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Economic Cost of Drowning in Inland Lakes and Rivers

G. Dean Witman

A review of the literature concerned with the economic impact of submersion injury prompted this article. By better understanding the magnitude of the economic cost to the United States of drownings and near drownings, it is possible to more clearly visualize the opportunity that exists for providing more and better training for people to respond to aquatic emergencies, especially in nontraditional settings. The goal of this article is to present some reliable estimates of the economic impact of drowning and encourage practitioners to consider alternatives that would reduce the costs resulting from drownings in inland lakes and rivers.

Several reliable estimates have been made of the economic impact of various causes of injury, including drowning. These studies have sought to guide public health efforts to more effectively reduce the impact of injury on society. The research has shown that injury is costly as a result of productive years lost because of death and disability, in resources used for medical care, and in the pain and suffering of the injured people, as well as the effects on their families and friends. Drowning per person is particularly costly because of the relatively high proportion of these injuries that result in death (Rice & Mackenzie, 1989). Other studies have pointed out the relative proportion of drownings in natural bodies of water compared with pools, saltwater, and domestic water sources such as bathtubs, toilets, and buckets (Quan, Gore, Wentz, Allen, & Novack, 1989). A study of lifeguard effectiveness (Branche & Stewart, 2001) estimated the cost of drownings that would have been incurred if lifeguards had not made various numbers of reported rescues. Existing lifeguard-training materials emphasize that lifeguards who provide care beyond their level of training might be considered negligent (American Red Cross, 2007) and that lifeguards should never jeopardize their own safety when making a rescue. Very little has been written about situations in which supervisors of aquatic activities have a duty to act but no meaningful skills or equipment that would allow them to respond safely to an aquatic emergency.

One congressionally mandated report on the cost of injury in the United States estimated that the lifetime cost of fatal and nonfatal drownings per injured person was highest for adolescents and young adults, age 15–24 (Rice & Mackenzie, 1989). In current dollars, that amount would be \$680,274 per person. If one were to multiply this dollar figure by the 1,461 drowning fatalities that occurred during 1985, the result would be more than \$993 million for this age group. Adding the

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same figures for older age groups results in a total cost for all water settings of more than \$2.5 billion.

A long-term study of drownings and near drownings in King County, WA, determined that 67% (64 out of 96) of drowning fatalities in children 0–19 years of age occurred at lakes or rivers (Quan et al., 1989). Of the older group, 15–19 years of age, 85% (35 of 41) of drowning fatalities occurred in these same natural aquatic settings. If one were to assume that these same percentages apply to people older than 19 years of age, the estimated cost for drownings among the people most likely to participate in aquatic activity in inland lakes and rivers would be between \$1.7 billion and \$2.1 billion.

Unlike the United States Lifesaving Association, which provided its large database of reported rescues at guarded beaches for the Branche 2001 study, no lifeguard organization is tracking saves at unguarded aquatic sites. Based on the lower percentage associated with children 0–19 years old, it is possible to estimate by using the 1985 injury data in Rice and Mackenzie's 1989 study that 3,258 people (>15 years old) would drown each year in inland lakes and rivers. At an average cost of more than \$500,000 per person, nearly \$17 million would be saved for every 1% of those people rescued by a lifeguard. This is roughly equivalent to the amount the City of San Diego spends to maintain its entire staff of 100 lifeguards (San Diego, n.d.).

The economic cost to the United States per drowning fatality is extremely high, especially for people in the 15–24 age group and, to some extent, the 25–44 age group. A relatively high proportion of people in these older age groups drown in natural bodies of water. Most drownings at guarded beaches were shown to occur during times when lifeguards were not present. Therefore, the presence of appropriately trained lifeguards is considered an effective way to prevent drowning.

Current lifeguard training teaches lifeguards to provide care within their level of training and never to jeopardize their own safety when making a rescue. This lifeguard training provides meaningful skills for responding to aquatic emergencies in swimming pools and other relatively controlled settings but is not particularly relevant in natural, freshwater settings. Even saltwater lifeguard training teaches lifeguards to rely on equipment, such as a rescue tube, that is usually unavailable in inland lakes and rivers except for designated swimming areas.

Some supervisors of aquatic activities, such as wilderness trip leaders, outdoor educators, and river guides, have a duty to act. These and other people who might be present when an aquatic emergency occurs in, on, or around an inland lake or river could be given meaningful skills for responding safely to an aquatic emergency and to better safeguard groups participating in aquatic activities. If these trained individuals were able to rescue a small percentage of the people who would have otherwise drowned at these sites, the savings in terms of productive life years, medical expenses, and the well-being of the injured people, their families, and friends would be enormous.

More and better training should be provided for people to respond to aquatic emergencies at inland lakes and rivers. Current lifeguard-training materials should be reviewed to determine the extent to which they are suitable for teaching the skills needed to respond to emergencies in these natural aquatic settings, and the materials should be strengthened wherever gaps appear. If available rescue techniques and equipment are found to be lacking for inland lakes, rivers, and other aquatic

venues, evidence should be accumulated that would help with the development of new approaches.

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