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Alcohol, Other Drugs, and Health: Current Evidence

MAY–JUNE 2011

INTERVENTIONS & ASSESSMENTS

Brief Interventions Efficacious for Unhealthy Alcohol Use in Hospital Inpatients

Evidence for the efficacy of hospital-based alcohol brief intervention is mixed. In a randomized trial, researchers tested a 30-minute brief motivational intervention repeated 2–3 times among Taiwanese male medical and surgical inpatients identified by screening as having unhealthy alcohol use.* Almost half of the 616 participants met DSM-IV criteria for dependence. Patients receiving specialty alcohol treatment at baseline were excluded. The intervention was done by social workers who completed a 5-day training course and were supervised weekly with use of recorded sessions.

- More intervention- than control-group participants (80% versus 70%) completed follow-up.
- At 12 months, compared with the control group, the intervention group reported fewer heavy drinking days (2 versus 3), fewer drinks (32 versus 49), and fewer drinking days (3 versus 4) in the past week. Findings were similar among those with dependence.
- Although use of specialty treatment was greater in the intervention group (8% versus 2%), there were no significant differences in alcohol-related problems or health-care utilization between groups.

*Reported consuming >14 drinks per week on a 7-day drinking calendar questionnaire. One standard drink = 12 g alcohol in this study.

Comments: This study is important because it was large and found benefit, although the authors suggest their results could be due to social desirability bias (i.e., report of less drinking in the intervention group that was more likely to follow up), particularly with self-reported consumption. Selection of a population with less severe unhealthy use (and less comorbid drug use, the prevalence of which was not reported) may also account for efficacy not seen other trials. Nevertheless, it appears some hospitalized patients may respond to brief intervention. Whether the selection of patients who will respond and the frequency and quality of the brief intervention can be reproduced in other hospitals remains to be seen.

Richard Saitz MD, MPH

Reference: Liu SI, Wu SI, Chen SC, et al. Randomized controlled trial of a brief intervention for unhealthy alcohol use in hospitalized Taiwanese men. *Addiction.* 2011;106 (5):928–940.

Screening for Unhealthy Alcohol Use Does Not Ensure Appropriate Intervention

Although primary-care based screening, brief intervention, and referral for treatment for unhealthy alcohol use has increased, questions remain about effectiveness in implementation. In this retrospective study, Veterans Affairs care providers were prompted electronically to refer patients to a behavioral health program, addiction service, or emergency care if they screened positive on the AUDIT-C* for unhealthy alcohol use (score ≥5),

*Alcohol Use Disorders Identification Test–Consumption.

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Screening Does Not Ensure Appropriate Intervention (continued from page 1)

the PHQ-2* for depression (score ≥3), or the PC-PTSD** for post-traumatic stress disorder (score ≥3). Patient visits over 2 years to 77 primary care physicians, nurse practitioners, and physician assistants were included in the study.

- Screening identified 4690 patients with positive AUDIT-C scores, 2772 patients with positive PHQ-2 scores, and 1590 patients with positive PC-PTSD scores.
- Referral rates were 15% for unhealthy alcohol use, 61% for depression, and 74% for PTSD.
- After adjustment for clinician, patients with a positive PHQ-2 or PC -PTSD screen were 10 and 19 times more likely, respectively, to be referred to treatment than patients with a positive AUDIT-C screen.

*Patient Health Questionnaire 2.
**Primary Care PTSD screen.

Comments: This study did not assess whether providers conducted brief interventions for patients who screened positive for unhealthy alcohol use. Because there is no "brief intervention" for depression or PTSD, the study may have differentially underestimated clinician response to a positive screen for alcohol. Nonetheless, the large difference in referral rates suggests that, unfortunately, performing screening for unhealthy alcohol use does not necessarily lead to optimal intervention.

Hillary Kunins, MD, MPH, MS

Reference: Maust DT, Mavandadi S, Klaus J, et al. Missed opportunities: fewer service referrals after positive alcohol misuse screens in VA primary care. *Psychiatr Serv.* 2011;62(3):310–312.

A Collaborative Care Model for Primary Care Delivery of Buprenorphine to Opioid-addicted Patients

Buprenorphine is an effective treatment for opioid addiction, but most primary care settings have little experience in delivering this type of care. In this study, researchers describe their 5-year experience with a collaborative care program to deliver buprenorphine treatment in a primary care setting. The program used a full-time nurse program director, a program coordinator, 9 part-time physicians, and nurse care managers with expanded clinical responsibilities (e.g., assessment, education, referral, and monitoring). Outcomes were measured 12 months after program entry. Of the 408 patients who entered the program between 2003 and 2008, 383 (94%) were eligible for analysis.

- Nurse care managers saw an average of 75 patients per week.
- At 12 months, 51% of patients remained in treatment or were successfully tapered, 42% were lost to follow-up or discharged, and 6% were transferred to methadone maintenance.
- Patients who remained in treatment or were successfully tapered were more likely female, white, older, employed, and using buprenorphine illegally upon program entry.
- Urine testing was negative for opioids and cocaine in 91% of patients who remained in treatment at 12 months.

Comments: This study shows collaborative care with nurse care managers can be an effective means of delivering buprenorphine treatment in a large urban academic primary care practice. It is not clear if this model would have similar effectiveness and feasibility in a smaller practice or in areas with fewer eligible opioid-addicted patients.

Kevin L. Kraemer, MD, MSc

Reference: Alford DP, LaBelle CT, Kretsch N, et al. Collaborative care of opioid-addicted patients in primary care using buprenorphine: five-year experience. *Arch Intern Med.* 2011;171(5):425–431.

Interim Methadone versus Standard Methadone: No Differences in Treatment Outcomes at 4 Months

Interim methadone (IM) was designed as an option to initiate methadone among opioid-dependent patients in the absence of scheduled psychosocial services rather than putting them on a waiting list for standard methadone (SM) treatment, which includes counseling. The aim of this randomized clinical trial was to determine if the absence of regular counseling had an adverse effect on methadone treatment outcomes at 4 months. Two hundred thirty participants were randomized to IM, SM, or restored methadone (RM*).

- Patients in the IM condition received a mean of 0.7 counseling sessions over the study period, while patients in the SM and RM conditions received 8.4 sessions and 17.7 sessions, respectively.
- There was no difference in treatment retention between groups (IM=92%, SM=81%, and RM=89%).
- There was no difference in heroin use outcomes between groups. All 3 reported 29 days of use in the prior 30 days at baseline, which decreased to 3.3, 5.5, and 3.0 days in the IM, SM, and RM groups, respectively.

*RM=SM plus meetings with a counselor who had a reduced caseload.

Comments: Although the frequency of counseling in the SM group was low and all IM patients were eventually transitioned to SM, these findings suggest that, in resource-limited settings where methadone treatment wait lists are common, IM is a reasonable alternative.

Jeanette M. Tetrault, MD

Reference: Schwartz RP, Kelly SM, O'Grady KE, et al. Interim methadone treatment compared to standard methadone treatment: 4-Month findings. *J Subst Abuse Treat.*. 2011;41(1):21–29.

Medication-specific Support May Reduce the Impact of Alcohol and Other Drug Use on Antiretroviral Adherence

The effectiveness of antiretroviral therapy (ART) among people with HIV/AIDS depends on high adherence over time. Alcohol and other drug (AOD) problems are associated with lower ART adherence. Researchers examined data collected during a trial of interventions to improve ART adherence (text message reminders, peer discussions, or both) (N=224). The question for this secondary data analysis (adjusted for intervention group assignment) was whether self-report of having received social* or medication-specific support** buffered the effect of AOD use on adherence. General social support was measured with the 19-item Medical Outcomes Study-Social Support survey, while medication-specific support was measured with an 8-item survey created by the investigators. At baseline, 27% of the sample reported past-year unhealthy alcohol use (AUDIT† score >7), and 55% reported past-year heroin, cocaine, or methamphetamine use.

- General social support did not have a significant effect on the association between AOD use and ART adherence.
- Medication-specific support had a moderating effect at 3 months but not at 6 or 9 months, during which time support decreased. For example, for those reporting high medication-specific support, 100% medication adherence was reported for 75–77% of participants with and without unhealthy alcohol use. But for those with low medication support, 100% adherence was reported by 67% of those without and 37% of those with unhealthy alcohol use. Findings were similar for those with weekly drug use versus less frequent use.

*E.g., having another person to confide in or enjoy activities with.
**E.g., having another person remind the patient to take his or her medication or assist with taking medication.
†AUDIT=Alcohol Use Disorders Identification Test.

Comments: This study suggests medication-specific support can decrease the detrimental effect that AOD use has on ART adherence among patients with HIV/AIDS. Patients may benefit from finding ways to sustain such support over time. In the meantime, it makes sense for practitioners to ask patients to identify people who can provide this type of support and to get them involved in helping patients take their medications.

Darius A. Rastegar, MD

Reference: Lehavot K, Huh D, Walters KL, et al. Buffering effects of general and medication-specific social support on the association between substance use and HIV medication adherence. *AIDS Patient Care STDs.* 2011;25(3):181–189.

People with HIV and Injection Drug Use Who Initiate Antiretroviral Therapy Do Not Increase Needle Sharing

Antiretroviral therapy (ART) reduces the transmission of HIV by lowering the viral load in infected individuals. However, there is some concern this knowledge leads to more HIV-related risk behaviors, including sharing needles. Researchers in Vancouver, Canada, prospectively collected 2100 person-years of observational data in a cohort of 380 men and women with HIV and injection drug use, 260 of whom initiated ART between 1996 and 2008. A generalized linear mixed-effects multivariable model was used to exam-

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Antiretroviral Therapy Does Not Increase Needle Sharing (continued from page 3)

ine the independent association between ART initiation and lending of used syringes.

- In the bivariable analysis, ART initiation was not significantly associated with syringe sharing.
- Syringe sharing was significantly higher among people who were homeless (odds ratio [OR], 1.48) or who had frequent heroin injection (OR, 2.84), frequent cocaine injection (OR, 3.17), higher CD4 count (OR, 1.16). or higher viral load (OR, 1.58). It was significantly lower among those on methadone maintenance (OR, 0.60).
- In the multivariable analysis, ART initiation was again not significantly associated with syringe sharing. Factors that remained significantly associated with syringe sharing were frequent cocaine use (OR, 2.62) and higher viral load (OR, 1.45).

Comments: This study suggests initiation of ART does not lead to increased needle sharing, at least in a locale where there is access to needle exchange programs and free health care. Interventions that reduce cocaine use may help reduce HIV-related risk behaviors.

Darius A. Rastegar, MD

Reference: Kuyper L, Milloy MJ, Marshall BD, et al. Does initiation of HIV antiretroviral therapy influence patterns of syringe lending among injection drug users? *Addict Behav.* 2011;36(5):560–563.

HEALTH OUTCOMES

Association between Daily Alcohol Use and Increased HIV Viral Load Independent of HAART Adherence

Although prior studies have suggested an association between alcohol use and HIV disease progression, a direct association between alcohol use and HIV biomarkers has not been established. This study examined the relationship between alcohol use and HIV biomarkers independent of highly active antiretroviral therapy (HAART) adherence by comparing HIV viral load and CD4 counts among HIV-infected alcohol users and nonusers in clinical care. Alcohol use and HAART adherence were measured via self-report. Of 325 subjects, 74% were receiving HAART; 11% of those receiving HAART and 24% of those not receiving HAART reported using alcohol daily in the past month.

- Adjusting for HAART adherence and demographic factors, daily drinkers (26 in the HAART group and 20 in the non-HAART group) had a 4-fold increase in the odds of detectable viral load (OR, 3.81) compared with people receiving HAART who did not report daily alcohol use. This relationship was attenuated when people who drank regularly but not daily* (65 people in the HAART group and 20 in the non-HAART group) were included in the analysis.
- A relationship between daily drinking and HIV viral load was not seen among patients who were not receiving HAART.
- No association was noted between alcohol consumption and CD4 count.

*Reported drinking "a few times a week" on the HIV Risk Assessment Battery.

Comments: Although limited by a cross-sectional design and self-reported alcohol and adherence measures, these data are consistent with other studies that suggest an association between daily alcohol consumption and increased HIV viral load for those taking HAART independent of adherence. It remains unclear whether there is a threshold of daily consumption that needs to be exceeded before an effect is seen.

Jeanette M. Tetrault, MD

Reference: Wu ES, Metzger DS, Lynch KG, et al. Association between alcohol use and HIV viral load. *J Acquir Immune Defic Syndr.* 2011;56(5):e129–e130.

Continued Cannabis Use Is Associated with Increased Incidence of Psychotic Symptoms

Prior investigations that demonstrated an association between cannabis use and psychosis had design limitations and could not confirm causality. In this prospective cohort study, investigators interviewed* a random sample of 1923 German adolescents and young adults at baseline (BL) and at 2 follow-up intervals (T2, 3.5 years; T3, 8.4 years) and examined results to determine the association between cannabis use and psychotic symptoms. Analyses were adjusted for potential confounders. Participants with baseline psychotic symptoms were excluded. Cannabis exposure was dichotomized as use ≥5 times over a lifetime at BL and use ≥5 times since the last interview at T2 and T3.

*Composite International Diagnostic Interview-Munich version (M-CIDI).

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Continued Cannabis Use and Psychotic Symptoms (continued from page 4)

- The proportion of subjects reporting cannabis use at BL and T2 were 13% and 20%, respectively.
- The proportion of subjects reporting incident psychotic symptoms from BL to T2 and from T2 to T3 were 31% and 14%, respectively.
- The adjusted odds ratio (OR) of psychotic symptoms at T3 for persons with incident cannabis use at T2 was 1.9.
- The adjusted OR of psychotic symptoms at T2 and T3 among cannabis users was significant among persons who used cannabis at BL and T2 (2.2) but not significant among persons who used cannabis at BL but not T2 (2.1) or at T2 but not BL (1.4).

Comments: This investigation's strong design supports the temporal association between continued cannabis use and psychotic symptoms. However, use of "psychotic symptoms" rather than "psychotic disorder" as the outcome still leaves the relationship between cannabis use and mental illness diagnoses uncertain.

Hillary Kunins, MD, MPH, MS

Reference: Kuepper R, van Os J, Lieb R, et al. Continued cannabis use and risk of incidence and persistence of psychotic symptoms: 1-year follow-up cohort study. *BMJ.* March 1, 2011;342:d738.

The Association of Cannabis Use with Onset of Psychosis: Still Controversial

A number of studies have found an association between cannabis use and earlier onset of psychosis, but this relationship is controversial. This meta-analysis combined data from 83 peer-reviewed English-language publications that reported substance use and age at onset of psychosis. These studies included 131 samples comprised of 8167 substance-using and 14,352 non-substance-using persons.

- Age at onset of psychosis was 2.7 years younger for people with cannabis use (whether cannabis users also used alcohol was not reported) and 2.0 years younger for people with unspecified substance use compared with those who had no substance use.
- Alcohol use was not associated with age at onset of psychosis.
- No statistical evidence was found for publication bias.

Comments: This pooled analysis presents evidence for an association between cannabis use and earlier onset of psychotic illness. The association with other substance use (but not alcohol) raises the possibility that people with a propensity to develop psychosis are more likely to use substances like cannabis, perhaps to "self-treat" preclinical symptoms. Cannabis use also produces neurocognitive symptoms, such as transient hallucinations or paranoia, whose presence might lead to earlier detection of nascent psychosis. Thus, this study cannot settle the causal question of whether cannabis use precipitates psychosis in genetically predisposed young people.

Peter D. Friedmann, MD, MPH

Reference: Large M, Sharma S, Compton MT, et al. Cannabis use and earlier onset of psychosis: a systematic meta-analysis. *Arch Gen Psychiatry.* 2011;68(6):555–561.

Alcohol Use and Death from Pancreatic Cancer

Prior research on the association between alcohol use and pancreatic cancer has been confounded by smoking and limited by underpowered studies. In this study, researchers prospectively followed a cohort of 1,030,467 adults aged 30 years or older from 1982–2006. Quantity and frequency of current alcohol use were assessed at baseline. There were 6847 deaths from pancreatic cancer in the cohort over the study period. Multivariable models were used to adjust for demographics and other pancreatic cancer risk factors.

- Compared with nondrinkers, the risk for pancreatic cancer death was higher among participants who drank 3 drinks per day (relative risk [RR], 1.31) and ≥4 drinks per day (RR, 1.14).
- Compared with nondrinkers, the risk for pancreatic cancer death was higher among both never smokers (RR, 1.36) and ever smokers (RR 1.16) who drank ≥3 drinks per day.
- Increased risk at ≥3 drinks per day was primarily seen with liquor use and not with beer or wine use.
- Risk estimates were similar for men and women.

Comments: This large prospective study shows increased risk for pancreatic cancer death among heavier drinkers regardless of smoking behavior. Adherence to lower risk drinking limits (no more than 2 drinks per day for men and 1 drink per day for women) should decrease the risk of pancreatic cancer.

Kevin L. Kraemer, MD, MSc

Reference: Gapstur SM, Jacobs EJ, Deka A, et al. Association of alcohol intake with pancreatic cancer mortality in never smokers. *Arch Intern Med.* 2011;171(5):444–451.

Preoperative Unhealthy Alcohol Use Increases Surgical Risk

Prior research has suggested that unhealthy alcohol use is a modifiable risk factor for perioperative complications. This study examined 9176 male veterans who underwent major noncardiac surgery in the Veterans Affairs (VA) Surgical Quality Improvement Program between 2004–2006 and who completed the AUDIT-C* as part of a VA mailed survey in the 12 months prior to surgery.

- Sixteen percent of patients screened positive for unhealthy alcohol use (AUDIT-C score >5).
- After adjusting for age, smoking, and days from screening to surgery, the prevalence of postoperative complications increased with increasing AUDIT-C score (see table).

AUDIT-C Score	Postoperative Complications (%)
1–4	5.6
5–8	7.9
9–10	9.7
11–12	14.0

Comments: The AUDIT-C can risk-stratify preoperative patients for alcohol-related postoperative complications up to a year prior to surgery. Extrapolating from other research, primary care providers should counsel patients with AUDIT-C scores >5 who are contemplating surgery about the postoperative risks and encourage them to abstain for at least a month preoperatively.

Peter D. Friedmann, MD, MPH

Reference: Bradley KA, Rubinsky AD, Sun H, et al. Alcohol screening and risk of postoperative complications in male VA patients undergoing major non-cardiac surgery. *J Gen Intern Med.* 2011;26(2):162–169.

*Alcohol Use Disorders Identification Test–Consumption.

Alcohol and Cardiovascular Disease Risk and Outcomes: Compelling Evidence?

Researchers conducted 2 systematic reviews of the literature to summarize alcohol's cardiovascular effects.

The first review identified 84 prospective cohort studies. Compared with not drinking alcohol,

- alcohol consumption was associated with lower risk for mortality from cardiovascular disease (CVD) and coronary heart disease (CHD) (relative risk [RR] for both, 0.75), incident CHD (RR, 0.71), and all-cause mortality (RR, 0.87).
- drinking 5 or more drinks per day was associated with incident stroke (RR, 1.6) and an increase in stroke mortality (RR, 1.4; of borderline significance).

The second review meta-analyzed results of 44 before-after studies (i.e., no alcohol use versus after alcohol use) and crossover studies on fasting plasma biomarkers for CHD risk.

- Alcohol consumption was associated with more favorable levels of 4 of 13 risk markers (high-density lipoprotein cholesterol, apolipoprotein A1, adiponectin, and fibrinogen).
- It was not associated with C reactive protein, plasminogen activator inhibitor 1, tissue plasminogen activator, total or low-density lipoprotein cholesterol, Lp(a) lipoprotein, triglycerides, tumor necrosis factor α, or interleukin 6.

Comments: These reviews suggest alcohol can reduce CVD and identify some possible mechanisms. Systematic reviews, however, cannot overcome limitations in original studies. For example, most of the observational studies measured alcohol consumption then examined outcomes years later—a design that would never be acceptable for study of a pharmacological preventive intervention. And, none can adequately adjust for the large number of relevant confounders (e.g., healthy characteristics of people who choose to drink "moderate" amounts). The authors state that they find the argument for causation compelling, but the evidence seems similar to the effects of estrogens on CVD risk markers and the numerous and consistent observational studies that found hormone replacement to be beneficial that were consistently wrong. Randomized trials may provide the only compelling evidence.

Richard Saitz MD, MPH

References: Ronksley PE, Brien SE, Turner BJ, et al. Association of alcohol consumption with selected cardiovascular disease outcomes: a systematic review and meta-analysis. *BMJ.* 2011;342:d671.

Brien SE, Ronksley PE, Turner BJ et al. Effect of alcohol consumption on biological markers associated with risk of coronary heart disease: systematic review and meta-analysis of interventional studies. *BMJ.* 2011;342:d636.

Heavy Drinking Associated with Greater Risk for Myocardial Infarction in a Study that Measured Alcohol More than Once

Most studies of the association between alcohol use and myocardial infarction (MI) use a single baseline measure of consumption and assume it doesn't change over subsequent years. Suspecting that such studies might yield biased results, researchers in Finland measured the association between alcohol use and MI among 1030 men in a prospective heart disease risk-factor cohort study, including 3 assessments of consumption (at study entry, 2–9 years later, and 5–10 years after that). Average weekly alcohol use over a year was categorized into 4 groups: <12 g,* 12–83 g, 84–167 g, and ≥168 g. Adjusted analyses controlled for age, working status, diabetes, smoking, cardiovascular disease, body mass index, HDL cholesterol, systolic blood pressure, insulin, and fibrinogen. Incidents of MI were recorded over the latter 14-year period of follow-up.

- In a model examining 1 assessment of alcohol consumption, relative risks (RRs) for MI were 1.10, 1.05, and 0.98 for subjects consuming <12 g, 84–167 g, and ≥168 g alcohol per week, respectively, compared with 12–83 g per week (not statistically significant).
- In an adjusted model that also included all 3 measurements of alcohol consumption, RRs were 1.27, 1.27, and 1.71 for subjects consuming <12 g, 84–167 g, and ≥168 g alcohol per week, respectively, with a significant increased risk among only the heaviest drinkers.

*One US standard drink = 13.7 g alcohol.

Comments: Of note, alcohol consumption did not reduce the risk for MI in any models. However, these results indicate that, when assessing the relationship between MI and alcohol use, the association may differ when alcohol use is assessed and included in statistical models over time and when the analysis is adjusted for various confounders. Observational studies of alcohol use and health outcomes should not rely on 1 short-term measurement of consumption. Clinicians and the public should use caution when interpreting the results of such studies, which currently comprise the bulk of the evidence supporting associations between drinking, cardiovascular disease, and death.

Nicolas Bertholet, MD, MSc

Reference: Ilomäki J, Hajat A, Kauhanen J, et al. Relationship between alcohol consumption and myocardial infarction among ageing men using a marginal structural model. *Eur J Publ Health.* March 11, 2011. DOI 10.1093/eurpub/ckr013.

Association between Alcohol Consumption and Risk of Dementia in Patients Aged 75 and Older

This population-based study in Germany evaluated the association between alcohol consumption, incident overall dementia, and Alzheimer dementia in a sample of 3202 primary-care patients aged ≥75 and free of dementia at baseline. Structured clinical interviews conducted at baseline, 1.5, and 3 years assessed for current quantity, frequency, and type of alcohol consumption and dementia diagnosis per DSM-IV criteria. For the 26% of patients not available for face-to-face follow-up at 3 years (including those who died over the study period), systematic assessments focusing particularly on dementia were obtained from primary-care physicians, relatives, or caregivers. Results were adjusted for sex, age, education, living situation, functional impairment, comorbid conditions, depression, apoE4 status, mild cognitive impairment, and smoking.

- Two-hundred seventeen patients (7%) met criteria for dementia during follow-up.
- Overall, patients who consumed alcohol had an approximately 30% lower risk for dementia (adjusted hazard ratio [HR], 0.71) and an approximately 40% lower risk for developing Alzheimer dementia (adjusted HR, 0.58) compared with nondrinkers.
- With regard to quantity of alcohol consumed (range, 1–40+ g per day), all HRs were lower than 1, although a statistically significant association was found only among patients who consumed light-to-moderate amounts (20–29 g) per day.
- No significant differences were seen based on type of alcoholic beverage consumed.

Comments: Similar to results from younger subjects in previous studies, these results suggest moderate drinking is associated with less dementia, even among the very old. In this study, alcohol consumption was significantly associated with other factors protective for dementia (better education, not living alone, and absence of depression). However, even after controlling for these, the risk for dementia remained significantly lower among light-to-moderate alcohol consumers compared with nondrinkers. Part of the explanation may be that men and women who drink alcohol sensibly in old age have other lifestyle factors that promote physical and mental health.

R. Curtis Ellison, MD

Reference: Weyerer S, Schäufele M, Wiese B, et al. Current alcohol consumption and its relationship to incident dementia: results from a 3-year follow-up study among primary care attenders aged 75 years and older. *Age Ageing.* March 2, 2011. DOI 10.1093/ageing/afr007.

Prescription Drug Monitoring Programs Are Not Associated with Lower Rates of Overdose or Prescription Opioid Consumption

Electronic prescription drug monitoring programs (PDMPs) proliferated from 16 to 32 states in the 2000s in an effort to address overdose fatalities attributed to increased prescriptions for opioid analgesics. Researchers conducted time-series regression analyses of 1999–2005 PDMP data to determine state-level associations between PDMPs, overdose rates, and prescription opioid distribution rates. Results were adjusted for median age, race/ethnicity, education, and level of urbanization.

- Over the study period, mean drug overdose rates doubled, opioid-related overdose mortality rates tripled, and mean morphine milligram equivalent (MME) consumption rates tripled with no significant differences between states with or without PMDPs.
- States with PDMPs had rates of Schedule-III opioid consumption (mainly hydrocodone) that were 20-MME-per-person higher, and rates of Schedule-II opioid consumption that were 20-MME-per-person lower, than states without PDMPs.
- The 3 PDMP states with serialized tamper-resistant prescription forms and the largest populations (California, New York, and Texas) had lower drug overdose mortality, lower opioid-related overdose mortality, and lower rates of opioid prescribing than other PDMP and non-PDMP states.
- Presence of a PDMP was not a significant predictor of drug overdose mortality, opioid-related overdose mortality, or MME consumption.

Comments: According to these results, PDMPs are not associated with a reduction in overdose or opioid prescription rates. Their presence was associated with the prescription of opioids that are less regulated. The study did not account for the possibility that PDMPs were implemented in states with higher overdose rates or that implementation of PMDPs may increase overdose surveillance. The requirement of serialized tamper-resistant prescription forms may reduce overdose but should be balanced with the potential concomitant decrease in access to treatment. To be an effective tool for addressing the rise in prescription-drug-related overdose, PMDPs require further development.

Alexander Y. Walley, MD, MSc

Reference: Paulozzi LJ, Kilbourne EM, Desai HA. Prescription drug monitoring program and death rates from drug overdose. *Pain Med.* 2011;12(5):747–754.

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