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DAN News

Diving Stats: DAN Reports on Accident Data

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The 2006 Report on Decompression Illness, Diving Fatalities and Project Dive Exploration is ready for the scuba diving community to review.

Compiled and published annually by DAN Research, the report presents information on Project Dive Exploration (PDE), scuba diving injuries and dive fatalities, as well as breath-hold diving incidents based on data collected during 2004. DAN has added new material this year that describes breath-hold incidents and annual injury and fatality rates for this activity.

Rates of DCS and Death

According to the PDE data collected between 1998 and 2004, the decompression sickness (DCS) incidence rate among warm-water dives fluctuated from 0 to 5 cases per 10,000 dives. The annual fatality rate for DAN Members between 1997 and 2004 varied between 11 and 18 deaths per 100,000 members per year. Note that these rates are for limited population samples (PDE dives per year for DCS and DAN Members per year for fatalities) and cannot necessarily be extrapolated to the diving population as a whole.

Project Dive Exploration (PDE) Data

DAN collected data from 1,521 divers, 3,265 dive series and 23,912 dives through PDE in 2004. The total number of dives logged by PDE during 1998 through 2004 is 105,135. PDE divers reported 95 percent of their dives to be "uneventful," or without any adverse incidents.

Incidents among PDE dives that did not result in injury and were either procedural or equipment-related were subjectively reported in 5 percent of the collected dives. The most common procedural problem was equalization, reported in 2.7 percent of PDE dives, followed by buoyancy trouble at 0.9 percent. The face mask was the most commonly reported equipment problem (0.69 percent); the dive computer followed at 0.4 percent.

Twelve PDE divers reported post-dive headaches, and three reported fatigue. Out of 591 reported instances of equalization problems, six divers reported post-dive symptoms that were severe enough to concern them or make them skip at least one dive. One diver reported short-lasting vertigo, and there was one case of severe sinus barotrauma.

In the PDE population, there were five DCS cases reported; this totaled an annual incidence of two DCS cases per 10,000 dives. Two cases were classified as DCS I (with symptoms that are considered non-neurological in origin, such as itching, rash, joint or muscle pain) and three cases were deemed as DCS II (with symptoms affecting the nervous or cardiovascular systems; one incident was diagnosed as cardiopulmonary). First aid oxygen relieved symptoms in two of the five cases. One case received a recompression Treatment Table 6 in addition, and the other was not recompressed. All cases resolved completely.

Dive Injuries

The Health Insurance Portability and Accountability Act of 1996 (HIPAA, Title II) has significantly changed how DAN collects diving injury data. In response, DAN has developed a new online system: The Medical Services Call Center (MSCC) allows medics, physicians, chambers, and evacuation services in different geographic locations to communicate quickly over the Web and so improve the speed and safety with which injured divers are triaged and delivered to care. The MSCC also captures all the information needed to address key questions for dive injury research. The transition to data collected by the MSCC will be complete beginning with the 2008 Diving Report, making greater accuracy for analysis in more cases.

In the 2004 dive injury cases, pain and sensory symptoms were most common; serious symptoms were rare. Symptom onset was on the order of minutes for malaise, rash, confusion, respiratory trouble and motor weakness, but an hour or more for pain and paresthesia (numbness or tingling

of the skin). The treated divers received between 1 and 17 recompressions. Relief was complete in 84 percent, partial in 6 percent, and there was no change in 10 percent.

Dive Fatalities

Out of 88 cases involving U.S. and Canadian divers, 42 percent occurred in the Southeast reporting region (North Carolina southward to Florida, plus Tennessee and Alabama). Autopsies were performed in 59 cases, and autopsy reports were available in 37.

Seventy percent of males and 80 percent of females were 40 years or older. The age range for females was 30-69 years, with a median of 53 years. The range for males was 14-72 years, with a median of 47 years. Body mass indexing (BMI) data available for 49 fatalities indicated that 26 percent were classified as normal weight, and 74 percent were overweight or obese. Forty-five percent were obese or morbidly obese, representing a higher proportion than in national surveys.

The initial triggering event that began the sequence leading to death was most often insufficient gas (14 percent), followed by rough seas and strong current (10 percent), heart disease (9 percent), entrapment (9 percent), and equipment problems (8 percent). The equipment problems may have been procedural or hardware related. The triggering event could not be established for 20 percent of the cases.

Breath-Hold Diving

DAN began data collection in 2005 to document fatal and nonfatal breath-hold incidents in 2004. In that year, 22 fatalities and one nonfatal case were reported from nine countries. Twelve occurred in three U.S. states: California and Hawaii (each 42 percent) and Florida (17 percent). All but one victim was male; the average age was 41 years (range 14 to 77).

Trigger events were documented in 43 percent (n=10) including shark attack (4/10), weather conditions (undertow [1 in 10], rip current [1 in 10], and rough seas [1 in 10]), one severe coronary arteriosclerosis, and one boat propeller strike. Shallow-water blackout was suspected in two other cases but without supporting documentation.

Want More Info? The entire report is available free of charge to DAN Members. To download it, click [here](#). You'll need your member number to log in for your copy.

– By Petar Denoble, Ph.D., DAN Senior Research Director