



ANNUAL RATE OF DECOMPRESSION SICKNESS BASED ON INSURANCE CLAIMS



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INTRODUCTION

- Establishing and monitoring a DCS incidence rate may help evaluate trends in dive safety and effects of changes in dive technologies, practices and policies.
- We estimated the annual rates of DCS by calculating the rate of claims for DCS therapy among divers with DAN insurance.

METHODS

- The study was approved by the Duke University Medical Center Institutional Review Board.
- DCS claims (ICD-9 code of 993.3) submitted by insured DAN members in 2000-2007 were provided by insurance claims processing service.
- Data on all insured DAN members were available for the same period.
- The rate of DCS claims per 100,000 insured members was calculated for each year.
- The effects of age, sex, and calendar year on claim rates were tested by logistic regression ($p < 0.05$).

RESULTS

- There were 1,401,864 insured member-years and 3,183 DCS cases.
- The distributions of insured DAN members by age and gender are shown in Fig. 1.
- The overall DCS claim rate was 227 (95%CI: 219-235) per 100,000 insured.
- Annual rates declined significantly from 285 in 2000 to 186 in 2007 (Fig. 2).
- Rates were higher in males (247; range 237-258) than in females (192; range 180-204).
- The relative risk for males to females was 1.29 (95% CI: 1.2-1.3).
- The rates declined with age and became similar for both genders above 40.

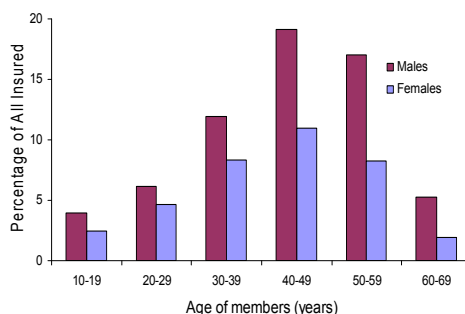


Figure 1. Distribution of Insured by Age and Gender

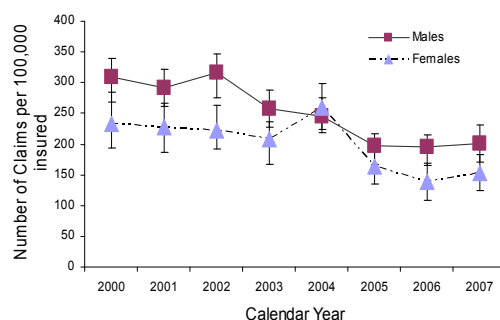


Figure 2. DCS Claim Rates by Year

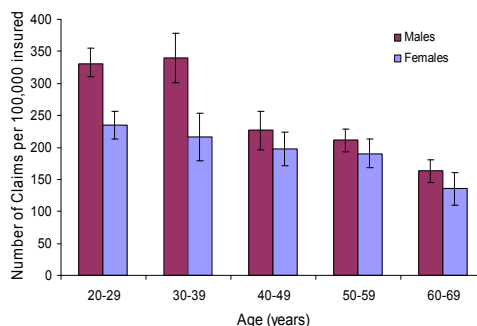


Figure 3. DCS Claim Rates by Age and Gender

RESULTS (continued)

- The risk for DCS claims decreased with increasing number of years of being insured relative to Year 2 (Fig. 4).
- After Year 2 (usually the first year of independent diving after certification), DCS claim rates steadily declined.
- The insurance renewal rates for divers who claimed DCS in first four insured years were greater than for those insured without claims.

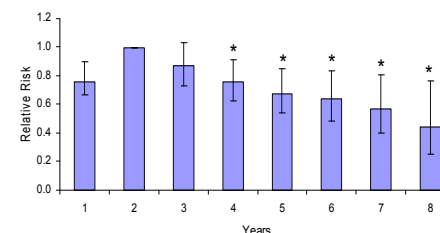


Figure 4. Relative Risk of DCS vs. Number of Insured Years. * Significant difference in comparison to Year 2 ($p < 0.05$).

DISCUSSION

- Our data were from secondary insurance claims and may not represent all DCS cases in insured DAN members.
- However, no US primary insurance covers all DCS treatment expenses which would be an incentive for treated divers to file claims with DAN.
- Claim rates may overestimate true DCS rates if the diagnosis were later changed.
- Dive profiles were not available to test for differences in exposure by age and gender.
- Divers who suffer early DCS are often suspected to drop out of diving, but divers who claimed DCS in first year were more likely to renew their insurance consecutively for next four years than other divers. This suggests that early DCS was not a drop-out incentive.