Alcohol and Health: Current Evidence

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Alcohol and Health Outcomes

Does Drinking Coffee Protect Against Alcoholic Cirrhosis?

Research shows that drinking coffee may lower the risks of cirrhosis and elevated blood levels of liver transaminase enzymes. To determine whether drinking coffee can protect against alcohol-related liver disease, researchers assessed baseline alcohol and coffee use in 125,580 adults without liver disease at study entry and identified cases of cirrhosis over an average of 14 years. Medical records confirmed that 199 subjects had alcoholic cirrhosis and 131 had nonalcoholic cirrhosis.

- In adjusted analyses, the risk of alcoholic cirrhosis was significantly lower in coffee drinkers than in noncoffee drinkers (odds ratio 0.6 for 1–3 cups of coffee per day; odds ratio 0.2 for >=4 cups of coffee per day). Risk decreased by 20% for each cup of coffee consumed per day.
- Drinking coffee daily was generally associated with a significantly lower risk of elevated liver transaminase enzymes, especially in subjects who drank >=3 alcoholic drinks per day.
- Drinking coffee was not significantly associated with nonalcoholic cirrhosis.

Comments: This interesting study shows that drinking coffee potentially protects against alcoholic cirrhosis. Causality cannot be determined from this observational study, but these results should prompt further investigation into how coffee might protect the liver from alcohol-related injury. Of course, the best way to prevent alcoholic cirrhosis remains adhering to lower-risk drinking limits.

Kevin L. Kraemer, MD, MSc

Reference: Klatsky AL, et al. Coffee, cirrhosis, and transaminase enzymes. *Arch Intern Med.* 2006;166(11):1190–1195.

A Link Between Moderate Drinking, Congestive Heart Failure, and Myocardial Infarction?

Because it protects against myocardial infarction (MI), moderate drinking may also lower the risk of congestive heart failure (CHF). Researchers used data from a prospective study on cardiovascular health to assess this possibility. They examined alcohol use and incident CHF and MI in 5595 subjects, aged 65 or older, who had been followed for 7 to 10 years. During follow-up, 1056 events of CHF occurred.

- In analyses adjusted for potential confounders but not MI, the risk of CHF was lower in subjects who drank 1–6 alcoholic drinks per week (hazard ratio [HR] 0.8, *P*=0.05) and 7–13 drinks per week (HR 0.7, *P*=0.01) than in subjects who never drank alcohol.
- Hazard ratios remained the same in analyses adjusted for incident myocardial infarction (MI) (*P*=0.11 for 1–6 drinks and *P*=0.04 for 7–13 drinks).
- Former drinkers at baseline had a significantly higher risk of CHF than did subjects who never drank (HR 1.6 in analyses adjusted for MI).

Comments: Most previous studies on this topic have also shown that moderate drinkers have a lower risk of developing CHF. Further, this study found (as have others) that the protection against CHF in moderate drinkers is not entirely mediated through reduction in MI risk. Although former drinkers at baseline had an increased CHF

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Moderate Drinking and Congestive Heart Failure (continued from page 1)

risk, no information on the drinking patterns of either former or current drinkers was provided—leaving unanswered questions about how to interpret this finding clinically.

R. Curtis Ellison, MD

Reference: Bryson CL, et al. The association of alcohol consumption and incident heart failure: the Cardiovascular Health Study. *J Am Coll Cardiol.* 2006;48(2):305–311.

Do Patients Return to Drinking After Liver Transplantation for Alcoholic Liver Disease?

Patients with a liver transplant for alcoholic liver disease are advised to abstain permanently from alcohol. To measure the recurrence of alcohol use after liver transplantation, researchers assessed 167 liver recipients every 3 months during the first post-transplant year and then every 6 months for 4 years thereafter. At routine aftercare appointments, subjects received recommendations for complete abstinence and additional counseling if they had returned to drinking. The majority of subjects were white and male, had alcohol dependence, and were sober for an average of 40 months before transplantation.

- During the first year after transplantation, 22% of subjects had at least 1 drink, 10% had at least 1 heavy drinking episode,* and 5% returned to frequent drinking.**
- By the fifth post-transplant year, 42% had at least 1 drink, 26% had at least 1 heavy drinking episode, and 20% returned to frequent drinking.
- In multivariable models, the length of pre-transplant sobriety was associated with a significantly *lower* risk of first alcohol use (hazard ratio [HR] 0.7) and first heavy drinking episode (HR 0.7). Alcohol dependence and pre-transplant depression were associated with a significantly *higher* risk of alcohol use (HRs 2.3 and 1.7, respectively).

Comments: This study shows that although the majority of liver recipients do not drink heavily, a substantial proportion returns to some alcohol use after transplantation for alcoholic liver disease. The findings highlight the need to develop improved supportive strategies, particularly those that increase the length of pre-transplant sobriety, to prevent post-transplant alcohol use.

Kevin L. Kraemer, MD, MSc

*6 drinks in a day for men, 4 for women
**4 drinking days in a week

Reference: DiMartini A, et al. Alcohol consumption patterns and predictors of use following liver transplantation for alcoholic liver disease. *Liver Transpl.* 2006;12(5):813–820.

Injury Risk Is Higher in Countries With Riskier Drinking Patterns

To estimate the risk of nonfatal injury associated with alcohol use, researchers performed a meta-analysis of case-crossover studies conducted in 28 emergency departments in 16 countries. Of 11,536 injured subjects, 2406 (21%) had been drinking within 6 hours of injury (i.e., acute consumption). Drinking patterns for each country were determined from surveys of key informants.

- The relative risk of injury associated with acute consumption was 5.7. It ranged from 1.1 in Canada to 35 in South Africa and was higher in

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Injury Risk Is Higher in Countries With Riskier Drinking Patterns (continued from page 2)

countries with riskier drinking patterns.

- Risk was lower for subjects who usually drank heavily (>=3 times a week and >=12 drinks on at least one occasion during the last year) than for those who drank less.

Comments: The strength of the association between drinking and injury in this study varied according to societal patterns of risky drinking. Future studies should determine whether clinical and policy interventions that make risky drinking less acceptable, especially in societies with detrimental drinking patterns, might lower the burden of disability from injury and violence.

Peter Friedmann, MD, MPH

Reference: Borges G, et al. Acute alcohol use and the risk of non-fatal injury in sixteen countries. *Addiction.* 2006;101(7):993–1002.

Drinking Frequency May Lower Heart Disease Risk in Men, Not Women

To determine whether patterns of alcohol use affect the risk of coronary heart disease (CHD), investigators in Denmark studied baseline drinking habits and 6-year CHD incidence among 28,448 women and 25,052 men. Subjects were aged 50–65 years and free of CHD at study entry. During follow-up, 749 women and 1283 men developed CHD.

- In adjusted analyses comparing drinkers with nondrinkers, drinking amounts were inversely associated with CHD risk for both women and men (e.g., hazard ratios [HRs] approximately 0.8 for 7–13 drinks per week and 0.7 for 21–27 drinks per week).
- For men, drinking frequency was also inversely associated with CHD risk. Men who drank alcohol daily had the lowest risk (HR 0.6 for daily drinking and HR 0.9 for 1 drinking day a week, compared with <1 drinking day a week).
- For women, reduced risk was similar across all drinking frequencies (e.g., HR 0.7 for daily drinking and HR 0.6 for 1 drinking day per week).

Comments: This large prospective study confirmed that alcohol consumption may reduce risk of CHD for both women and men by a similar magnitude. The reduction in risk with increasing drinking frequency for men, but not women, may relate to fewer female subjects in some of the higher frequency categories.

R. Curtis Ellison, MD

Reference: Tolstrup J, et al. Prospective study of alcohol drinking patterns and coronary heart disease in women and men. *BMJ.* 2006;332(7552):1244–1248.

Assessments and Interventions

Screening for Unhealthy Alcohol Use: Hospital or Primary Care?

One might argue that alcohol screening should have the greatest impact in settings, like hospitals, that have a significant proportion of patients with unhealthy alcohol use. But does hospital-based screening reach at-risk patients too late? To assess this possibility, researchers in the United Kingdom reviewed the medical records of 94 inpatients with alcohol-related cirrhosis and determined how many had a hospital admission before receiving a diagnosis of alcohol-related liver disease. They also interviewed 45 patients with alcohol-related liver disease, who were hospitalized on a liver ward or seen at an outpatient liver specialty service, to assess health services utilization.

- In the record review, 60% (56/94) of inpatients did not have a hospital admission before receiving a diagnosis of alcohol-related liver disease. Only one third (31/94) of inpatients had a prior hospitalization for an alcohol-related reason. The mean time from first admission to diagnosis of alcohol-related liver disease was 10 years.
- Interviewed patients reported relatively frequent contact (ranging from 2 to 13 visits per year) with their general practitioners in the preceding 5 years.

Comments: Most hospitalized patients with alcohol-related liver disease do not have prior hospitalizations. These findings suggest that screening may not have its maximal impact if conducted only with hospitalized patients. Primary care settings provide an opportunity to screen, and therefore to prevent, the consequences of unhealthy alcohol use.

Richard Saitz, MD, MPH

Reference: Verrill C, et al. Are the opportunities to prevent alcohol related liver deaths in the UK in primary or secondary care? A retrospective clinical review and prospective interview study. *Subst Abuse Treat Prev Policy.* 2006;1:16.

Why Do People Enter Specialty Treatment for Alcohol Problems?

Understanding the reasons some people with alcohol dependence enter treatment might help others who do not enter treatment. British researchers explored these reasons through open-discussion and semi-structured interviews with 98 subjects who entered specialty alcohol treatment (as part of a clinical trial) with alcohol use as their primary substance problem. Data was collected and analyzed according to grounded theory principles (annotating interview reports to encapsulate meaning, grouping annotations into themes, and using early analysis to inform later stages of data collection).

- People sought and entered treatment mainly because they recognized that problems in many areas of their lives were accumulating and worsening as a result of their drinking.
- In most cases, they also felt pressure from a family member, primary healthcare professional, or the legal system and/or experienced a "trigger event" (e.g., acute physical problem, liver enzyme test result, new family responsibility like children, risk of losing relationships).

Comments: The authors recognized the main limitation of this study—possible lack of generalizability because of its sample of British patients seeking treatment and entering a clinical trial. Nonetheless, the identified reasons for entering treatment are familiar: change occurs when a trigger coincides with growing problems recognized as alcohol related. These findings should remind clinicians of their important role in helping with problem recognition and influencing treatment entry.

Richard Saitz, MD, MPH

Reference: Orford J, et al. Why people enter treatment for alcohol problems: findings from the UK Alcohol Treatment Trial pre-treatment interviews. *J Substance Use*. 2006;11(3):161–176.

Combining GGT and CDT to Detect Unhealthy Alcohol Use

No single serum test can effectively detect unhealthy alcohol use. Combining tests, however, may improve detection. Researchers compared the performance of a combined index of gamma-glutamyltransferase (GGT) and carbohydrate-deficient transferrin (CDT) (GGT-CDT) with other biomarkers in 3 groups: 165 heavy drinkers* with alcohol dependence, 51 moderate drinkers, and 35 abstainers. Of the heavy drinkers, 51 had evidence of liver disease but not hepatitis B or C, and 44 were later assessed during supervised abstinence.

- The sensitivity of GGT-CDT for detecting heavy drinking was 90% (specificity 98%) and exceeded that of the other biomarkers: 63% for CDT alone; 58% for GGT alone; 50% for alanine aminotransferase; 47% for aspartate aminotransferase; and 45% for mean corpuscular volume.
- The superior performance of GGT-CDT was not affected by the presence of liver disease.
- During a mean of 11 days of supervised abstinence, 93% of supervised subjects had a decrease in GGT-CDT of 1.5% of the initial value per day.

Comments: This study suggests that combining biomarkers may be more fruitful than individual serum tests for detecting heavy drinking. Still, many questions remain about using combined biomarkers in clinical settings where the distinctions among drinking groups will not be as clear as in this study.

Jeffrey Samet, MD, MA, MPH

*Drank approximately 3–40 drinks per day

Reference: Hietala J, et al. Comparison of the combined marker GGT-CDT and the conventional laboratory markers of alcohol abuse in heavy drinkers, moderate drinkers and abstainers. *Alcohol Alcohol*. Advance Access published on June 23, 2006; doi:10.1093/alcalc/agl050.

Special Populations

The Combined Effects of Drinking and Comorbidities on Mortality in Elders

Mortality associated with risky drinking has not been appreciated in older adults, possibly because their comorbidities mask alcohol's effects. This study assessed the combined influence of drinking and comorbidities on 20-year mortality in 4691 adults aged 60 and older who participated in a national health and nutrition study.

During follow-up, 2673 subjects died. The prevalence of risky drinking at baseline was 10% (n=425). Risky drinking was defined as follows:

- For subjects without comorbidities: 3 drinks per day >=4 times per week or >=4 drinks per day
- For subjects with gout or an anxiety disorder or who were taking medications for nerves, insomnia, seizures, allergies, indigestion, or pain: 2–3 drinks per day >=2 times per week or >=4 drinks per day

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The Combined Effects of Drinking and Comorbidities on Mortality in Elders (continued from page 4)

- For subjects with hepatitis or ulcer disease: Any drinking

Most risky drinkers (69%) were classified as such because of their combined alcohol use and comorbidities (and not solely because of the amount they consumed). In adjusted analyses, the risk of mortality was higher in risky drinkers and abstainers than in nonrisky drinkers (hazard ratio [HR] 1.1 for both; borderline significant findings).

Comments: In this study, comorbidity rather than amounts consumed defined most risky drinking in older adults. Clinicians should consider recommending lower drinking limits to their older patients with specific comorbidities to reduce mortality risk.

Joseph Conigliaro, MD, MPH

Reference: Moore AA, et al. Alcohol use, comorbidity, and mortality. *J Am Geriatr Soc.* 2006;54(5):757–762.

Unhealthy Drinking and Comorbidity in American Indians

To identify drinking patterns and comorbidities correlated with alcohol dependence among American Indians (AIs), researchers examined data from a stratified random-sample survey of 3084 Southwest and Northern Plains AIs who lived on or within 20 miles of their reservations at baseline. A gold-standard interview defined substance dependence and other DSM-IV diagnoses.

- Of the 1287 (42%) subjects who drank alcohol in the past 12 months, 15% had alcohol dependence (20% of men and 11% of women).
- Among men, a threshold of >=12 drinks on a day in the past year was 89% sensitive for alcohol dependence.
- Among women, a threshold of >=5 drinks on a day in the past year was 98% sensitive for alcohol dependence.
- In adjusted analyses, increasing drinking amounts and frequency were significantly associated with alcohol and drug use disorders (in both men and women), and alcohol-related conditions and traumatic injuries (in women only).

Comments: According to this study, high frequency, and particularly high quantity, of drinking was strongly associated with alcohol dependence among reservation-based American Indians. These findings bolster the imperative for alcohol screening among all reservation-based American Indians seeking care for physical or mental health problems. Fortunately, these patients will screen positive on the revised screening item recommended by the National Institute on Alcohol Abuse and Alcoholism (Have you had 5 or more drinks on an occasion in the past year?).

Peter D. Friedmann, MD, MPH

Reference: O'Connell J, et al. The relationship between patterns of alcohol use and mental and physical health disorders in two American Indian populations. *Addiction.* 2006;101(1):69–83.

Prenatal Exposure to Moderate Drinking Worsens Cognition in African Americans

Cognitive deficits from prenatal alcohol exposure have been well documented in children with fetal alcohol syndrome. Researchers in this study assessed whether such deficits could result from moderate exposure and persist throughout childhood. Women were interviewed during their pregnancy and later assessed, along with their children, at various intervals for 10 years (n=636 mother-child pairs). Cognitive ability was measured with the Stanford-Binet Intelligence Test, and analyses were adjusted for relevant prenatal, psychosocial, and environmental variables.

- During the first trimester, 62% of African American and 68% of white women drank. Most drinkers consumed <1 drink per day, though 37% of African American and 70% of white women who drank had a heavy drinking episode (>=4 drinks on an occasion).
- Drinking decreased during pregnancy (e.g., 9% of African American and 11% of white drinkers had a heavy drinking episode in the second trimester).
- Fetal alcohol exposure during the first and second trimesters significantly predicted cognitive deficits in short-term memory and verbal, visual, and quantitative reasoning in African American, but not white, children at age 10.
- Exposure during the third trimester did not significantly affect cognitive ability.

Comments: These findings indicate a significant relationship between prenatal alcohol exposure (generally to moderate amounts) and cognitive ability at age 10 among African American, but not white, offspring. This study does not, however, suggest that drinking during pregnancy is safe for white women. Physicians should counsel expectant mothers, particularly African Americans, about the risks of any alcohol use during pregnancy.

Joseph Conigliaro, MD, MPH

Reference: Willford JA, et al. Moderate prenatal alcohol exposure and cognitive status of children at age 10. *Alcohol Clin Exp Res.* 2006;30(6):1051–1059.

Journal Alerts

National Institute Reviews Findings From a National Survey and Health Services Research

The latest issues of *Alcohol Research and Health*, the journal of the National Institute on Alcohol Abuse and Alcoholism, focus on two important areas in alcohol research: the epidemiology of alcohol and related conditions, and health services.

The issue on the National Epidemiologic Survey on Alcohol and Related Conditions highlights these topics:

- Prevalence of and trends in alcohol abuse and dependence
- Comorbidity between alcohol and specific drug use disorders
- Co-occurrence of substance use disorders and mood, anxiety, and personality disorders
- Recovery from alcohol dependence
- Prevalence and changes in driving after drinking

In the health services issue, experts review the following:

- Linking research with practice in alcoholism treatment
- Performance measures
- Economic evaluation of interventions
- Court-mandated treatment for convicted drunk drivers
- Racial and ethnic disparities in alcohol treatment
- Gender and substance abuse treatment utilization
- Welfare reform's impact on substance abuse services
- Computer-based tools for diagnosis and treatment

Comments: The important research summarized in these two issues of *Alcohol Research and Health* can inform clinicians of both the magnitude of alcohol-related problems in the United States and the strengths and challenges of the services that aim to address these problems.

Richard Saitz, MD, MPH
Rosanne Guerriero, MPH

References: Alcohol Research and Health. Health Services Research. 2006;29(1); *Alcohol Research and Health. National Epidemiologic Survey on Alcohol and Related Conditions: Selected Findings. 2006*;29(2).

Medical Care Covers Alcohol and HIV Issues Among Veterans

The August 2006 supplement of *Medical Care* focuses on the intersection of alcohol use and HIV in veterans. Studies in the supplement involve a prospective cohort of over 7000 veterans and a "virtual" cohort, assembled using electronic medical records, of almost 50,000 veterans.

- One study indicates that male veterans with HIV are more likely than male veterans without HIV to engage in risky sexual behavior, particularly because of intoxication.
- Other studies show that among veterans with HIV, (1) those with alcohol problems use health services more often than those without, and (2) those who are homeless are hospitalized more—but use outpatient care less—than those who are housed.
- Lastly, a group of researchers report on the association between alcohol use and medical illness among veterans with HIV, emphasizing the lack of a safe level of consumption.

Comments: This supplement provides a platform to develop new ways to address the overlapping problems of alcohol use and HIV among veterans.

Richard Saitz, MD, MPH

Reference: Medical Care. 2006;44(8):Suppl 2.

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Addiction
Addictive Behaviors
AIDS
Alcohol
Alcohol & Alcoholism
Alcoholism: Clinical & Experimental Research
American Journal of Drug & Alcohol Abuse
American Journal of Epidemiology
American Journal of Medicine
American Journal of Preventive Medicine
American Journal of Psychiatry
American Journal of Public Health
American Journal on Addictions
Annals of Internal Medicine
Archives of General Psychiatry
Archives of Internal Medicine
British Medical Journal
Drug & Alcohol Dependence
Epidemiology
Journal of Addictive Diseases
Journal of AIDS
Journal of Behavioral Health Services & Research
Journal of General Internal Medicine
Journal of Studies on Alcohol
Journal of Substance Abuse Treatment
Journal of the American Medical Association
Lancet
New England Journal of Medicine
Preventive Medicine
Psychiatric Services
Substance Abuse
Substance Use & Misuse
Many others periodically reviewed (see www.alcoholandhealth.org)

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