



Dive Fatalities in Fresh Water Environment in the Great Lakes

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Shane Jennings MD, MA
Undersea and Hyperbaric Medicine Fellow

Heyboer M, Wojcik S, Denoble P

Department of Emergency Medicine
Division of Hyperbaric Medicine and Wound Care
Upstate Medical University
Syracuse, New York

Introduction

- Salt-water dive fatalities are commonly reported across the globe.
- However little is known regarding dive fatalities in fresh water environments.
- The purpose of this study was to characterize fresh water dive fatalities in the Great Lakes region of the United States.

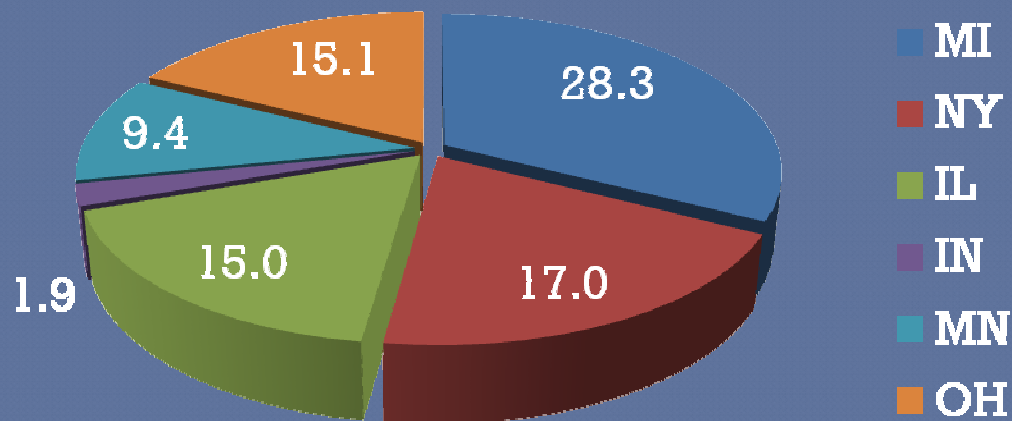
Materials and Methods

- We reviewed dive data from Divers Alert Network (DAN)
 - Years of 2004-2012
- Dive fatalities in fresh water in the Great Lakes:
 - New York, Michigan, Ohio, Wisconsin, Illinois, Minnesota, and Indiana

Results

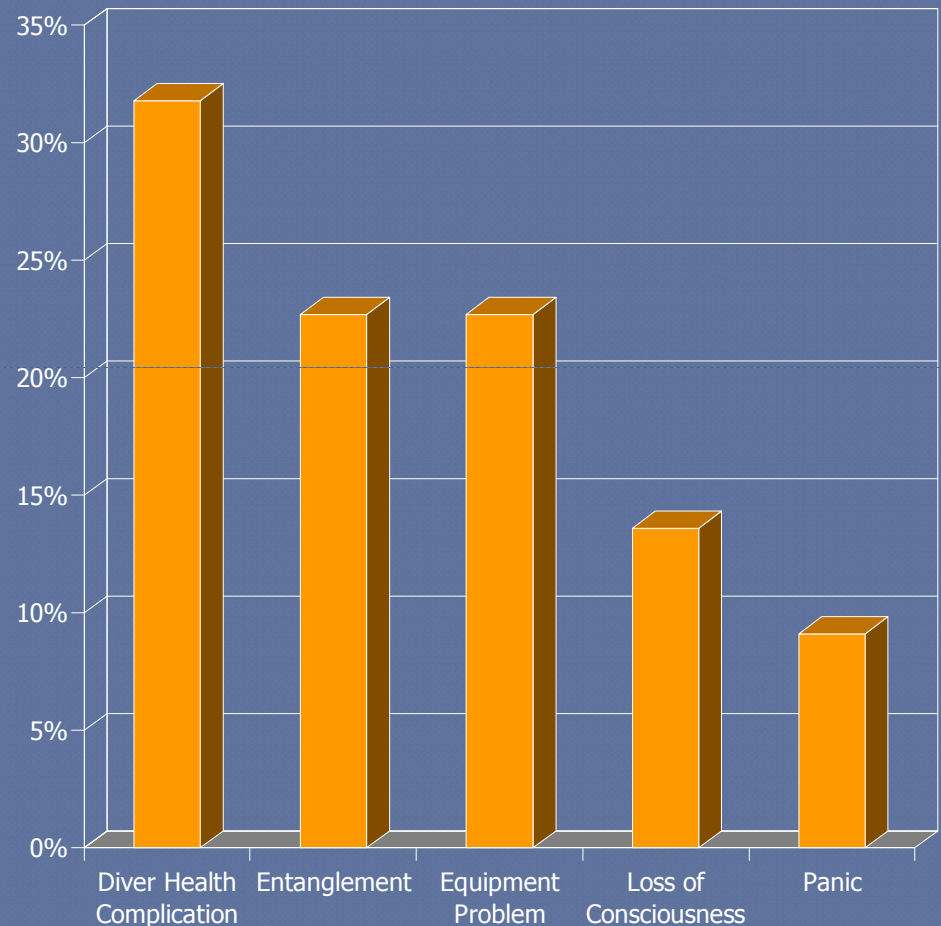
- A total of 53 dive fatality cases were reported during the selected years
- Largest number of cases:
 - Michigan (28.3%) and Upstate New York (17%)

% of Dive Fatalities per State



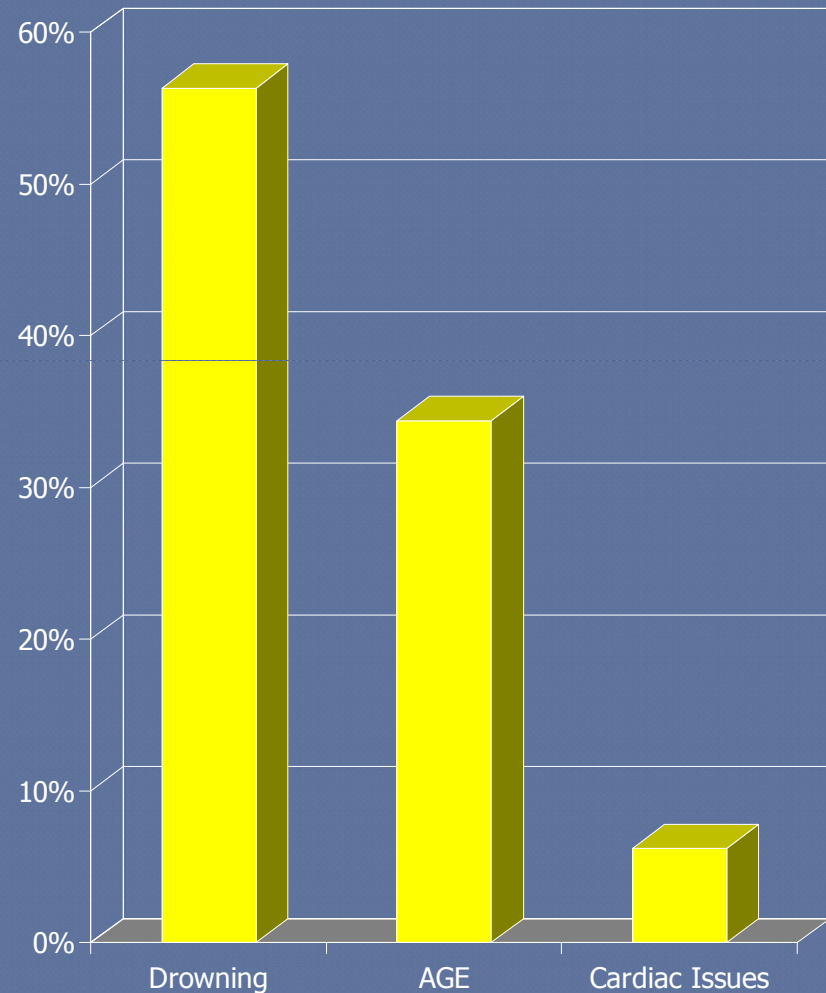
Results

- Reported trigger events included:
 - Diver health complication (31.8%)
 - Entanglement (22.7%)
 - Equipment problem (22.7%)
 - Loss of consciousness (13.6%)
 - Panic (9.1%)



Results

- The cause of death was mainly attributed to:
 - Drowning (56.3%)
 - Air gas embolism (34.4%)
 - Cardiac issues (6.2%)



Results: Demographics

- Age
 - Median: 49 years old
 - Mean: 46.5 years old
- Sex
 - Male: 90 %
 - Female: 10 %



Results: Demographics

- Reported Previous Health Problems
 - No (False): 83%
 - Yes (True): 17%
- Certified Diver
 - Yes: 94.9 %
 - No: 5.1 %

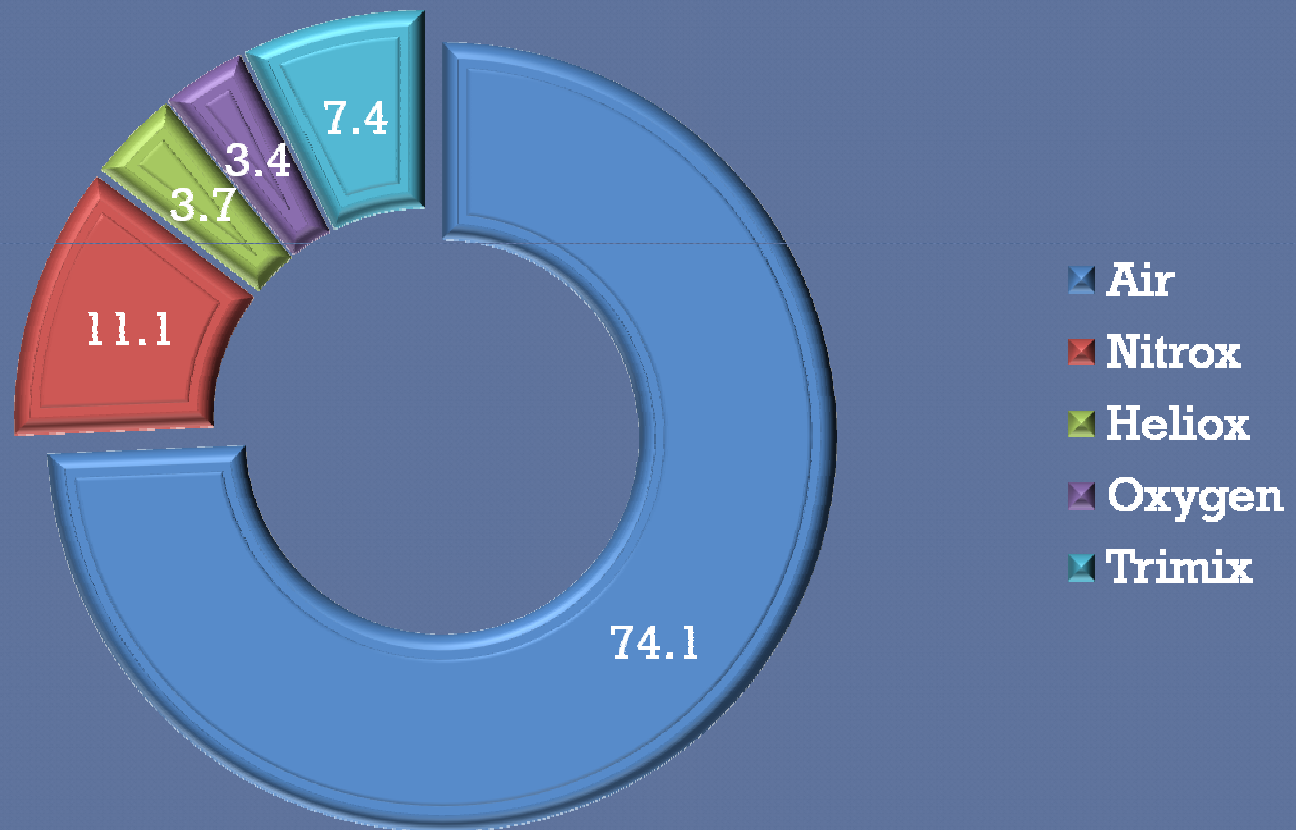


Results

- Dive Activity (most common)
 - Pleasure / Sight Seeing: 54.7 %
 - Training: 10 %
- Time of Dive
 - Day: 94.9 %
 - Night: 5.1 %
- 97.1% considered themselves familiar with the dive area

Results

Breathing Gas (%)

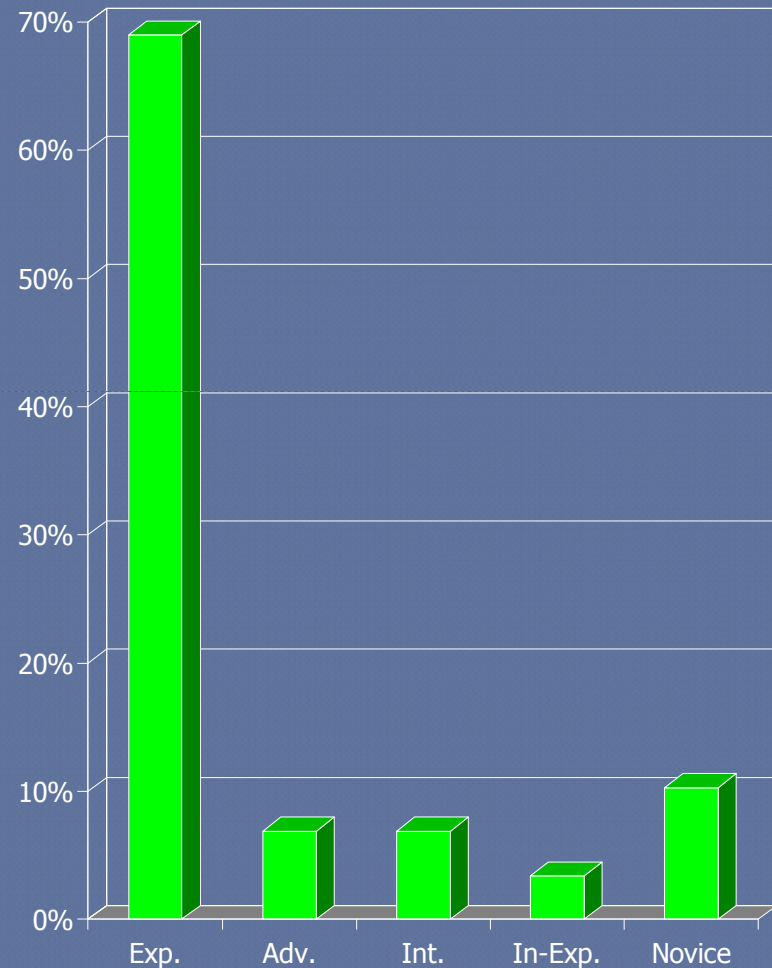


Results: Equipment

- Apparatus
 - Open Scuba: 71.1 %
 - Re-breather: 21.1 %
 - Surface Supply: 2.6 %
 - Missing: 5.3 %
- Equipment Source:
 - Owned: 60 %
 - Borrowed: 10 %
 - Rented: 3.3 %
 - Missing: 20 %
 - Unknown: 6.7 %

Results

- Diver Experience:
 - Experienced: 69%
(61+ dives)
 - Advanced: 6.9%
(41 - 60 dives)
 - Intermediate: 6.9%
(21 - 40 Dives)
 - In-Experienced : 3.4%
(6 - 20 dives)
 - Novice: 10.3%
(0 - 5 dives)



Summary

- Dive fatalities in the fresh water environment in the Great Lakes region were primarily accidental and preventable causes of death
- A large percent of these were a result of air gas embolism
- Surprisingly these fatalities occurred in more experienced divers

THANK YOU

- A special thank you to Dr. Petar Denoble and Diver's Alert Network (DAN) for their assistance with this research and willingness to share diving data in promoting further education in hyperbaric medicine.



Thank You