

## Drowning: Lifeguard Rescue and Resuscitation

### To the Editor:

We applaud the recent article by Drs. Layon and Modell<sup>1</sup> as a timely and thorough review of drowning, from epidemiology to treatment. In fact, the scope of the drowning problem may be even larger than initially presented, with more than 400,000 global drowning fatalities in the year 2000 as estimated by the World Health Organization.\* We fully concur that further research in the area of drowning treatment is needed, but the greatest success with the least risk and most promise involves drowning prevention and rescue. This can be achieved by teaching populations to swim and encouraging swimming in lifeguard-protected areas. Lifeguard services are often among the first cut by agencies attempting to reduce operating expenses, yet lifeguards offer "significant economic and social savings to society"<sup>2</sup> because of their low relative expense and high success rate.

In 2008, lifeguards working for agencies reporting to the United States Lifesaving Association reported more than 70,000 rescues from drowning at beach venues alone. They further reported more than 4.5 million preventive actions (such as moving swimmers away from rip currents or other hazards), which helped avoid the need for rescue or medical treatment. United States Lifesaving Association statistics consistently show a relative chance of drowning death while in a lifeguard-protected area of only 1 in 18 million visits.† Meanwhile, media reports of would-be citizen rescuers dying in rescue efforts are common.

As the authors note, "patients who are awake and oriented upon arrival to the emergency department survive without neurologic sequelae if treatment of their pulmonary problem is successful," but "the initial prehospital therapy clearly affects patient outcome." They further note a very low success rate for those who arrive unconscious in the emergency department.

Although most rescues by lifeguards are routine, allowing the victim to walk away, some result in the need for medical assistance. Most lifeguards in the United States are trained in resuscitation. In some areas, this is basic, whereas in others, lifeguards are emergency medical technicians up to the paramedic level. Some lifeguard agencies struggle with providing

the most basic equipment, whereas others have positive end-expiratory pressure available, along with advanced airway devices.

The authors promote the value of immediate oxygen therapy in the field, but this is only available to some lifeguard agencies, many of which expend funds on Automatic External Defibrillators, which the authors note are rarely of value in drowning resuscitation. In addition to further research, the medical community should direct efforts toward promoting the provision of lifeguard protection and improving field resuscitation techniques, such as supporting advanced airway interventions, because drowning remains an acute respiratory insult. Positive patient outcome is more likely to result from expeditious rescue and field resuscitation than treatment in the emergency department or in the intensive care unit days later.

Anesthesiologists, as experts in airway management and resuscitation, are uniquely positioned to aid in drowning treatment. Over a decade ago, this author (W.C.C.) helped develop an educational relationship with a university anesthesiology department and a local lifeguard organization.‡ This ultimately led to increased airway skills with lifeguard supervisors and a protocol for tracheal intubation by selected lifeguards with advanced medical training (paramedic or physician). Ocean lifeguards can respond well before most ambulance services, but most have limited practice with advanced airway training. This could serve as a great opportunity for anesthesiologists to teach the use of the bag-valve mask, oral and nasopharyngeal airways, and the laryngeal mask airway, among other devices.

Drowning is a global problem that can be dramatically reduced by teaching people how to swim, by encouraging swimming in lifeguarded areas, and by improving field resuscitative techniques. Promoting attention to the entire continuum of the drowning prevention spectrum will result in the best possible outcome. We thank the authors for bringing this topic to the readers' attention.

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## References

1. Layon AJ, Modell JH: Drowning: Update 2009. *ANESTHESIOLOGY* 2009; 110:1390-401
2. Lifeguard Effectiveness: A Report of the Working Group. Edited by Branche CM, Stewart S. Atlanta, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2001

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\* [http://www.who.int/violence\\_injury\\_prevention/publications/other\\_injury/en/drowning\\_factsheet.pdf](http://www.who.int/violence_injury_prevention/publications/other_injury/en/drowning_factsheet.pdf). Accessed June 1, 2009.

† <http://www.usla.org/Statistics/public.asp>. Accessed June 1, 2009.

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