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## U.S. Adoption of the Uniform Definition of Drowning

G. Dean Witman

In 2005, drowning accounted for 3,582 unintentional fatalities in the United States plus another 710 fatalities, from drowning and other causes, due to boating-related incidents (National Center for Injury Prevention and Control, 2008). For every person who died of drowning, several times that number received emergency department care for nonfatal submersion injuries. Often these people were hospitalized or transferred to another facility for treatment. Nonfatal drowning incidents can result in long-term disabilities including a permanent loss of basic functioning.

Globally, an estimated 376,000 drowned in 2002, which makes drowning the third leading cause worldwide of unintentional injury death after motor vehicle accidents and falls (World Health Organization, Web page on "Drowning," 2008). The World Health Organization (WHO) indicates that this enormous figure substantially underestimates the global burden of drowning because it excludes drowning related to floods and boating.

Prevention of drowning requires effective measures that address known risk factors. To correctly identify risk factors, data collection is needed wherever drowning incidents occur. Historically, data collection has been hindered by the lack of a uniform and internationally-recognized definition of water-related injury, which takes into account injuries that both do and do not result in death (van Beek, Branche, Szpilman, Modell, & Bierens, 2005).

To achieve uniformity and international recognition of the definition of drowning, experts entered into a period of vigorous debate that culminated in consensus being reached during a World Congress on Drowning (WCOD) in 2002. During the discussion period, congress participants discussed the suitability of earlier definitions in addition to alternative new definitions. After rigorously analyzing the issues associated with all definitions in use before the conference, the experts there agreed to adopt the following new definition: "Drowning is the process of experiencing respiratory impairment from submersion/immersion in liquid." Based on this consensus, WHO published a strong recommendation that the uniform definition be used to properly describe the problem and allow for effective comparisons of drowning trends (World Health Organization, Fact Sheet on "Drowning," 2008).

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## Method

As someone extensively involved in aquatics as well as a concerned citizen of the United States, I felt it was important to understand the extent to which my country's government and its many agencies are complying with WHO guidelines and the consensus reached among the experts at WCOD. I sought help from the offices of my local congressman and two senators. In letters I sent during this past March, I posed the following questions and asked for my representatives' help in obtaining answers about the practices of United States government agencies with respect to this vital issue:

1. Which agencies of the U.S. government collect data on deaths and injuries associated with the process of experiencing respiratory impairment from submersion/immersion in liquid?
2. Which agencies use collection methods that comply with World Health Organization (WHO) guidelines calling for worldwide use of the definition of drowning adopted by the 2002 World Congress on Drowning (WCOD)?
3. Which agencies do not use collection methods that comply with WHO guidelines concerning the definition of drowning and what are their plans for compliance?
4. In cases where agencies having no plans to comply with WHO guidelines, who is the official most directly accountable for a decision not to comply and how can she/he be contacted?
5. Which congressional committees have oversight over the agencies who have elected not to comply and which committees have held hearings into this matter?

## Results<sup>1</sup>

I received responses from the office of my local congressman and one of my two U.S. senators. The latter also forwarded a letter from one of the agencies that collects drowning statistics. While the responses neither individually nor collectively addressed all of my questions, they did provide a lot of useful information that I had not been able to obtain from published sources. For example, it was evident from the letters from the elected representatives that many people in the U.S. government indeed recognize the importance of global awareness of drowning as a public health issue and the need for global surveillance and data collection.

These sources also informed me of several agencies that are responsible for collecting data on drowning, including the Centers for Disease Control and Prevention (CDCP); CDCP's National Center for Injury Prevention and Control (NCIPC); the National Center for Health Statistics (NCHS), which is part of CDCP; and the U.S. Consumer Product Safety Commission (USCPSC). This is in addition to the United States Coast Guard (USCG), which collects incident reports pertaining to boating-related fatal drowning.

Considering the multiplicity of agencies involved, it is not surprising that adoption of a uniform, internationally-recognized definition is somewhat uneven. On the one hand, according to one of the sources, NCIPC and the WHO were the first organizations to adopt the WCOD definition. While they "continue to urge"

other health organizations to move in this direction, none of the sources mentioned a directive requiring its use. For example, one of the sources pointed out that the coding manual for USCPSC's National Electronic Injury Surveillance System (NEISS) specifies a different definition of drowning, which, according to the source, allows data collection "such that the intent of the (WCOD) definition is followed." USCG's reports clearly do not follow even the intent of the definition with respect to inclusiveness because they exclude relevant cases that are not boating-related and incidents that do not result in death.

Because the WCOD definition allows for multiple drowning outcomes, "death, morbidity, and no morbidity," it was encouraging to find out that NCHS collects data on nonfatal as well as fatal drowning. The latter information is gathered from death certificates," which are dependent on licensed physicians', medical examiners', and coroners' understanding of the cause of death." Most likely for this reason, one of the sources also maintained that current U.S. data systems "adequately capture instances of death" that result from drowning.

With respect to nonfatal drowning, the situation is much more complicated. For example, the sources revealed that the data systems "do not capture a person's functional status at the time of hospital discharge" and therefore rely on "proxy measures" based on emergency department visits and hospitalizations that do not precisely gauge the number of these cases. The systems also rely on input from physicians' offices, clinics, hospitals, and emergency departments and as a result, depend on compliance by a variety of medical organizations outside the U.S. government. While congressional committees have oversight of the agencies that collect injury data, one of my sources asserted that Congress cannot require these organizations to use a uniform, internationally-recognized definition of drowning.

## Discussion

In general, I was encouraged to find out that the U.S. government recognizes that drowning is a serious worldwide health issue and continues to look for ways to improve the accuracy and completeness with which drowning data are collected. Nonetheless, formidable challenges remain.

Capturing the number of deaths resulting from drowning allows us to analyze trends and assess the size of the drowning problem. Reliance on information collected from death certificates, however, does not enable current systems to capture the detailed circumstances surrounding a drowning incident. Systematic prevention efforts that address the risk factors present when drowning occurs require that we understand exactly what is happening in these cases.

Operating multiple data systems with no single agency responsible for their management has resulted in a situation where relevant cases may be excluded or irrelevant cases included in U.S. government drowning statistics depending on the definition that is used. A particular problem is that USCPSC has not explicitly adopted the WCOD definition of drowning while other agencies have.

Because of the size and diversity of the United States, it is not surprising that the government relies on a decentralized method of collecting data on nonfatal drowning. Because current data systems depend on a large number of different medical organizations, all with their own mission, rules and separate interests, this undoubtedly

affects their ability to accurately quantify these events. Evidence of this is the reliance on so-called proxy measures because the systems do not capture a person's health status as she or he leaves a hospital and, according to the reports, the government is either unwilling or unable to require medical professionals to disclose this information. Further evidence is the need for CDCP and USCPSC to "continue to explore ways to track the actual burden of disability" resulting from these incidents.

## Conclusion

In light of this situation, I would, first of all, like to encourage aquatics professionals from outside the U.S. to undertake their own assessment of the systems used to collect drowning statistics in their country, publish their findings, and share any lessons learned. For U.S.-based readers, I would like to encourage lively discussions about the implications of the current situation and what should be done about it. In particular, I recommend that this journal or another suitable forum be used to achieve consensus on a course of action.

To foster that discussion and promote consensus, I propose that you contact your congressional representatives with requests that they do the following:

1. Tell you what they are doing to improve the status of the surveillance system for submersion-related injuries and how members of the aquatics community can help.
2. Request and share with you reports from the CDCP and USCPSC on their joint efforts to ensure that data on nonfatal drowning are collected in a manner consistent with the WCOD definition, highlighting any support that is needed from Congress and aquatics professionals to bring this about.
3. Sponsor legislation requiring that
  - a. Data systems be upgraded to enable the capture of the detailed circumstances surrounding all fatal drowning events;
  - b. A single agency be authorized to oversee the coding scheme used for injury surveillance purposes;
  - c. USCG use the WCOD definition for collecting data on boating-related drowning including incidents which do not result in death;
  - d. NHTSA include in its capture of data pertaining to motor vehicle-related deaths and injuries the detailed circumstances regarding respiratory impairment due to immersion or submersion in water;
  - e. A grant system be established that would support training for medical personnel and the general public about using the uniform, worldwide definition of drowning and consensus within the medical community to avoid commonly used terms such as near-drowning, dry and wet drowning, active and passive drowning, secondary drowning, silent drowning, and others that generate confusion among the public.

Drowning continues to account for a large number of fatalities in the United States and throughout the world. Nonfatal drowning results in pain and suffering on the part of an even greater number of people. Drowning is particularly burdensome in an economic sense, not only because of the resulting medical costs, but also due to the lost productivity of people who have died or been disabled.

To prevent drowning, effective measures that address known risk factors must be put in place. Correctly identifying these risk factors requires that data collection systems use a uniform and internationally-recognized definition of drowning that takes into account both fatal and nonfatal injuries. Aquatics professionals are in a unique position to take action that would improve the status of the surveillance system for submersion-related injuries wherever they live.

## Note

<sup>1</sup> Due to the sensitive nature of the information summarized here, the author has elected not to reveal detailed information about his sources. Aquatics professionals seeking help in obtaining information from government sources should contact the author at witmand@yahoo.com.

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