Alcohol, Other Drugs, and Health: Current Evidence

NOVEMBER–DECEMBER 2009

INTERVENTIONS & ASSESSMENTS

New Cocaine Vaccine Is Safe but Has Limited Efficacy

No pharmacotherapy exists for cocaine dependence. Preclinical and open-label studies suggest that vaccination to produce anticocaine antibodies attenuates cocaine's reinforcing effects. This randomized, double-blind, placebo-controlled clinical trial evaluated the safety and efficacy of a cocaine vaccine among 115 volunteers recruited from a US urban methadone maintenance program. Over the 12-week intervention period, 109 of 115 subjects received 5 injections of vaccine or placebo. Follow-up was at 24 weeks.

- The most common adverse effects were injection site induration and tenderness. There were no treatment-related serious adverse events, study withdrawals, or deaths.
- The frequency of cocaine-free urine samples during weeks 1–4 and weeks 5–24 did not differ between treatment conditions in intent-to-treat analyses.
- The 38% of vaccinated subjects who attained a high serum IgG (antibody) level (≥43 μg/mL) had more cocaine-free urine samples (45%) than those with a low IgG level or those who received placebo (35%).
- The proportion of subjects having a 50% reduction in cocaine use was greater in subjects with a high IgG level (53%) than in those with a low IgG level (23%) during weeks 8–20, but there was no difference in complete abstinence.

Comments: The vaccine in this study appears to have reduced but not eliminated cocaine use for 2 months in the minority of cocaine-dependent persons who had a high antibody response. Before this approach can be considered for routine clinical use, better vaccines that generate a sustained blocking antibody level in a larger percentage of individuals and with a less intensive vaccination schedule are needed.

Peter D. Friedmann, MD, MPH

Reference: Martell BA, Orson FM, Poling J, et al. Cocaine vaccine for the treatment of cocaine dependence in methadone-maintained patients: a randomized, double-blind, placebo-controlled efficacy trial. *Arch Gen Psychiatry.* 2009;66(10):1116–1123.

Efficacy of Brief Intervention for Heavy Drinking in Hospitalized Patients Questionable

Brief intervention (BI) is being widely advocated for addressing heavy alcohol use among general hospital patients. To determine whether BI improves outcomes for such patients, researchers performed a systematic review of controlled trials. Eleven studies with 2441 participants were identified. Five studies took place on general medical wards, 3 in trauma centers, 2 in a variety of settings, and 1 in an orthopedic/trauma center. Most studies tested 1 intervention session, 2 studies involved 2 sessions, and 1 study involved 3 sessions.

- Intervention was associated with self-report of less weekly alcohol consumption in the 3 studies that examined 6-month outcomes. But, results were heterogeneous and nonsignificant when 1 of the studies, which tested 3 sessions and had nonblinded outcome assessments, was excluded.

(continued on page 2)

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Efficacy of Brief Intervention for Heavy Drinking (continued from page 1)

- No studies found differences in consumption between BI patients and controls at 1 year.
- Among the studies presenting change score data on mean alcohol consumption per week, decreases in weekly drinking were greater among BI patients than controls at 12 months (assessed in 2 studies) but not at 6 months (assessed in 2 studies).
- No studies found significant differences between BI patients and controls for laboratory markers, heavy drinking episodes, driving offenses, or death.

Comments: In hospitals, the severity of heavy alcohol use is greater than that seen in outpatient primary care settings, and patient-provider relationships are not usually longitudinal. This context differs greatly from primary care settings where BI has proven efficacy. This review suggests some promise for BI in hospital settings but raises serious questions about whether it will have substantial efficacy. Such evidence should be seriously considered when deciding whether additional treatment services should be coupled with alcohol screening and BI in general hospitals.

Richard Saitz MD, MPH

Reference: McQueen J, Howe TE, Allan L, et al. Brief interventions for heavy alcohol users admitted to general hospital wards. *Cochrane Database Syst Rev.* 2009;3:CD005191.

Single Question Alcohol Screen Detects Unhealthy Alcohol Use in a Primary Care Setting

A 2005 Guideline from the National Institute on Alcohol Abuse and Alcoholism recommended a single question screen that had yet to be validated in clinical settings: "How many times in the past year have you had X or more drinks in a day?", where X was 4 drinks for women and 5 drinks for men. In this cross-sectional study, researchers conducted a validation study of this single-question screen among 286 patients recruited from an urban primary care setting. The sensitivity and specificity of the question was compared with a calendar-based assessment designed to assess risky consumption levels and a structured questionnaire designed to establish DSM-IV criteria for an alcohol use disorder.

- The single-question screen was 84% sensitive and 78% specific for risky consumption and 88% sensitive and 67% specific for a current alcohol use disorder.
- The single-question screen was 82% sensitive and 79% specific for any unhealthy use (risky consumption or an alcohol use disorder).
- The single-question screen performed comparably to the 3-item AUDIT-C.*
- Test characteristics did not vary by gender, ethnicity, or education.

*Alcohol Use Disorders Identification Test—Consumption.

Comments: The brevity and performance of this single-question screen recommends its use to detect both risky drinking and alcohol use disorders in the busy primary care setting. The phrasing of the item should facilitate more discussion of heavy episodic (binge) drinking, a major source of adverse consequences among nondependent drinkers. The vast majority of people who drink heavily at times are not dependent, and any success in decreasing their drinking will greatly reduce societal and personal harms from alcohol use.

Peter D. Friedmann, MD, MPH

Reference: Smith PC, Schmidt SM, Allensworth-Davies D, et al. Primary care validation of a single-question alcohol screening test. *J Gen Intern Med.* 2009; 24(7):783–788.

Methadone Treatment Documentation in the Medical Record: Implications for Patient Safety

Most patients receiving methadone maintenance treatment (MMT) also require care for comorbid medical conditions, which typically occurs in separate health-care venues with strict confidentiality rules regulating transfer of medical information. Since clinically important interactions can occur between methadone and some other medications, all treating physicians should know when a patient is receiving methadone. Researchers in this study identified all patients (N=84) in an MMT program who had provided consent for the release of their medical information to an affiliated but separate medical center. The most recent primary care note or hospital discharge summary of each patient was reviewed for mention of opioid use, abuse, or dependence, participation in MMT, and potential interactions between methadone and other drugs.

- Medical records lacked documentation of opioid dependence in 30% of patients.
- Medical records lacked documentation of MMT in 11% of patients.
- Sixty-nine percent of patients were prescribed at least 1 medication with the potential to interact with methadone, and 19% were on 3 or more such medications.

Comments: As the authors point out, transfer of medical information between the MMT program and the medical center in this study was likely a best-case scenario due to the close relationship between the 2 treatment venues and having signed releases in place. Prescription of medications with the potential to interact with methadone is common; however, many medications can be safely prescribed to MMT patients as long as the clinician and patient are aware of and monitoring the potential for interaction. Clinicians can optimize exchange of clinical data between treatment sites by routinely obtaining signed consent from patients for communication between providers, by co-locating MMT with other medical care, and by promoting integrated delivery systems that allow provider access to a single eletronic health record.

Marc N. Gourevitch, MD, MPH

Reference: Walley AY, Farrar D, Cheng DM, et al. Are opioid dependence and methadone maintenance treatment (MMT) documented in the medical record? A patient safety issue. *J Gen Intern Med.* 2009;24(9):1007–1011.

Brief Intervention for Hospitalized Patients with Problematic Prescription Drug Use: No Long-Lasting Effects

Prescription drug (PD) misuse is a challenging problem. This randomized controlled trial tested whether a brief intervention (BI) involving 2 sessions of motivational interviewing could reduce problematic PD use among 126 inpatients at a German university hospital. Problematic use was defined as having a prior diagnosis of prescription drug dependence or abuse or as taking nonprescribed potentially addictive medication for at least 60 of the 90 days preceding baseline screening. The first session of the intervention was conducted while the patients were hospitalized; the second took place 4 weeks later. A prior report, described in the March–April 2009* issue of this newsletter, showed a reduction in PD use (although not necessarily misuse) at 3 months following the intervention. This study examined 2 outcomes—cessation of PD use and 25% reduction in use—at 12 months. Analyses controlled for baseline differences in PD dependence and duration of use.

- There was no difference in cessation rates between the BI and control groups at 12 months (25% versus 20%; odds ratio [OR], 1.4).
- There was no difference in proportion of patients who reduced their drug use by at least 25% at 12 months (50% versus 49%; OR, 0.9).

Comments: Although application of the BI model for problematic PD use is appealing, in this study, BI had no effect on use of potentially addictive medications at 12 months. Whether a more intensive or long-standing intervention is needed for hospitalized patients with PD use, who are generally sicker than patients with risky alcohol use in ambulatory settings (the group for which BI was originally developed), remains an important area for investigation.

Hillary Kunins, MD, MPH, MS

Reference: Otto C, Crackau B, Löhrmann I, et al. Brief intervention in general hospital for problematic prescription drug use: 12-month outcome. *Drug Alcohol Depend.* 2009; 105(3):221–226.

*www.bu.edu/aodhealth/issues/issue_mar09/friedmann_zahradnik.html.

Prison-Initiated Methadone Maintenance Improves Postrelease Treatment Outcomes

The risk of postrelease relapse is high among inmates who were opioid dependent prior to incarceration. Although research has shown that initiating methadone maintenance treatment (MMT) in prison reduces this risk, the practice has not received widespread acceptance. In this randomized clinical trial, male inmates (N=204) with preincarceration heroin dependence who were about to be released were assigned to either counseling (advice to seek MMT upon release), counseling plus transfer (directive to report

(continued on page 4)

Prison-Initiated Methadone Improves Postrelease Treatment Outcomes (continued from page 3)

to an MMT facility within 10 days of release), or counseling plus methadone (gradual initiation of MMT in prison and directive to report to an MMT facility within 10 days for continued care). Mean age of participants was 40 years; 70% were African American, and 71% had received prior substance abuse treatment. The mean duration of incarceration was 605 days. Primary outcomes at 12 months are shown in the following table:

Treatment and urine toxicology results

Outcome measure	Treatment condition			p
	Counseling only	Counseling + transfer	Counseling + methadone	
Mean days of methadone treatment	23	91	166	<0.01
In methadone treatment for 12 months	0%	17%	37%	--
Opioid-positive urine test	66%	49%	25%	<0.01
Cocaine-positive urine test	72%	67%	43%	<0.05

Comments: In this trial, counseling plus prerelease MMT was superior to counseling alone or counseling plus transfer to MMT at engaging patients in treatment and decreasing illicit drug use among inmates with a history of heroin dependence. The primary limitation of the study is that urine toxicology data were not available in 44% of the sample due to reincarceration, hospitalization, or relocation. Nevertheless, this study provides further support for public-health initiatives that improve the transition of substance-use care from the institutional to the community setting.

Jeanette M Tetrault, MD

Reference: Kinlock TW, Gordon MS, Schwartz RP, et al. A randomized clinical trial of methadone maintenance for prisoners: results at 12 months post-release. *J Subst Abuse Treat.* 2009;37(3):277–285.

Abstinence Rates with Office-based Buprenorphine Treatment Differ by Retention and Insurance Status

As office-based treatment of opioid dependence with buprenorphine becomes more widespread, an increasing number of reports describe practices and outcomes in real-world settings. This report describes a highly structured office-based program that included a 1–2 day inpatient induction, 5 weeks of 3-hour counseling sessions 4 times per week, then weekly counseling sessions for an additional 12 weeks. Participants attended subsequent monthly follow-up visits and were required to attend thrice weekly 12-step meetings. Full adherence was required to remain in the program. Among the 110 of 176 (63%) consecutively admitted patients available for follow-up at a minimum of 18 months,

- 85 patients (77%) reported continuous buprenorphine treatment.
- retained patients were more likely to report abstinence (p=0.01) and to be employed (p=0.03) than nonretained patients.
- retained patients with insurance were more likely to report abstinence than those without insurance (97% versus 86%, respectively) (p=0.04).

Comments: The high retention rate in this structured office-based buprenorphine treatment program may reflect the selection of a highly motivated patient population. One might conservatively estimate that patients not available for follow-up had dropped out of treatment, resulting in a retention rate of 48% (similar to previous reports). The association between insurance status and abstinence is unsurprising given that treatment costs surely prevent full realization of efficacy. It further suggests that coverage for ongoing treatment of substance use disorders might improve long-term outcomes.

Hillary Kunins, MD, MPH, MS

Reference: Parran TV, Adelman CA, Merkin B, et al. Long-term outcomes of office-based buprenorphine/naloxone maintenance therapy. *Drug Alcohol Depend.* 2009;106(1):56–60.

HEALTH OUTCOMES

Diverted Methadone and Buprenorphine Primarily Used to Prevent Withdrawal or to Stop Using Heroin

Opioid agonist treatment (OAT) with methadone or buprenorphine is effective for reducing illicit drug use among opioid-dependent patients. However, the diversion of these agents may be harmful. As part of a larger longitudinal study conducted in Baltimore, MD, between 2004 and 2007, a subsample of the original 515 opioid-dependent subjects, most of whom were seeking methadone treatment, were recruited to undergo in-depth interviews regarding their use of diverted methadone or buprenorphine.

- Twenty-two people (24% of the subjects interviewed) reported using diverted methadone or buprenorphine. Of these, 17 used methadone only, 4 used methadone and buprenorphine, and 1 used buprenorphine only.
- Those who used diverted methadone were more likely to have been enrolled in OAT in the past and were less likely to have used heroin or cocaine in the past month.
- Most of the diverted methadone used was in liquid form. Only 2 people had taken the pill form.
- All but 1 subject used the diverted medication to prevent withdrawal symptoms or to stop using heroin, and all generally took modest doses (about 30–40 mg per day of methadone and 4 mg per day of buprenorphine).

Comments: Although this was a small sample of an opioid-dependent population in 1 locale, it is reassuring that diverted methadone and buprenorphine was primarily taken to reduce heroin use, and that modest doses were used. However, this study does not allay concern about the potential dangers of these drugs among the less experienced people who use them.

Darius A. Rastegar, MD

Reference: Mitchell SG, Kelly SM, Brown BS, et al. Uses of diverted methadone and buprenorphine by opioid-addicted individuals in Baltimore, Maryland. *Am J Addict.* 2009;18(5):346–355.

Does Alcohol Use Affect Driving Performance in Patients with Obstructive Sleep Apnea?

Alcohol use and lack of sleep may affect the driving performance of patients with obstructive sleep apnea (OSA) more than it affects healthy people. In this study, researchers compared the simulated 90-minute driving performance of 38 patients with untreated OSA and 20 healthy age- and gender-matched controls randomized to 1 of 3 experimental conditions: ingestion of vodka to achieve a calculated target blood alcohol concentration of 0.05 g/dL, sleep restricted to a maximum of 4 hours, and unrestricted sleep.

- Participants with OSA were more likely than controls to have at least 1 crash (odds ratio [OR], 25.4*). They were also more likely to crash after alcohol use (OR, 2.3) or restricted sleep (OR, 4.0).
- Participants with OSA had greater steering deviation than controls at baseline. Alcohol use and restricted sleep were each associated with a 40% greater increase in steering deviation in participants with OSA compared with controls.
- Alcohol use did not affect braking reaction time in either group.

*The high OR probably reflects the fact that only 1 crash occurred in the control group.

Comments: In this well-designed study, blood alcohol concentrations less than the typical legal limits for driving were associated with significantly poorer driving performance in participants with untreated OSA than in controls. Patients with untreated OSA should be urged to seek OSA treatment and to avoid alcohol use. This study does not address the question of whether the same level of alcohol use would have a similar effect on driving performance among patients with treated OSA.

Kevin L. Kraemer, MD, MSc

Reference: Vakulin A, Baulk SD, Catcheside PG, et al. Effects of alcohol and sleep restriction on simulated driving performance in untreated patients with obstructive sleep apnea. *Ann Intern Med.* 2009;151(7):447–455.

Methadone Contributes to Bone and Dental Disease: Fact or Fiction?

Patients receiving or considering methadone maintenance treatment (MMT) for opioid dependence often express concern that methadone causes bone disease and dental decay. Although this has long been considered a misconception, low bone density has been noted in some MMT patients. This cross-sectional study sought to determine the prevalence and risk factors associated with

(continued on page 6)

Methadone and Bone and Dental Disease (continued from page 5)

vitamin-D deficiency in patients receiving MMT. Deficiency was defined as a 25-hydroxyvitamin D level less than 20 ng/mL, while insufficiency was defined as a level between 20–30 ng/mL.

- Of the 93 patients enrolled in the study, 36% had evidence of vitamin-D deficiency and an additional 16% had evidence of insufficiency.
- Vitamin-D deficiency was associated with age over 40 (odds ratio [OR], 3.47) and black or Hispanic race/ethnicity (OR, 3.34).
- Longer enrollment in MMT was not associated with vitamin-D deficiency.

Comments: Although causation cannot be inferred and a model adjusting for all independent variables could not be constructed due to limited outcome cases, this small cross-sectional study did demonstrate a high prevalence of vitamin-D deficiency among patients receiving MMT. These findings are important since vitamin-D deficiency can lead to musculoskeletal pain, osteoporosis, and periodontal disease, all of which are common among MMT patients. Further investigation is needed to better understand the association between MMT, other risk factors (e.g., smoking), and vitamin-D deficiency.

Jeanette M. Tetrault, MD

Reference: Kim TW, Alford DP, Holick MF, et al. Low vitamin D status of patients in methadone maintenance treatment. *J Addiction Med.* 2009;3(3):134–138.

Adults with Prescription-Opioid Dependence Engage in High Rates of HIV Risk Behaviors

Heroin users, particularly those who engage in injection drug use (IDU), are well known to be at increased risk for HIV infection. Less is known about the risk behaviors of those who abuse prescription opioids. Researchers compared data on HIV risk behaviors obtained via interview from persons seeking detoxification treatment for heroin (n=27) or oxycodone (n=23) dependence at an inpatient psychiatric hospital. Demographic characteristics were similar between groups.

- Patients who used oxycodone reported more days of use in the past 30 days than patients who used heroin and were more likely to report marijuana use (13% versus 2%).
- None of the patients using oxycodone engaged in IDU, while 89% of the patients using heroin did.
- Past-month rates of sexual activity (68%), unprotected intercourse (47%), sex while intoxicated (51%), and sex with strangers (18%) were similar between groups; however, patients who used oxycodone were more likely to report having multiple partners (30% versus 4%).
- Patients who used oxycodone were also less likely to report having an HIV test in the past year (33% versus 71%).

Comments: Although this study looked at a small number of subjects at a single institution, the findings suggest that prescription-opioid–dependent adults engage in risky sexual behaviors at rates comparable to, if not higher than, their heroin-dependent counterparts. It also suggests that more needs to be done to screen these individuals for HIV infection and counsel them regarding their risk.

Darius A. Rastegar, MD

Reference: Meade CS, McDonald LJ, Weiss RD. HIV risk behavior in opioid dependent adults seeking detoxification treatment: an exploratory comparison of heroin and oxycodone users. *Am J Addict.* 2009;18(4):289–293.

Inverse Association between Alcohol Consumption and Mortality May Differ by Ethnicity

Moderate alcohol consumption is associated with a reduced risk of total mortality among Caucasian women, but whether it has the same protective effect for African-American women or all women with hypertension is unclear. This prospective study assessed the relationship between alcohol intake and mortality among 10,576 black and 105,610 white postmenopausal women participating in the Women's Health Initiative. Women with a history of cancer or cardiovascular disease at baseline were excluded. Mean follow-up was 8 years.

- A total of 5608 women died over the follow-up period.
- After adjusting for potential confounders, moderate drinking (1 to <7 drinks per week) was associated with a lower risk of mortality among Caucasian women [hazard ratio (HR), 0.81] and all hypertensive women (HR, 0.76) compared with lifetime abstainers, but it had no significant protective effect for African-American women (HR, 0.94).

(continued on page 7)

Alcohol Consumption, Ethnicity, and Mortality Risk (continued from page 6)

- Overall, in comparison with lifetime abstainers, current drinking of any amount from <1 drink per month to <14 drinks per week was associated with a lower risk of mortality among Caucasian women whether or not they had hypertension and among hypertensive African-American women (HR, 0.74), but it had no protective effect for nonhypertensive African-American women (HR, 1.31).

Comments: There have been conflicting data as to whether the inverse association between moderate drinking, cardiovascular disease, and mortality seen among Caucasians also occurs among African Americans. As stated by the authors, the results among African-American women in this study may have been affected by the low prevalence of moderate drinking and the low mortality rate among lifetime abstainers without hypertension. Thus, the question of whether African Americans respond differently to alcohol than Caucasians in terms of mortality, and whether such differences, if they exist, relate to drinking pattern or biologic factors, remains unclear.

R. Curtis Ellison, MD

Reference: Freiberg MS, Chang YF, Kraemer KL, et al. Alcohol consumption, hypertension, and total mortality among women. *Am J Hypertens.* 2009;22(11):1212–1218.

Does Folate Intake Modify the Association between Alcohol and Breast Cancer Risk?

Research has shown an association between alcohol consumption and breast cancer risk. Some studies suggest folate may modify this risk. Investigators examined data from 88,530 postmenopausal women participating in the US Women's Health Initiative Observational Study to assess the relationship between breast cancer, alcohol consumption, and folate. Between 1993 and 1998, participants aged 50–79 years completed baseline questionnaires assessing alcohol and folate intake as well as breast cancer risk factors. Cox proportional hazards analysis was used to examine the relationship between alcohol, folate intake, and incident breast cancer over a mean follow-up period of 5.5 years. During that time,

- 1783 breast cancer cases occurred.
- breast cancer risk increased with greater consumption (≤5 g alcohol per day, adjusted hazard ratio [HR], 1.10; >5–15 g per day, HR, 1.14; >15 g per day, HR, 1.13).
- no significant interaction between alcohol and folate was seen in adjusted models.

Comments: This well-done analysis found no evidence that folate intake reduces breast cancer risk in postmenopausal women who consume alcohol. Most of the potential confounding variables (e.g., positive family history, use of hormone supplements, early menarche) showed the expected positive association with breast cancer risk, and the association with alcohol intake was similar to that shown in other studies (roughly a 6% increase in risk per typical 12 g drink per day). However, recruitment for this study occurred after the fortification of cereals and grains with folate in the US, which could have resulted in fewer women with inadequate intake. Further, the relatively brief follow-up period may not have been adequate to demonstrate a protective effect.

R. Curtis Ellison, MD

Reference: Duffy CM, Assaf A, Cyr M, et al. Alcohol and folate intake and breast cancer risk in the WHI Observational Study. *Breast Cancer Res Treat.* 2009;116(3):551–562.

The Impact of Neighborhood Alcohol Outlet Density on Alcohol-related Health Outcomes

Researchers in Louisiana and California conducted a cross-sectional study to assess the association between alcohol outlet density and self-reported alcohol-related health outcomes (i.e., sexually transmitted infection [STI], motor vehicle accidents, injury, liver problems, hypertension, and violence) in the last year. They also sought to determine whether these associations were mediated by individual alcohol use. Three measures of alcohol outlet density were used: neighborhood density (number of outlets per square mile of census tract), individual density (number of outlets within 1 mile of each subject's home), and distance to the nearest outlet from each subject's home.

- The average distance to the nearest outlet was 0.5 miles. The average outlet density within 1 mile was 1.1.
- In analyses adjusted for age, sex, race, ethnicity, education, location, and income, individual outlet density was associated with STI (adjusted odds ratio [AOR],* 1.80), liver problems (AOR, 1.33), and violence (AOR, 1.31). Distance to the nearest outlet was not associated with STI, liver problems, or violence.
- Individual alcohol use partially mediated the relationship between outlet density, STI, and violence and

*Indicates the change in likelihood when outlet density increased by 1 unit.

(continued on page 8)

Alcohol Outlet Density and Health Outcomes (continued from page 7)

fully mediated the association between outlet density and liver problems.

Comments: It is important for primary care physicians to be aware of community contextual effects on a patient's health. In this study, the association between outlet density and some alcohol-related health outcomes is only partially explained by individual alcohol use. Clinicians should keep in mind the potential impact of alcohol outlet density in a patient's neighborhood as a factor in his or her health, even in the absence of unhealthy alcohol use.

Nicolas Bertholet, MD, MSc

Reference: Theall KP, Scribner R, Cohen D, et al. The neighborhood alcohol environment and alcohol-related morbidity. *Alcohol Alcohol.* 2009;44(5):491–499.

Visit www.aodhealth.org to download these valuable training tools:

Helping Patients Who Drink Too Much

A free online training curriculum on screening and brief intervention for unhealthy alcohol use

www.mdalcoholtraining.org

- Learn skills for addressing unhealthy alcohol use (e.g. screening, assessment, brief intervention, and referral) in primary care settings. Includes a free PowerPoint slide presentation, trainer notes, case-based training videos, and related curricula on health disparities/cultural competence and pharmacotherapy.

Prescription Drug Abuse Curriculum

A free downloadable PowerPoint presentation to address prescription drug abuse

www.bu.edu/aodhealth/presc_drug.html

- Framed within the clinical scenario of chronic pain management, this valuable teaching resource includes detailed lecture notes to expand on the information contained in each slide. Designed to last 2 hours, the material can be easily adapted to fit the 1-hour lecture slot typical of most training programs.

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American Journal of Drug & Alcohol Abuse
American Journal of Epidemiology
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American Journal of Psychiatry
American Journal of Public Health
American Journal on Addictions
Annals of Internal Medicine
Archives of General Psychiatry
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Journal of Addiction Medicine
Journal of Addictive Diseases
Journal of AIDS
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Journal of Studies on Alcohol
Journal of Substance Abuse Treatment
Journal of the American Medical Association
Lancet
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Preventive Medicine
Psychiatric Services
Substance Abuse
Substance Use & Misuse

Many others periodically reviewed (see www..aodhealth.org).

Contact Information:

Alcohol, Other Drugs, and Health: Current Evidence
Boston University School of Medicine/Boston Medical Center
801 Massachusetts Ave., 2nd floor
Boston, MA 02118
aodhce@bu.edu