**Category:** Genetics

**Title:** Genetic and Environmental Contributions to Alcohol Abuse and Dependence in a Population-Based Sample of Male Twins

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**Background:** In previous twin and adoption studies, a moderate to strong genetic influence on alcohol men was found with heritability estimates of 40-60%. These studies were not population-based and were either archival, clinically ascertained samples, or a sample of volunteers. This is the first US population-based study to assess genetic factors influencing alcoholism among men.

**Objective:** To assess genetic factors in men influencing alcoholism in a US population-based twin study.

**Type of Article:** Study

**Design:** Structured interviews were used to assess DSM-III-R and DSM-IV alcohol abuse and dependence among twins.

**Setting:** US population-based of Mid-Atlantic and Virginia twins.

**Patients:** 3,516 twins from male-male pairs born in Virginia between 1940 and 1974. 653 fraternal (dizygotic) and 861 identical (monozygotic).

**Outcomes Measured:** Included lifetime prevalence of alcohol abuse or dependence. Then the twin pairs were assessed for concordance between monozygotic twins and dizygotic twins.

**Main results or findings:** Lifetime prevalences ranged from 24 % (DSM IV criteria) to 27.4% (DSM III R criteria). The concordances and odd ratios showed a risk of an alcohol-related disorder in the case of an affected twin is increased substantially over the sample preference. The odds ratios and pair correlations were significantly higher among monozygotic and among dizygotic pairs.

**Conclusion/Limitations:** These findings suggest the importance of genetic influences on the variation in the risk of alcohol abuse or dependence in men. There was little evidence to suggest that genetic factors are important in the narrowly defined alcoholism (alcohol dependence with or without physiological dependence) than for the more broadly defined alcoholism (alcohol abuse/dependence or “problem drinking”). This suggests that alcohol related problems exist on a continuum and not the existence of discrete etiologies.

The major limitation is that the study only included Caucasian twins born in Virginia. The will limit the generalizability of the findings.
Commentary (Impact on Internal Medicine). This study adds to the growing information of family, twin and adoption studies that support the role of genetic risk in the formation of alcoholism. The exact mechanism of this genetic probability is unknown at this time. It has been suggested that a loci associated with aldehyde and alcohol dehydrogenase and a variant of the dopamine receptor, however these studies have not been replicated. For the internist, this increases the need for a good family history in regard to substance use. Hopefully studies such as this further decrease the stigma associated with substance use disorders because of the strong association with the medical model for disease.