

EDITOR

Mervyn Susser, MB, BCh, FRCP(E), DrPH

DEPUTY EDITOR

Mary E. Northridge, PhD, MPH, MT

ASSOCIATE EDITORS

Heinz W. Berendes, MD, MHS
Manning Feinleib, MD, DrPH
Lawrence J. Fine, MS, MD, MPH, DrPH
Richard Neugebauer, PhD
Anne Schuchat, MD
Zena A. Stein, MA, MB, BCh

CONSULTING EDITOR FOR STATISTICS

Bruce Levin, PhD, MA

EDITORIAL BOARD

Faye Wong, MPH, RD (2000),
Chair

Hortensia Amaro, PhD (1999)
Sevgi O. Aral, PhD, MS (1998)
Shirley A. A. Beresford, PhD, MA, MSc (1998)
Maria Cervania (2000)
Carolyn Clancy (2000)
Helene Gayle, MD (1999)
Lawrence W. Green, DrPH (1999)
Lucie Kelly, PhD, RN, FAAN (1998)
Jeffrey P. Koplan, MD (1999)
Marvin Marcus, DDS (1998)
Nigel Paneth, MD, MPH (2000)
Victor W. Sidel, MD (1999)
Ellen K. Silbergeld, PhD (1999)

STAFF

Mohammad N. Akhter, MD, MPH
Executive Editor/Executive Director

Ellen T. Meyer
Director of Publications

Nancy Johnson
Managing Editor

Patricia Gallagher
Acting Production Editor

Ashell Alston
Advertising Manager

Charlene Bright, Marilyn Butler,
Maura Leonard, José Pérez, Gina Pierelli,
Joyce Wilcox
Publication Assistants

CONTRIBUTING EDITORS

George A. Silver, MD, MPH
Public Health Policy Forum
Wendy K. Mariner, JD, LL.M., MPH
Health Law and Ethics
Elizabeth Fee, PhD
Theodore M. Brown, PhD
Public Health Then and Now
H. Jack Geiger, MD, MSciHyg
Topics for Our Times
Hugh H. Tilson, MD, DrPH
Notes from the Field
Sonja Noring, MA
Book Corner

ASSOCIATE CONTRIBUTING EDITOR

Wendy Chavkin, MD, MPH
Topics for Our Times

Editorial

Editorial: Substance Abuse and Addiction— the Need to Know

America has many social ills: crime and violence, poverty, teen pregnancy, domestic violence and child abuse, high health care costs, the spread of AIDS and other sexually transmitted diseases, and federal entitlement programs that defy reform. As a country, we have to take action to deal with all of these problems. However, unless we move to combat substance abuse and addiction, we are unlikely to succeed.

The statistical evidence gives substance abuse and addiction its status as public health enemy No. 1. Some 76 million Americans have experienced alcoholism in their families.¹ More than 61 million Americans smoke cigarettes.² Eleven million binge drink (five or more drinks on one occasion) at least once a week on average.² Almost 7 million use smokeless tobacco; more than 10 million smoke marijuana; more than 3 million abuse psychotherapeutic drugs such as tranquilizers, amphetamines, and sleeping pills; almost 2 million use cocaine; at least 1 million use hallucinogens such as PCP or LSD; and almost 1 million—many of them teenagers—report using inhalants.²

Of the 4 million women who give birth each year, some 820 000 smoke cigarettes, 760 000 drink alcohol, and 500 000 use illicit drugs during pregnancy.³ These numbers cannot be added because many women use more than one substance. When a mother smokes, drinks, or uses drugs during pregnancy, the medical—and Medicaid—bill to deliver and care for her child can jump sharply.⁴ For example, hospital charges for infants exposed to illicit drugs are up to four times greater than those for drug-free infants.⁴

More American children and adolescents are smoking cigarettes and using marijuana and inhalants, and at the youngest ages ever. Between 1992 and 1996, the proportion of eighth graders who reported smoking in the past month increased from 15.5% to 21%

(L. Johnston et al., unpublished data, 1996). From 1992 to 1995, the proportion of eighth graders who said they had used marijuana during or before seventh grade rose from 7.7% to 12.7%, while the proportion of eighth graders who reported using inhalants during or before seventh grade grew from 14.5% to 17.7%.^{5,6}

The gender gap in the use of alcohol, tobacco, and illicit drugs is disappearing as well. Among 12- to 17-year-olds, girls are now as likely as boys to experiment with alcohol and illicit drugs, although boys are still more likely than girls to become regular drinkers and users of illicit drugs.^{3,7} In the past, girls who tried drugs did so at later ages than did boys. Today, however, girls and boys are wading into the sea of drug experimentation at the same early and vulnerable ages.³

Both the University of Michigan study Monitoring the Future and the tracking survey of The Partnership for a Drug-Free America have found a decline in the perception among adolescents that taking drugs is risky. The annual Center on Addiction and Substance Abuse National Survey of American Attitudes on Substance Abuse⁸ revealed that the proportion of teens with friends and classmates who have used drugs such as cocaine and heroin jumped from 39% in 1996 to 56% in 1997. These disturbing trends come at a time when a generation of baby boomers, who grew up in an age when drug experimentation was widespread and fashionable,² is sending mixed messages to its children about the dangers of drugs.

The report by Johnson et al. in this issue of the Journal demonstrates how dramatic illicit drug use soared with the baby-boomer generation.⁹ In 1996, the CASA Survey found that many baby-boomer

Editor's Note. See related article by Chavkin et al. (p 117) in this issue.

parents appeared resigned to drug use by their own children as well: 46% of them expect their teenagers to try drugs, and 65% of parents who regularly used marijuana in their youth believe their teens will try drugs.¹⁰ Only 58% of boomer parents consider it a "crisis" when their child aged 15 years or younger smokes marijuana, compared with 83% of parents who never used marijuana. Yet, we know that adolescents who try drugs at such an early age use drugs more frequently, escalate to higher levels more quickly, are less likely to stop using them, and are more likely to move on from marijuana to drugs like cocaine and heroin.^{9,11}

Recent neuroscientific studies have demonstrated in stunning detail the changes in brain chemistry that marijuana and cocaine cause, opening up exciting possibilities for new treatments.¹²⁻¹⁴ They also challenge old beliefs about the supposed "safety" of marijuana use. The evidence indicates a biomedical link between use of alcohol, nicotine, marijuana, cocaine, and heroin, because all of these substances affect dopamine levels in the brain through common pathways.^{12,13} Recent research also demonstrates that cessation of marijuana use brings on withdrawal symptoms,^{12,13} which may encourage a user to resume marijuana use or to try other drugs such as cocaine or heroin.

We need to attack this problem on several fronts: research, prevention, treatment, and law enforcement. I believe that the greatest area of neglect has been research.

The National Center on Addiction and Substance Abuse at Columbia University has analyzed the United States Centers for Disease Control and Prevention 1995 Youth Risk Behavior Survey to determine whether smoking marijuana leads to more dangerous illegal drug use even in the absence of other problem behaviors such as criminal activity, truancy, eating disorders, poor school performance, and attempted suicides. We found that, among 12- to 17-year-old boys with no other problem behaviors, those who report drinking alcohol and/or smoking cigarettes at least once in the previous month are 28 times likelier to smoke marijuana than those who report neither smoking nor drinking alcohol. For girls 12 to 17 years old, the relationship is even stronger; those who report drinking alcohol and/or smoking cigarettes at least once in the previous month are 37 times likelier to smoke marijuana than those who report neither smoking nor drinking alcohol.

These statistical relationships are compelling. They are even more striking than findings in the first surgeon general's report

on smoking and health that smokers were 9 to 10 times likelier to get lung cancer than nonsmokers.¹⁵ The early returns from the Framingham Study showed that men with high cholesterol levels were 2 to 4 times likelier to have heart disease.¹⁶ These findings on cancer and heart disease prompted massive investments in biomedical research programs.

In fiscal year 1997, the National Institutes of Health (NIH) spent more than \$5 billion on research on cancer, cardiovascular disease, and AIDS (National Institutes of Health, written communication with Kimberly Garr-Ferguson, October 14, 1997). NIH spent about a seventh of that amount, just \$787 million, on research on substance abuse and addiction, the largest single cause and exacerbator of those three crippling and killing conditions. Our nation should invest at least \$1 billion a year on research on addiction, and there should be a significant increase in biomedical and social research on adolescence.

It is also important that research examine the nature and causes of substance abuse among men and women. A review of the research in this area by the National Center on Addiction and Substance Abuse suggests that the problem differs among men and women in important ways.³ A better understanding of such differences could substantially improve prevention and treatment efforts.

The substance abuse and addiction problems of women are only beginning to receive the full attention they deserve. Although recent calls to include more women in study samples have met with some success, many researchers are not disaggregating their results by gender to search for differences that could inform prevention and treatment efforts. The studies on substance abuse in this issue of the *Journal* are encouraging exceptions.

For example, we need a better understanding of the nature of women's addiction to cigarettes. The finding by Husten et al.¹⁷ that men are more likely than women to be intermittent smokers is provocative in light of increasing evidence that it is harder for women to quit than for men. In addition to being addicted to nicotine, women may also rely on cigarettes to manage depression or anxiety. Another factor that may make it harder for them to cut down or quit is that social rituals involving smoking may be particularly important to women.¹⁸

The report by Emmons et al.¹⁹ also points to interesting differences in the correlates of smoking among women and men at college that could affect the success of prevention efforts. For example, the

absence of religious beliefs is a stronger predictor of smoking for women, while not participating in athletics is a more powerful predictor for men.

We already know that weight concerns are a strong deterrent to women who want to quit.^{3,20} The paper by Burnette et al.²¹ demonstrates how the health risks associated with weight gain after smoking cessation are trivial relative to the health benefits of quitting. Yet, adolescent girls continue to take up the habit and women continue to struggle with quitting, and we do not fully understand why. Certainly, the entertainment industry, which is once again glamorizing smoking in movies as well as music videos,²² and the fashion industry, whose love affair with a painfully thin image of women endures, send powerful messages to girls about how to be chic and popular in ways that may have deadly consequences.

As evidence mounts of the tragic consequences of smoking during pregnancy, the paper by Nafstad²³ demonstrates the damage done to the fetus when a pregnant woman is simply exposed to the smoke from other cigarette smokers. Despite such findings, however, state and local policy is largely focused on the consequences of prenatal use of illicit drugs such as cocaine. As reported by Chavkin et al.,²⁴ state interventions to combat drug use during pregnancy with punitive measures are increasing, while funding for substance abuse treatment is declining. To have an informed policy, we need greater investments in research on the nature and consequences of prenatal use of all substances—tobacco, alcohol, licit and illicit drugs—as well as the effectiveness of concerted prevention and treatment efforts.

Our nation's parsimonious investment in research on substance abuse and addiction is a critical mistake, because this public health epidemic destroys the lives and potential of millions of Americans. It is a chronic and costly disease without a cure in sight, making prevention all the more important. Perhaps most troubling, it is attracting our children in greater numbers to the potential ruin of their futures and ours. For this reason more than any other, we must devote resources to combating substance abuse and addiction that are commensurate with the devastating scope of the problem. □

*Joseph A. Califano, Jr
Chairman and President
National Center on Addiction
and Substance Abuse
at Columbia University*

References

1. Schoenborn CA. Exposure to alcoholism in the family: United States, 1988. *Adv Data Vital Health Stat.* September 30, 1991; no. 205. US Government Printing Office; 1991–281–821/40008.
2. *Preliminary Results from the 1996 National Household Survey on Drug Abuse.* Rockville, Md: US Dept of Health and Human Services, Substance Abuse and Mental Health Services Administration; 1997:60.
3. *Substance Abuse and the American Woman.* New York, NY: National Center on Addiction and Substance Abuse; 1996.
4. *Drug-Exposed Infants: A Generation at Risk.* Washington, DC: US General Accounting Office; 1990.
5. Johnston LD, O'Malley PM, Bachman JG. *National Survey Results on Drug Use from The Monitoring the Future Study, 1975–1992. Volume I: Secondary School Students.* Rockville, Md: US Dept of Health and Human Services, National Institutes of Health; 1993:134
6. Johnston LD, O'Malley PM, Bachman JG. *National Survey Results on Drug Use from The Monitoring the Future Study, 1975–1995. Volume I: Secondary School Students.* Rockville, Md: US Dept of Health and Human Services, National Institutes of Health; 1996:153.
7. *Substance Abuse among Women in the United States.* Rockville, Md: US Dept of Health and Human Services, Substance Abuse and Mental Health Services Administration; 1997.
8. *National Survey of American Attitudes on Substance Abuse III: Teens and their Parents, Teachers and Principals.* New York, NY: National Center on Addiction and Substance Abuse; 1997.
9. Johnson RA, Gerstein DR. Initiation of use of alcohol, cigarettes, marijuana, cocaine, and other substances in US birth cohorts since 1919. *Am J Public Health.* 1998;88:27–33.
10. *National Survey of American Attitudes on Substance Abuse II: Teens and Their Parents.* New York, NY: National Center on Addiction and Substance Abuse; 1996.
11. *Cigarettes, Alcohol, Marijuana: Gateways to Illicit Drug Use.* New York, NY: National Center on Addiction and Substance Abuse; 1994.
12. Tanda G, Pontieri FE, Di Chiara G. Cannabinoid and heroin activation of mesolimbic dopamine transmission by a common opioid receptor mechanism. *Science.* 1997;276:2048–2050.
13. Rodriguez de Fonseca F, Carrera MRA, Navarro M, Koob GF, Weiss F. Activation of corticotropin-releasing factor in the limbic system during cannabinoid withdrawal. *Science.* 1997;276:2050–2054.
14. Volkow ND, Wang GJ, Fischman MW, et al. Relationship between subjective effects of cocaine and dopamine transporter occupancy. *Nature.* 1997;386:827–830.
15. *Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service.* Washington, DC: US Dept of Health, Education, and Welfare; 1964.
16. Dawber TR. *The Framingham Study: the Epidemiology of Atherosclerotic Disease.* Cambridge, Mass: Harvard University Press; 1980.
17. Husten CG, McCarty MC, Giovino GA, Chrismon JH, Zhu B. Intermittent smokers: a descriptive analysis of persons who have never smoked daily. *Am J Public Health.* 1998;88:86–89.
18. Perkins KA. Sex differences in nicotine versus nonnicotine reinforcement as determinants of tobacco smoking. *Exp Clin Psychopharmacol.* 1996;4:166–177.
19. Emmons KM, Wechsler H, Dowdall G, Abraham M. Predictors of smoking among college students. *Am J Public Health.* 1998;88:104–107.
20. Perkins KA, Levine MD, Marcus MD, Shiffman S. Addressing women's concerns about weight gain due to smoking cessation. *J Subst Abuse Treat.* 1997;14:173–182.
21. Burnette MM, Meilahn E, Wing RR, Kuller LH. Smoking cessation, weight gain and changes in cardiovascular risk factors during menopause: the Healthy Women Study. *Am J Public Health.* 1998;88:93–96.
22. Durant RH, Rome ES, Rich M, Allred E, Emans SJ, Woods ER. Tobacco and alcohol use behaviors portrayed in music videos: a content analysis. *Am J Public Health.* 1997;87:1131–1135.
23. Nafstad P. Nicotine concentration in the hair of nonsmoking mothers and the size of offspring. *Am J Public Health.* 1998;88:120–124.
24. Chavkin W, Breitbart V, Elman D, Wise P. National survey of the states: policies and practices regarding drug-using pregnant women. *Am J Public Health.* 1998;88:117–119.