



W4 The Medicolegal Investigation of Recreational Diving Fatalities

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Learning Overview: After attending this presentation, attendees will: (1) have a basic understanding of the special physiology and specialized equipment associated with scuba diving; (2) appreciate the epidemiology of deaths associated with recreational diving, including geographic distribution, common causes of death, and contributing factors to these fatalities; (3) be able to adequately investigate and interpret the historical events and circumstantial evidence associated with diving fatalities; (4) understand the recommended approach to the autopsy of persons who died while diving and be able to interpret the anatomical findings in the context of the historical events; and (5) have handout material and points of contact for future reference to competently investigate a diving-related death.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing the training and resources needed to forensic pathologists and medicolegal death investigators, so they may competently and confidently investigate recreational (scuba) diving-related deaths.

The popularity of recreational diving using Self-Contained Underwater Breathing Apparatus (SCUBA) has increased dramatically over the past several decades. Present estimates place the number of active recreational divers in the United States at between 500,000 to 1,000,000. The number of fatalities involving United States citizens performing recreational dives averages 80 to 90 each year. These fatalities challenge the investigators and pathologists who must investigate and certify these deaths. Recreational diving fatalities are often litigated in civil court. This workshop is designed for the pathologist, criminalist, attorney, and general section member who may become involved in the investigation of a scuba diving accident or fatality.

The initial portion of this workshop will include a brief overview of diving physiology, including the effects on the body of breathing compressed air. The pathophysiology of barotrauma, nitrogen narcosis, oxygen toxicity, gas embolism, and decompression illness (caisson disease) will be reviewed. The pathophysiology of drowning will be reviewed, since it is a frequent outcome in a fatal diving mishap.

Following the discussion on physiology, the epidemiology and risk factors associated with recreational diving fatalities will be presented. A detailed presentation on the recommended investigation of a fatal diving mishap will be given using illustrative cases from several jurisdictions. The importance of interviewing witnesses and gathering information on the diver's past medical history, diving experience, pre-dive status, and the circumstances surrounding the dive will be emphasized. The relevance of knowing the exact depth and bottom time of the dive, as well as when and where the diver began to run into difficulty, will be discussed. Additionally, this workshop will include a hands-on section in which typical diving equipment will be available for examination and familiarization by attendees. This will be accompanied by a brief discussion on the evaluation of dive gear.

In the final portion of the workshop, the speakers will review the autopsy protocol for scuba diving victims and emphasize those tests and observations that are helpful in determining the cause of death. The significance of finding intravascular bubbles will be discussed, as will the proper interpretation of the findings of the autopsy. Natural diseases that are likely to cause sudden incapacitation and death while scuba diving will be reviewed. Finally, related topics, such as hazardous marine animals, zoophagia, and trauma leading to recreational diving fatalities, will be presented.

Thorough handouts will be provided by the speakers, including checklists of important information to obtain regarding a diving mishap, a diving fatality reporting form, a suggested autopsy protocol for use on a diving related fatality, and recommended resources for consultation and referral.

SCUBA Diving, Drowning, Air Embolism