the Convention of Montego Bay (CMB) [23] in part II, sub-section B.

On the open sea, the bodies on board are taken charge of by the crew and submitted to the laws of the flag state; however, solidarity with other ships (under a different registration) can be observed, for their transportation in particular.

In the article 94 of the CMB it is said that: "Every state orders the opening of an investigation led by or before one or several people duly qualified, on every sea accident or navigational incident occurring on the open sea in which a ship flying its flag is implied and which cost the life or caused severe injuries to nationals from another state, or huge damage to ships or installations of another state or to the sea

environment. The state of the flag and the other state cooperate in all the investigations led by the previously mentioned one concerning the sea accident or navigational incident of this type".

A doctor with a dead person on board must perform several tasks:

- certify the death;
- try to determine its causes;
- draw up the medical documents certifying the death and helping the legal authorities in case of an investigation of a suspicious event.

Finally, he or she must safeguard against other deaths on board.

To declare that the death occurred on board is not always easy, knowing that the doctor will not have an electroencephalograph at his disposal or the possibility to carry out a brain angiography to determine whether the encephalic functions stopped.

In instead most national laws, irreversible brain destruction is considered as death [1, 20, 21–26].

Human life must be defined as the brain life and death as the brain death. We can find an explanation to this consensus, legally as well as medically, in the temporal conception of human life that favours the interpersonal dimension of the human being. Vegetative life, only possible after brain death, seems to be — for societies of the 20th century — a life that does not deserve to be lived, and is therefore voluntarily excluded from the notion of life [1, 26]. So, the doctor on board will have to use the clinical means that he or she has, facing a person presenting persistent cardiac and/or respiratory arrest, to determine (or not) the secondary arrest of the encephalic functions. The statement of death will be approached by trying to find the three following clinical criteria: the total absence of consciousness and spontaneous motor activity; the abolition of all the reflexes from the brain trunk; and the total absence of spontaneous ventilation. More explorations will be necessary to determine this state when coming back ashore.

Once the death is certified, it will be necessary to determine the moment, the cause, and the circumstances, which is not easy [27]. Indeed, these decisions often fall within the competence of a medico-legal assessment; however, the ship's doctor will be helped with numerous facts to make the inventory regarding a dead body.

The inspection can provide a great deal of information. The place where the corpse was found on board may be the place where the death occurred or it could be the place where the person has been brought to. The equipment on board could be the cause of the trauma, by means of its impact or failure. The room where the body was found could have had a gas leak. The dead person could present some marks of trauma (oedema, bruises, external haemorrhage,

joint deformities); he or she might be livid (a few hours after death) or waxen.

Feeling the body can determine rigor mortis or marks of trauma unnoticed during the first inspection.

The dry temperature of the room and that of the body can reveal information regarding the approximate time of death. The central body temperature will decrease by about 1°C per hour in a heated, dry room [21, 26].

Finally, questioning the witnesses, if there are any, often gives some understanding of the circumstances of the death. It is important to find the medical file of the person. This file provides information about the person's past history and the possible existence of any serious disease that could have suddenly deteriorated whilst on board.

After analysing this data, the doctor will be able to certify the death, which will then be part of the basis of any legal investigation, particularly in cases of violent or suspicious death [28–30].

In any event, the doctor will have to prevent other deaths on board by removing the factor which may have been the cause of the death of the first victim (for example, a gas leak for poisoning, infectious disease diagnosed too late, faulty and/or dangerous equipment).

## CONCLUSIONS

Deaths on board constitute significant events in the life of seafarers. Their impact has fortunately been decreasing during the last few decades. Their causes are still dominated by accidents, despite repeated preventive actions.

Due to their extent, shipwrecks have affected worldwide public opinion throughout the twentieth century. Even now, there is always an occasional human drama affecting the crews of fishing or merchant ships.

The families of the victims often look for detailed circumstances of the death of seafarers at sea. The evidence of the ship's doctor and his or her opinion as to the cause of death is of great importance in such cases.

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