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Alcohol and Health: Current Evidence

MARCH - APRIL 2006

Alcohol and Health Outcomes

Does Binge Drinking Affect Prognosis After Myocardial Infarction?

Although binge drinking may increase the risk of myocardial infarction (MI), its effect on prognosis after MI is unclear. To determine whether binge drinking after MI is associated with death, researchers studied 1919 patients who had been hospitalized with MI. At baseline, 250 subjects (almost all men) reported binge drinking* in the past year (median of once per week); 3% of these binge drinkers had evidence of alcohol abuse recorded in their medical records. During 4 years of follow-up, 318 subjects died.

- Binge drinkers had a significantly higher risk of death than did nonbinge drinkers (hazard ratio [HR] 2.0) in analyses adjusted for potential confounders. Results were similar regardless of the amount of usual intake, number of binge episodes, or beverage type.
- Light drinkers (consumed approximately <8 drinks per week) and heavier drinkers (≥ 8 drinks per week) who did not binge had a lower risk of death than did abstainers

(HRs 0.8 and 0.6, respectively; P for trend=0.009). Light and heavier drinkers who binged did not have a lower risk.

Comments: This well-done study found that the risk of death among patients with MI was twice as high in binge drinkers than in nonbinge drinkers. It also showed that binge drinking, which was relatively common (occurring in approximately 25% of drinkers) and often unrecognized, completely negated any protective effect of moderate alcohol intake against mortality. These findings suggest that clinicians need to counsel both light and heavier drinkers who have had MI about the dangers of bingeing.

R. Curtis Ellison, MD

* ≥ 3 drinks within 1–2 hours

Reference: Mukamal KJ, et al. Binge drinking and mortality after acute myocardial infarction. *Circulation*. 2005;112(25):3839–3845.

Alcohol Is a Leading Risk Factor for Cancer

Alcohol is a known risk factor for a number of cancers. To calculate the proportion of cancer deaths attributable to alcohol and other risk factors, researchers analyzed systematic reviews, meta-analyses, and data from the World Health Organization.

- Over one third (35%) of cancer deaths worldwide were attributable to 9 risk factors: overweight and obesity, low fruit and vegetable intake, physical inactivity, smoking, alcohol use, unsafe sex, urban air pollution, indoor smoke, and contaminated injections.
- Cancer sites affected by alcohol included the mouth and oropharynx, esophagus, liver, and breast.
- Alcohol use was among the top 3 causes of cancer deaths* worldwide (responsible for 4%–5% of cancer deaths).

- Of the 4 cancers that were largely attributable (>50% of cases) to the risk factors studied, alcohol was a major cause of 2 (mouth and oropharynx, and esophageal cancers).

Comments: Aggregate data such as these do not inform us about drinking levels associated with specific cancer risks. However, they do tell us that addressing alcohol use can help prevent cancer.

Richard Saitz, MD, MPH

*Attributable to the 9 risk factors studied

Reference: Danaei G, et al. Causes of cancer in the world: comparative risk assessment of nine behavioural and environmental risk factors. *Lancet*. 2005;366(9499):1784–1793.

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The Relationship Between Alcohol and Breast Cancer Differs by Tumor Receptor Status

The association between alcohol intake and breast cancer may differ by the positive or negative estrogen-receptor (ER) and progesterone-receptor (PR) status of breast tumors. Researchers investigated this possibility using data from 51,847 postmenopausal participants in a population-based Swedish study. During approximately 8 years of follow-up, 1188 women with breast cancer with known ER and PR status were identified.

- In analyses adjusted for potential confounders (e.g., age, family history of breast cancer, body mass index), drinking approximately ≥ 1 drinks per day significantly increased the risk of developing ER positive tumors—regardless of PR status—in women who had used postmenopausal hormones.
- Drinking also increased risk, but at a non-significant level, among women who did not use the hormones.
- Alcohol use did not significantly increase the risk of developing ER negative tumors.

Comments: This study found that alcohol increased the risk of ER positive, but not negative, tumors—a finding that supports some previous research but contradicts other reports. Although these researchers examined postmenopausal hormone use and adjusted analyses for potential confounders, they did not account for folate intake, which can also modify the association between alcohol and breast cancer. Overall, the scientific data suggest an increased risk of breast cancer for women who consume alcohol, but the mechanisms for and modifiers of this risk remain unclear.

R. Curtis Ellison, MD

Reference: Suzuki R, et al. Alcohol and postmenopausal breast cancer risk defined by estrogen and progesterone receptor status: a prospective cohort study. *J Natl Cancer Inst.* 2005;97(21):1601–1608.

Alcohol Intake and Dementia in China

A number of prospective studies from Europe and the United States have shown an inverse association between alcohol intake and the development of dementia. To determine whether this association exists among the Chinese, researchers assessed dementia (using the Mini-Mental State Examination and the Diagnostic and Statistical Manual of Mental Disorders) and alcohol use in 2632 people aged 60 and older from 6 communities in China. Over 2 years of follow-up, 121 subjects developed dementia.

- In analyses adjusted for potential confounders (e.g., age, education, smoking), light-to-moderate drinkers* had a significantly lower risk of dementia than nondrinkers did (odds ratios [ORs] 0.6 for Alzheimer's disease and 0.3 for vascular dementia).
- Heavier drinkers had a nonsignificantly higher risk (ORs comparing heavier drinkers with nondrinkers: 1.4 for Alzheimer's disease and 1.7 for vascular dementia).
- Compared with nondrinkers, light-to-moderate drinkers who drank wine had a lower risk of overall dementia (OR 0.7),

but light-to-moderate drinkers who drank beer had a higher risk (OR 2.5).

Comments: Like recent European and US studies on alcohol and dementia, this study found lower risks of dementia in light-to-moderate drinkers. This study also reported a tendency for an increased dementia risk in heavier drinkers. The marked differences between beer and wine drinkers may be due to confounding by unmeasured lifestyle factors, especially the total amount of alcohol consumed and/or the pattern of drinking.

R. Curtis Ellison, MD

* ≤ 168 g of alcohol per week (approximately 2 drinks per day) for men and ≤ 112 g (1–1.5 drinks per day) for women

Reference: Deng J, et al. A 2-year follow-up study of alcohol consumption and risk of dementia. *Clin Neurol Neurosurg.* Available at: [doi:10.1016/j.clineuro.2005.06.005](https://doi.org/10.1016/j.clineuro.2005.06.005). Accessed December 28, 2005.

Moderate Alcohol Use Lowers Diabetes Risk in Older Women

The relationship between alcohol use and type 2 diabetes in men is U-shaped—moderate drinkers have a lower risk than non-drinkers and heavier drinkers do. Dutch researchers studied whether this relationship exists in older women, assessing alcohol use and diabetes incidence among 16,330 women aged 49–70 years. During an average of 6 years of follow-up, about 760 women developed type 2 diabetes.

Women with more years of moderate drinking had a lower risk of developing type 2 diabetes (e.g., hazard ratios comparing drinkers with abstainers and adjusted for potential confounders: 1.1 for those who had 1 daily drink for 0–4.9 years and 0.8 for those who had 1 daily drink for 20–29.9 years; *P* for trend=0.007).

Comments: Moderate alcohol consumption is associated with a lower risk of type 2 diabetes in older women, as in other populations. Recent research suggests that alcohol may increase serum adiponectin (an insulin-sensitizing adipocyte-derived hormone) and insulin sensitivity. Nonetheless, in the absence of definitive intervention trials, clinicians should consider the implications of this study cautiously.

Peter Friedmann, MD, MPH

Reference: Beulens JWJ, et al. Alcohol consumption and risk of type 2 diabetes among older women. *Diabetes Care*. 2005;28(12):2933–2938.

Assessments and Interventions

Primary Care Intervention Reduces Unhealthy Alcohol Use in the Elderly

Effectively incorporating brief intervention for unhealthy alcohol use into clinical practice remains a challenge. To evaluate a possible method of implementation, researchers randomly assigned 3 primary care practices (including 711 patients aged 65 or older who drank ≥ 1 drinks in the past 3 months and 23 physicians) to receive usual care or 1 of 2 interventions.

In both intervention groups, patients were mailed educational materials and personalized reports of their drinking risks and problems (based on a 10-minute screening interview). In one of the groups, doctors were also given the patient drinking reports. Researchers assessed alcohol use at baseline and 12 months later (665 subjects at follow-up) and adjusted analyses for potential confounders.

- At baseline, 52% of patients drank low-risk amounts, 26% drank risky amounts, and 21% drank risky amounts with alcohol-related health consequences.
- At follow-up, the proportion who drank risky amounts with consequences decreased to 16% among patients who had been provided the drinking reports but whose doctors had not. It decreased to 18% among patients who, along with

their doctors, had been provided the reports. These decreases significantly differed from the decrease seen in the usual care group.

- Lower-risk drinking, but not drinking risky amounts, increased significantly in both intervention groups compared with the usual care group.

Comments: A personalized report for elderly patients appeared to modestly reduce unhealthy alcohol use. The pre-intervention survey plus any additional time spent by patients and physicians on alcohol issues may limit widespread use of this intervention in clinical practice. Nonetheless, interventions like this that systematically identify and attend to patient problems show the greatest promise for addressing unhealthy alcohol use.

Richard Saitz, MD, MPH

Reference: Fink A, et al. An evaluation of an intervention to assist primary care physicians in screening and educating older patients who use alcohol. *J Am Geriatr Soc*. 2005;53(11):1937–1943.

Can Shelter Services and Administering Alcohol Help the Homeless With Alcohol Dependence?

Alcohol dependence is common in homeless people, and treatment success is limited. Recognizing these issues, a group in Canada created a shelter-based program that does not require abstinence and aims to minimize the harms associated with alcoholism.

Along with medical and social services, the program provides participants up to 5 ounces of wine or 3 ounces of sherry per hour on demand, 7 days per week. This study examined outcomes in 17 subjects (average age 51 years) who were enrolled in the program for 5–24 months, had been homeless for at least 2 years, and had alcoholism for an average of 35 years.

Subjects had significant decreases in the following while in the program (compared with 3 years before program entry):

- Average daily consumption, including nonbeverage alcohol (e.g., mouthwash) (decreased from 46 drinks to 8 drinks)
- Average monthly emergency-department visits (from 0.8 to 0.5)
- Average monthly police encounters (from 1.1 to 0.5)

(continued on page 4)

Shelter Services and Alcohol Administration (continued from page 3)

Subjects did not have significant changes in blood markers of alcohol use.

Comments: This demonstration was not a clinical trial, the number of participants was small, and alcohol use off shelter premises was not recorded. Nonetheless, the findings are intriguing—the program appeared to benefit a group who had little success with treatment in the past. The real question is whether any of

these benefits could have been achieved without serving hourly drinks to people with alcoholism.

Richard Saitz, MD, MPH
Rosanne Guerriero, MPH

Reference: Podymow T, et al. Shelter-based managed alcohol administration to chronically homeless people addicted to alcohol. *CMAJ*. 2006;174(1):45–49.

The Costs and Benefits of Screening With Carbohydrate-Deficient Transferrin in Primary Care

The costs and benefits of using biomarkers to screen primary care patients for unhealthy alcohol use is unknown. Using a decision-analysis model based on published data, researchers estimated the costs and benefits of alcohol screening with carbohydrate-deficient transferrin (CDT) in primary care settings. The model, which focused on patients with diabetes and/or hypertension, assumed that 70 of 1000 simulated patients would drink heavily* and that all who screened positive would receive brief intervention.

- Self-report of alcohol use (without use of validated screening questionnaires) would identify 28 of 70 (40%) heavy drinkers. CDT plus self-report would identify 53 of 70 (76%).
- CDT plus self-report, compared with self-report alone, would save \$212.30 in medical, legal, and motor-vehicle accident costs.
- CDT plus self-report remained cost-saving in 83% of the multivariate simulations.

Comments: This well-done analysis provides some preliminary support to using CDT for alcohol screening in primary care. However, before widespread implementation is considered, future cost-benefit and cost-effectiveness analyses should directly compare CDT-based screening with screening conducted with standard instruments, such as the CAGE or AUDIT.**

Kevin L. Kraemer, MD, MSc

*>90 drinks per month for men (>60 for women)

**CAGE is a mnemonic standing for Cut-down, Annoyed, Guilty, Eye-opener; AUDIT stands for Alcohol Use Disorders Identification Test.

Reference: Dillie KS, et al. Cost-benefit analysis of a new alcohol biomarker, Carbohydrate Deficient Transferrin, in a chronic illness primary care sample. *Alcohol Clin Exp Res*. 2005;29(11):2008–2014.

AA Attendance and Abstinence

While Alcoholics Anonymous (AA) is a preferred form of after-care for patients “completing” formal treatment programs, little is known about AA involvement and its effects on abstinence over time. In this study, researchers assessed participation in AA, abstinence, and other alcohol outcomes over 5 years among 349 patients who entered treatment at baseline and attended AA at least once during follow-up.

- Four patterns of AA attendance emerged: low (mainly during the year following treatment entry); medium (about 60 meetings per year with a slight increase by year 5); high (over 200 meetings per year with a slight decrease by year 5); and declining (almost 200 meetings the year following treatment entry and about 6 meetings in year 5).
- Abstinence (past 30 days) in year 5 significantly differed across groups: 79% of patients with high attendance reported abstinence, followed by 73% with medium attendance, 61% with declining attendance, and 43% with low attendance.
- Patients with medium or high attendance had the largest

social networks of people who supported patient abstinence or decreased alcohol use.

- Patients across the groups had similar numbers of dependence symptoms and social consequences of drinking.

Comments: Patients who attend AA after treatment can be characterized as those who never connect, those who connect briefly, and those who maintain stable (and sometimes quite high) attendance. Even those who connect for a short while appear to benefit years later, though higher attendance was associated with a greater likelihood of long-term abstinence. Providers should reinforce AA attendance as part of a comprehensive effort to improve long-term abstinence.

Joseph Conigliaro, MD, MPH

Reference: Kaskutas LA, et al. Alcoholics Anonymous careers: patterns of AA involvement five years after treatment entry. *Alcohol Clin Exp Res*. 2005;29(11);1983–1990.

The GABRA2 Gene and Subtypes of Alcohol Dependence

Studies have shown an association between the gene that codes for a subunit of the gamma-aminobutyric acid type A receptor (GABRA2) and alcohol dependence. To determine whether variations in the GABRA2 gene are associated with subtypes of alcohol dependence, researchers in Germany genotyped 257 inpatients with dependence and 88 healthy controls. The examined subtypes were a positive family history (1 or more first-degree relatives with alcohol dependence), a negative family history, early onset (<26 years old at diagnosis), late onset, alcohol withdrawal seizures, delirium tremens, and anti-social personality disorder.

- A specific GABRA2 haplotype was significantly more common in patients with dependence than in controls (45% versus 29%, respectively; odds ratio [OR] 2.0).
- This “higher-risk” haplotype was also significantly associated with most subtypes of alcohol dependence (ORs ranging from approximately 1.9 to 2.6 compared with controls) and was most likely in patients with a positive family history.

Comments: This study supports prior data indicating that a GABRA2 haplotype may increase susceptibility for alcohol dependence. Although the higher-risk GABRA2 haplotype was most common in patients with a presumed “higher genetic load” (those with a positive family history of dependence), its prevalence was similar across the subtypes. The clinical utility of uncovering susceptibility genes such as GABRA2 is uncertain.

Kevin L. Kraemer, MD, MSc

Reference: Fehr C, et al. Confirmation of association of the GABRA2 gene with alcohol dependence by subtype-specific analysis. *Psychiatr Genet.* 2006;16(1):9–17.

Special Populations

Alcohol Use Among Low-Income Pregnant Latinas

Some research suggests that the prevalence of heavy drinking among Latinas of childbearing age may be increasing. This study examined the prevalence of and risk factors for alcohol consumption *during* pregnancy among 100 low-income pregnant Latinas.

- Three months before recognizing they were pregnant, 43% of subjects had consumed some alcohol, 20% had consumed ≥ 4 drinks on an occasion at least once (bingeing), and 5% had consumed ≥ 7 drinks per week.
- After realizing they were pregnant, 13% continued drinking alcohol.
- A planned pregnancy did not affect the likelihood or amount of alcohol use.
- In multivariable analyses, speaking English and acculturation were significant predictors of any alcohol use in the 3 months before subjects recognized they were pregnant. Lower parity and having ever smoked were significant predictors of bingeing.
- Knowledge about fetal alcohol syndrome (FAS) and/or awareness of messages warning about alcohol use during

pregnancy were associated with increased (not decreased) odds of any alcohol use or bingeing in the 3 months before pregnancy recognition.

Comments: The prevalence of alcohol use among pregnant Latinas—both before they recognized their pregnancies and after—is substantial. Alcohol interventions for low-income Latinas who may become pregnant are needed. As suggested by this study, providing information about FAS may be insufficient (though the increased odds of drinking among women with greater alcohol awareness may have been due to better recall of warnings by heavier drinkers). Factors that reinforce alcohol consumption in early pregnancy should be identified and addressed.

Joseph Conigliaro, MD, MPH

Reference: Chambers CD, et al. Alcohol consumption among low-income pregnant Latinas. *Alcohol Clin Exp Res.* 2005(11);29:2022–2028.

Alcohol-Related Diagnoses Increase Resource Use by Hospitalized Seniors

A number of studies have examined the prevalence of unhealthy alcohol use in older adults. Fewer studies, however, have assessed medical service use for alcohol-related conditions in this population. In an 11-state study of 2.3 million patients aged 65 and older who were hospitalized through the emergency department, researchers compared resource use by those with an alcohol-related diagnosis and those with other diagnoses. Analyses were adjusted for age, sex, comorbidities, and geographical location.

- Admissions with primary alcohol-related diagnoses, compared with other admissions, were significantly less costly (by \$2172) but associated with longer stays (by 0.3 days).
- Admissions with secondary alcohol-related diagnoses* were both more costly (126% to 343% higher charges) and associated with longer stays (37% to 119% longer).

Comments: Admissions with primary alcohol-related diagnoses may have been less costly because they generally require less sophisticated procedures than do many other admissions. The second finding, in particular, suggests that unhealthy alcohol use, which is underdetected in medical settings, is an important source of comorbidity and higher costs among hospitalized seniors. Future research should examine the extent to which screening and intervention of older adults can prevent these higher costs.

Peter Friedmann, MD, MPH

*Those associated with the 10 most common *International Classification of Diseases, Ninth Revision, Clinical Modification* Clinical Classifications Software primary diagnoses

Reference: Saleh SS, et al. Resource use of elderly emergency department patients with alcohol-related diagnoses. *J Subst Abuse Treat.* 2005;29(4):313–319.

Obstacles for American Indians Seeking Mental Health and Substance Use Treatment

Identifying obstacles that hinder American Indians from seeking treatment for mental health and substance use problems is a health-services research priority. In this study, investigators examined 4 such obstacles among 224 American Indians who sought mental health and substance use treatment in the past year. The obstacles included wanting to solve the problem without treatment, wanting the problem to remain a secret, concerns about quality of care, and problems communicating and trusting healthcare providers.

- Between 45% and 64% of subjects reported facing at least one of the obstacles.
- Generally, obstacles were less common among subjects with social support and those who found their counselors useful. Obstacles were more common among subjects with anxiety

and those in the Southwest tribe (versus the Northeast Plains tribe).

Comments: Barriers at the individual, community, and organizational levels may account for the low proportion of American Indians who seek help for their mental health and substance use problems. Public health practitioners must recognize the heterogeneity among American Indians in order to provide appropriate and effective treatment for these disorders.

Jeffrey Samet, MD, MA, MPH

Reference: Duran B, et al. Obstacles for rural American Indians seeking alcohol, drug, or mental health treatment. *J Consult Clin Psychol.* 2005;73(5):819–829.

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Contact Information:

Alcohol and Health: Current Evidence
Boston University School of Medicine/
Boston Medical Center
91 East Concord Street, Suite 200
Boston, MA 02118
ahce@bu.edu