Drinking and Boating: a Population-Based Case-Control Study of Recreational Boating Fatalities

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Abstract
Background: Whereas alcohol is involved in many boating fatalities, the relative risk of death associated with alcohol use among boaters is unknown.

Objectives: To determine the association of alcohol use with the relative risk of dying while boating for passengers and operators.

Methods:
A case-control study was conducted where recreational boating deaths (18 years and older) during the period from 1990 to 1998 in Maryland and North Carolina (N=221) were compared with controls obtained from a multi-stage probability sample of boaters in each state during 1997-99 (N=3943). Logistic regression was used to calculate relative risk of a boating fatality associated with different levels of blood alcohol concentration (BAC) while controlling for other risk factors. Stratification, clustering, and weighting were also taken into account in the analysis.

Results:
Compared to a zero BAC, the relative risk of death was increased even at 10 mg/dl, with an estimated OR of 1.3 (95% CI: 1.2-1.4); increasing to 52.4 (95% CI: 25.9-106.1) at 250 mg/dl; and was similar for passengers and operators. The relative risk associated with alcohol use did not vary by boat type and was the same whether the boat was moving or was not underway.

Discussion:
Drinking increases the relative risk of dying while boating even at low levels of BAC. In addition, drinking by passengers as well as operators is associated with the same increased relative risk of death regardless of whether the boat is underway. Prevention efforts targeted only at those operating a boat are missing many boaters at high risk. These findings suggest that countermeasures directed only at operators of moving boats are likely to have less impact on alcohol-related boating fatalities than broader efforts to address drinking by anyone engaged in recreational boating.