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The Medical Student JAMA



HARM REDUCTION FOR INJECTION DRUG USERS
MEDICAL STUDENTS AND SUBSTANCE ABUSE
THE INTERNATIONAL TOBACCO STRATEGY

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Smoke and Spirits: The Substance Abuse Dilemma

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Since antiquity, people have experimented with plant substances for their psychogenic effects. Long before the health effects of alcohol were known, it was commonly recognized that alcohol could not only enhance one's sense of well-being, but also could cause "social harms."¹ Research now shows direct links with the abuse of certain substances and defined pathology. For example, the alcoholic can expect a predisposition toward cirrhosis, and cigarette smokers can count on a greater incidence of coronary artery disease.²

Over 1.4 million people in the United States sought formal treatment for their alcohol and drug abuse problems in 1995,³ and countless more individuals are addicted to harmful substances. With so many people affected, one is compelled to ask whether our current treatment strategies are effective in addressing substance-related health problems. Medical students Nathaniel Gunn, Chase White, and Ramya Srinivasan assert that the current "war on drugs" approach does not reach the core of the substance abuse problem. In this issue of MS/JAMA the students describe the principle of harm reduction as a means toward addressing the problem of addiction and illustrate its application in a newly created student health clinic for intravenous drug users.

While medical students and physicians may help patients resolve substance dependency, they themselves are not immune to these temptations. Richard Mangus, Claire Hawkins, and Michael Miller studied the medical student population and report their findings on tobacco and alcohol use among 1996 medical school graduates.

The United States is not alone in its addiction woes. Martin Makary and Ichiro Kawachi argue that this country is to blame for some of the problems currently experienced abroad. As

Makary and Kawachi point out, US tobacco companies are aggressively targeting international markets using promotional tactics Americans would find reprehensible. In their essay, the authors give suggestions on how medical professionals can protest the surge of tobacco marketing overseas.

Lowering the prevalence of substance abuse and reducing the adverse health consequences are challenges that will likely remain for some time. Intense federal efforts are being directed toward stemming addiction, and there has been some progress on the domestic tobacco front. From the ban in 1989 on smoking aboard domestic airline flights to this year's Congressional drama with the failed McCain tobacco control bill (S, 1415), it is apparent that cigarette smoking in this country is becoming less acceptable. Spurred by the Liggett Group's admission in 1997 that smoking is addictive and that the tobacco industry sought to sell its products to children as young as age 14,⁴ the tobacco industry has had to pay billions of dollars to state governments to reconcile smoking-related Medicaid costs.⁵

While there is no magical cure for solving substance abuse, steps toward preventing addiction may be the key. In their relationships with patients, medical students and physicians can play an important role in reducing addiction.

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Cover: *A Grasshopper Which Sprang From Indecision While a 3-Day-Old Peeled Banana Waited to Be Painted* (acrylic on canvas) by Ryan McAdams.

Primary Care as Harm Reduction for Injection Drug Users

Nathaniel Gunn, Chase White, Ramya Srinivasan, *University of California at Davis School of Medicine*

In March 1997, Joan Viteri died of overwhelming septicemia, a complication of an operation for an abscess in her hip caused by injection drug use. Joan came from a middle-class family and was well educated, but she had become a heroin user at the age of 16. Although Joan had access to medical care, the possibility of undergoing a surgical procedure without sufficient postoperative narcotic pain control—a practice illicit drug users often encounter—scared her. This, in addition to the contemptuous attitude providers often hold toward injection drug users, made using medical treatment an appalling option for Joan. She therefore delayed obtaining treatment for a simple abscess until it became fatal.

Joan's story is not unique. As a society we have elected to declare a "war on drugs." In reality, the war on drugs is a war on people. Drug use can clearly be harmful: heroin can cause respiratory collapse, alcohol can cause cirrhosis, and methamphetamines can cause psychosis. However, no known drug causes hepatitis C, wound botulism, necrotizing fasciitis, or HIV infection. Every day these infections disseminate among drug users, causing disease, disability, and death. The illegal, marginalized social context in which drug users are forced to exist sustains and perpetuates these infectious diseases.

The combination of a lack of primary prevention strategies and deferred use of secondary care increases morbidity and mortality among injection drug users (IDUs).

Although contaminated needles facilitate the spread of infectious diseases,^{1,3} primary prevention through needle exchange remains illegal. Lack of secondary care permits treatable bacterial and fungal infections to grow unchecked, leading to serious or fatal diseases.^{4,6}

In 1995, 35% of all AIDS cases reported in the United States were directly or indirectly associated with injection drug use.⁷ Hepatitis B and C infections are prevalent in the IDU population.^{8,9} In some user populations, transmission of hepatitis C occurs so rapidly that within 6 months of beginning drug use one third of users are infected, and within 2 years, 90% have contracted hepatitis C.¹⁰ These diseases affect the community at large. Perinatal transmission, coupled with high-risk behaviors, such as exchanging sex for money and/or drugs and multiple sexual partners, make IDUs a vector for infectious disease transmission into non-drug-using, noninfected populations.¹¹⁻¹³

Most IDUs are familiar with injection-related diseases and are able to diagnose their illnesses as accurately as clinicians.¹⁴ Ironically, only a fraction of IDUs seek out prophylactic or necessary medical treatment. Some IDUs fear being arrested for involvement in illegal activities. According to Dr Neil Flynn (verbal communication, July 1998), professor of infectious diseases at the UC Davis School of Medicine, many IDUs are indigent and do not qualify for disability or state Medicaid. Therefore, they are unable to pay for medical services. However, Dr Flynn believes that for many

IDUs the primary deterrent to seeking medical care is indignation stemming from prior dismissive treatment from health care professionals. Few people would subject themselves to the treatment that some health care providers reserve for the drug user unless, as Joan, they have no other choice.¹⁵

Harm Reduction as an Alternative

Harm reduction is an alternative approach to the "war on drugs."^{16,17} The primary tenet of harm reduction is that any step to reduce the negative effects of drug use is valuable. Rather than placing an emphasis on sending "right and wrong messages," harm reduction pragmatically addresses drug use from a public health and medical perspective, without moralizing. Transdermal nicotine patches for addicted smokers,¹⁸ needle exchange,^{1,2} and sex education coupled with the distribution of free condoms to sexually active teens¹⁹ are all examples of harm reduction practices that have been effective. Anecdotally we know that the harm reduction practice of providing free taxi rides for the intoxicated has reduced alcohol-related traffic fatalities. Harm reduction encompasses abstinence as a desirable goal, but recognizes that when abstinence is not possible, it is not ethical to ignore the other available means of reducing human suffering.

Joan Viteri Memorial Clinic

There are 14 000 IDUs who inject on a daily basis in Sacramento, Calif.²⁰ As students at UC Davis School of Medicine working in the Sacramento area, we recognized a need for primary health care services specifically directed toward the IDU population. Toward this end, we created a primary care clinic, the Joan Viteri Memorial Clinic, based on the philosophy of harm reduction. The mission of this clinic is to diagnose, treat, and prevent diseases associated with injection drug use without judgment and free of charge. The clinic does not mandate abstinence.

Supported by donations from public and private sources, the clinic opened August 1, 1998. UC Davis has donated equipment, certain laboratory services, and malpractice liability coverage for medical students and physicians. Additionally, Harm Reduction Services, a Sacramento social outreach program for IDUs, has donated clinic space. Every Saturday afternoon, 5 medical students provide patient care overseen by a volunteer attending physician. In the first month alone, the students treated more than 40 patients with needs ranging from wound care and abscess drainage to hepatitis C management.

By exposing medical students to the impact of drugs and drug policy on the local community and the user, this clinic serves as a unique adjunct to our clinical and political education. By engendering understanding and mutual respect between providers and IDUs, we hope to change
(Continued on page 1195.)

Tobacco and Alcohol Use Among 1996 Medical School Graduates

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In this era of prevention and health promotion, the health-related behaviors of medical professionals have drawn considerable attention and are a common focus of research. Today's physicians not only serve as providers of care for their patients, but also are expected to model the advice they impart.^{1,2} Addiction to chemical substances is a problem that may afflict any person, and it has long been a concern among physicians. Brewster² found reference in the literature to concerns of physician addiction to alcohol, cocaine, and morphine as early as 1869. Multiple cross-sectional studies have since tracked the use of tobacco and alcohol among medical students and physicians. Although tobacco use among medical students and physicians has decreased steadily over the past 50 years, the patterns of alcohol intake in this group have remained relatively stable.³ The purpose of this study is to assess the prevalence of tobacco use and the patterns of alcohol consumption among 1996 graduating medical students using a cross-sectional survey.

Methods

A questionnaire was developed to assess social and health-related habits and experiences of fourth-year medical students. The questionnaire included sections from the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System Questionnaire. Topics addressed included overall general health status and practices, social and professional relationships, and demographics.

This instrument was placed in the campus mailbox of all graduating medical students at 8 US medical schools (4 public and 4 private), with 2 schools in each of the 4 regions commonly designated by the Association of American Medical Colleges for geographic categorization. A randomization scheme was not used. Questionnaires required less than 10 minutes to complete and were returned individually in unmarked, stamped envelopes provided to students. No incentive was offered for participation in the study and no individual follow-up was possible. Data were collected between April and June of 1996. Statistical analyses were conducted using SPSS (version 6.1, SPSS, Inc).

Results

A total of 1001 questionnaires were placed and 548 were returned (55%), with individual schools' response rates ranging from 44% to 69%. Of the returned questionnaires, 61% were from students at public universities and 39% from students at private institutions. The sample included a greater proportion of males (56%) than females (44%), and more whites (73%) than other racial groups (27%) (Table). Respondents' ages ranged from 23 to 47, with a median age of 26 years (mean, 27.5).

Among graduating students, 2% reported currently being smokers, and 13% reported ever having been smok-

ers. Differences in tobacco use as a function of age and gender were not statistically significant, with the exception of a history of previous smoking, which was more common with increasing age.

Frequent alcohol use (3 or more days a week) was reported by 18% of students, and 21% of students reported at least one episode of binge drinking (5 or more drinks in one sitting) in the past 30 days. Male students were significantly more likely than female students to exhibit both of these behaviors ($P=.03$ and $P<.01$). Frequent alcohol use was most common in whites and blacks and among older students. Eighteen percent of respondents consumed more than 2 drinks at each drinking session, and male students were more likely to report this drinking behavior than were female students ($P=.01$). White students were much more likely than any of the other racial groups to report binge drinking, and age groups did not significantly differ regarding binge drinking.

Eighteen percent of women and 11% of men ($P=.02$) believed that their alcohol intake increased in medical school. Asians and the "25 and younger" age category were the racial and age groups most likely to report an increase in alcohol intake during medical school.

Comment

Results from this survey suggest an important decline in the prevalence of tobacco use among medical students. The 2% prevalence of smoking in this sample is the lowest rate reported in the literature among a large sample of medical students and is indicative of a continued acknowledgment by medical professionals of the dangers of tobacco use.⁴ Although 20% of the students in the oldest age group reported ever having smoked, this was true of only 8% in the youngest age group. Considering that few individuals begin smoking after age 18, this is an important marker for a much decreased use of tobacco among medical students.⁵

The preventive care beliefs and practices of health professionals are noted by the general public and may influence patient behaviors.¹ For this reason, the decline in physician smoking in recent years has important repercussions for the nation's health. The 1979 Surgeon General's report on smoking and health concluded that between 10% and 25% of smokers who are advised to quit by their physician may quit smoking or reduce the amount they smoke.⁶ Several subsequent studies demonstrated a relationship between physician advice concerning tobacco consumption and the subsequent use of tobacco by patients.⁷⁻⁹

Although the prevalence of tobacco consumption by physicians has declined over the past half century, the patterns of physician alcohol intake have remained stable or shown a slight increase.¹⁰ In general, younger physicians consume alcohol with the same frequency and in the same amounts as their age-related peers.^{11,12} But as

Demographics of Students and Bivariate Analysis of Responses

Variables	No. (%)	Current Smoker, %	Ever Smoker, %	Alcohol Intake on ≥ 3 d/wk, %	≥ 2 Drinks per Drinking Session, %	≥ 1 Episode of Binge Drinking in Past 30 Days, %	Increased Alcohol Intake While in Medical School
Sex							
Male	307 (56)	3	12	21	21	26	11
Female	241 (44)	2	14	14	13	15	18
		NS*	NS*	$P = .03$	$P = .01$	$P < .01$	$P = .02$
Age, y							
≤ 25	147 (26)	3	8	11	14	19	18
26-28	268 (49)	2	12	17	22	25	11
≥ 29	131 (25)	3	20	28	14	17	14
		NS*	$P < .01$	$P = .001$	$P = .05$	NS*	NS*
Race/ethnicity							
White	401 (73)	2	14	20	20	26	13
Black	19 (3)	0	11	32	16	5	16
Asian	95 (17)	4	7	8	10	10	19
Hispanic	20 (4)	0	15	0	15	5	10
All other	12 (2)	17	17	8	17	8	8
Overall	548 (100)	2	13	18	18	21	14

*Not significant. Two respondents did not list their age and one did not list race/ethnicity.
† P value not calculated because of small cell sizes.

physicians age, their alcohol intake tends to increase, in contrast to the intake of the general population, which tends to decrease with age.¹⁰ Estimates of physician impairment due to alcoholism are as high as 10%, comparable to the estimated 12% in the general population.^{13,14} Seven studies conducted among medical students between 1977 and 1990 found that over this time period, the prevalence of alcohol abuse ranged from 7% to 17%.¹⁵⁻²¹ Among this study's sample of 1996 senior medical students, 21% reported an episode of binge drinking within the last 30 days, and 18% averaged more than 2 drinks per drinking session. Binge drinking and heavy alcohol consumption are possible markers for alcohol abuse.

The patterns of alcohol intake for this sample of medical students are similar to those for the age-related general population. Men tended to drink more often and more heavily than their female peers and were significantly more likely to have engaged in an episode of binge drinking within the last 30 days. Interestingly, women were more likely than their male peers to report an increase in alcohol intake while in medical school, which supports the hypothesis of Flaherty and Richman²² that there is a gender convergence in the drinking patterns among medical students that results from the occupational hazards of medical school. These findings may indicate the unique pressures placed on female medical students compared with their male counterparts. Possible examples of these gender-specific pressures include cultural expectations of women regarding child-rearing and domestic responsibilities and the deemphasis of a woman's career compared with that of her male colleagues. Additionally, women in the medical field must compete in a profession still largely dominated by men.²³

Results from this study must be viewed in light of the limitations of a self-report survey design. These include recall bias, reporting errors, and nonresponse bias. Though self-reported alcohol consumption has generally been shown to be a valid measurement, it is possible that underreporting of both alcohol and tobacco use may have occurred because of the negative associations with use of these substances.^{24,25} This study had a 45% nonresponse rate, introducing a nonresponder bias of un-

known quantity into the results. Data collection for this study occurred toward the end of the last year of medical school, which may have artificially inflated the results of the alcohol intake questions, especially those related to binge drinking. Finally, this questionnaire was not distributed in a strictly random fashion and its reliability and validity were never completely assessed.

Despite these limitations in the study's comparability with other studies, it provides key information on a large, geographically distributed sample of medical students whose demographics are similar to the enrollment of all US medical students with regard to gender, age, race, and enrollment patterns.²⁶ Based on published studies concerning the validity of substance use questionnaires^{24,25} and given the educational level and medical background of the study sample, there is a high likelihood that the results are a true representation of actual substance intake.

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The International Tobacco Strategy

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Despite recent progress in limiting tobacco advertising and usage in the United States,¹ the tobacco industry is rapidly expanding into larger global markets. While smoking prevalence rates have decreased 1% per year in Western countries since the mid-1970s, tobacco use has surged in the developing world.² Worldwide estimates indicate that annual deaths from cigarette smoking will rise from the current figure of 3 million to 10 million by 2025, with approximately 70% of these deaths occurring in developing countries.³ The disparity is alarming. Medical students and physicians have a unique opportunity to make known the individual and societal consequences of tobacco marketing overseas^{4,5} and to thereby minimize smoking-related morbidity and mortality.

Several aspects of international tobacco marketing are cause for concern. Tobacco companies are promoting and marketing overseas in ways long banned in the United States, for instance, selling cigarettes without a health warning label and advertising on television. Outside the United States, the tobacco industry sponsors high-school sporting events, distributes free cigarette samples, and even arranges for discotheques to grant free admission in exchange for empty cartons of cigarettes.^{6,7} Further, studies show that cigarettes sold in the Philippines have 50% more tar content and as much as twice the amount of nicotine as those sold by the same companies in the United States.⁸

China, with a population of 1.1 billion, is the largest tobacco market in the world. The potential earnings from the lifetime tobacco addiction of a large population are strong incentives for the industry to target Asia. As in many developing countries, the US industry is not only outperforming local tobacco companies in China, but it is also replacing unsophisticated, often rural, indigenous tobacco businesses that generally do not advertise aggressively.^{9,10}

Current US law encourages the foreign practices of American tobacco companies. Section 301 amendment of the 1974 Trade Act has essentially opened the door for tobacco companies in Asian markets by giving the executive branch of government the authority to threaten trade sanctions against any country that impedes the sale of US tobacco products.¹¹ In 1987 and 1988, the US government threatened to impose trade sanctions 3 times. In response, Japan and Korea began allowing US cigarette imports without tariffs. Television advertisements in Japan increased 10-fold.⁶ Japan's public health lobby stated that this "saturation advertising" targeted women and adolescents, despite solemn assurances from industry officials that they would not do so.¹² Within a few years, US cigarette imports to Japan increased 75% with predictably sharp increases in smoking, especially among Japanese women and adolescents.⁷

It is precisely these types of activities that have recently motivated individuals and institutions to stand against smoking by divesting tobacco stocks. In 1990 at Harvard University, a group of students in a public health class inquired about the institution's investment portfolio. Once the students learned of the school's ownership of tobacco stocks, they wrote letters to the university president stating the discrepancy between the medical and public health schools' mission to promote health and its tobacco investments. Within one year, Harvard University sold over \$58 million worth of stocks in tobacco companies, namely, American Brands, Philip Morris, British American Tobacco, and US Tobacco.¹³ In announcing the divestment to Harvard students, the university president stated in a letter (May 18, 1990) that the decision was made because of "the health hazards of smoking and the vigorous and successful efforts of companies to promote sales of cigarettes to teenagers and to inhabitants of countries where no warnings are required."

The Harvard experience is encouraging, and there are many more opportunities for medical students and health care professionals to take a stand against the tobacco industry. For example, in 1995 a report in the *Lancet* showed that many health maintenance organizations own a substantial share of tobacco companies. The Prudential Insurance Company, which was the largest health insurer in the United States in 1995, was reported to own at least \$248 million in tobacco investments.¹⁴ Months after this fact was publicized, Prudential sold its tobacco stocks.

Medical students can protest the recent surge of international tobacco marketing in several ways. First, students should request a list of holdings in their institution's endowment portfolio, and insist on an institutional ban on tobacco investments by writing to their university president and business managers. Second, students can stand against the industry by voicing concern to their institutional investment responsibility committee and requesting medical student representation on the committee.

Finally, students should urge Congress to repeal Section 301 of the 1974 Trade Act, which unfairly protects the US tobacco industry. In addition, students should challenge the US government's permissive policies on unrestricted marketing and sale of a more addictive and more hazardous cigarettes than those marketed and sold at home. At minimum, US tobacco companies and their subsidiaries should adhere to the same standards of product marketing, promotion, and sales that are required in their home country.

It is predicted that tobacco poses the greatest future health risk to the developing world, surpassing malnutrition and communicable diseases. Student efforts advocating divestment of tobacco stocks and legislative reform are crucial in stemming the tide of smoking worldwide.

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Primary Care as Harm Reduction (Continued from p 1191.)

provider and user attitudes toward each other. We believe that lifestyle choices do not preclude a person from deserving compassion and care. We hope that our clinic will serve as a positive model for other clinics wishing to provide drug users with primary health care.

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