



Published in final edited form as:

Psychiatr Clin North Am. 2012 June ; 35(2): 411–423. doi:10.1016/j.psc.2012.03.007.

Clinical Implications of Drug Abuse Epidemiology

Jeffrey D. Schulden, MD*, **Marsha F. Lopez, PhD, MHS**, and **Wilson M. Compton, MD, MPE**
Division of Epidemiology, Services, and Prevention Research, National Institute on Drug Abuse (NIDA), 6001 Executive Boulevard, MSC 9589, Bethesda, MD 20892-9589, USA

Keywords

Drug abuse; Drug dependence; Drug use; Epidemiology

Findings from several large-scale, population-based surveys of drug use have indicated relatively high prevalence of illicit drug use and shifts in trends in illicit drug use, for example highlighting the elevated rates of prescription drug misuse and associated morbidity and mortality from their misuse. These studies have furthered understanding of the high comorbidity of drug use disorders with other psychiatric disorders and with the HIV epidemic. Building on an understanding of this research in substance abuse epidemiology, it is important for clinicians to learn to integrate strategies for prevention, screening, and linkage to substance abuse treatment programs available for the communities they serve. On-going research supports the important role of such Screening, Brief Intervention, and Referral to Treatment (SBIRT) programs in a range of settings, including primary care, mental health, and emergency departments.

TRENDS IN SUBSTANCE USE

Large, population-based, annual surveys, such as the National Survey on Drug Use and Health (NSDUH) and the Monitoring the Future study, provide a foundation for understanding patterns of illicit drug use over time.^{1,2} After reaching a peak in the late 1970s, rates of illicit drug use among adolescents generally declined during the 1980s, increased somewhat during the 1990s, then have stayed relatively stable over the past several years, although with some indication of a possible slight upward trend in recent years (Fig. 1).¹ Nevertheless, multiple such epidemiologic studies suggest that illicit drug use is relatively common in the population, with initial use typically starting in mid to late adolescence. The 2010 NSDUH data, based on surveys conducted in a representative sample of US households, indicate that approximately 8.9% of persons ages 12 and older in the United States—an estimated 22.6 million individuals—have used any illicit drug at least once during the past month, 6.9% have used marijuana, and 2.7% have used prescription-type psychotherapeutic drugs nonmedically.² For comparison, the 2010 NSDUH data indicate that 51.8% of respondents age 12 and older reported having had alcohol in the past month.² The 2011 Monitoring the Future data, based on surveys conducted at a representative sample of US secondary schools, found that 20.1% of 8th grade students reported having ever tried an illicit drug, 37.7% of 10th graders, and 49.9% of 12th graders, showing a rising trend in use over the course of adolescence.¹ For comparison, 33.1% of 8th graders reported having ever tried alcohol, 56.0% of 10th graders, and 70.0% of 12th graders.¹ Thus, the prevalence of illicit drug use is generally closer to that of alcohol use

*Corresponding author. schuldenj@nida.nih.gov.

Disclaimer: The views and opinions expressed in this report are those of the authors and should not be construed to represent the views of NIDA or any of the sponsoring organizations, agencies, or the US government.

among adolescents than among the United States population as a whole. Data from MTF also indicate that marijuana continues to be the most commonly used illicit drug, with 16.4% of 8th graders, 34.5% of 10th graders, and 45.5% of 12th graders reporting having ever tried marijuana.¹

Such large-scale surveys have found that typically drug use increases from adolescence to young adulthood then gradually declines.^{1–3} Given the high prevalence of illicit substance use, it is imperative that clinicians routinely screen for use among their patients, especially among adolescents and young adults.^{4–6} Of note, the American Academy of Pediatrics has recently released a policy statement on substance use SBIRT for pediatricians, encouraging widespread adoption as a part of routine adolescent primary care screening and including recommended comprehensive algorithms for SBIRT in the pediatric setting.⁷ Ideally, all clinicians would be able to offer patients integrated prevention, brief intervention, and referral to treatment services within well-coordinated health systems, although many communities still unfortunately face limited access to comprehensive drug abuse prevention and treatment services.^{4–9}

PRESCRIPTION OPIOID MISUSE

These ongoing surveys have also found a high prevalence of misuse of prescription drugs, such as hydrocodone and oxycodone, along with elevated rates for the problems associated with their misuse, including fatal and nonfatal opioid overdose.^{10–14} The heightened concern for the high prevalence of prescription drug misuse is due in part to evidence of elevated levels of abuse among adolescents.^{12,15,16} In 2011, among 12th graders, past year use of prescription drugs was reported to be 15.2%.¹

Clinicians must balance appropriately treating their patients while being alert for possible misuse of prescription opioids and other psychoactive medications such as stimulants and sedatives.^{13,17–20} This balance can sometimes prove difficult, especially when treating chronic pain conditions. In general, clinicians treating persons with chronic analgesics or other psychoactive medications are advised to prescribe in limited, appropriate doses with regular follow-up appointments; to encourage the disposal of any unused medication; and to foster trusting relationships with patients in which personal and family history of substance abuse and risks of prescription medication misuse are openly discussed.^{13,17–20} As possible, clinicians are advised to pursue analgesic treatment regimens that include nonopioid analgesics and include psychotherapeutic strategies for managing chronic pain, such as cognitive-behavioral therapy.^{13,17–23}

DRUG ABUSE AND DEPENDENCE

A proportion of persons who use illicit substances develop ongoing dysfunctional patterns of use that may constitute drug abuse or dependence. Some large, population-based studies, such as the NSDUH and the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), have included actual diagnostic categories of drug abuse and dependence as defined in the *Diagnostic and Statistical Manual of Mental Disorders-IV* (DSM-IV). Recent data from the NESARC indicate that approximately 2.0% of adults living in US households had a DSM-IV drug use disorder in the prior 12 months (1.4% abuse, 0.6% dependence), and 10.3% reported a drug use disorder at any point in their lifetime (7.7% abuse, 2.6% dependence).³ For comparison, data from the NESARC also indicate that approximately 8.5% of adults living in US households had an alcohol use disorder in the past 12 months (4.7% abuse, 3.8% dependence).²⁴

Drug use disorders were also highly associated with measures of physical, social, and occupational disability, including missed work days and repeated hospitalizations.^{3,25–27}

The widespread nature of drug use disorders further highlights the substantial public health problem they represent and the need for integrated SBIRT programs in a range of clinical settings serving general patient populations, including primary care and emergency department settings.⁴⁻⁹

SPECIAL POPULATIONS

Although drug use disorders are found commonly throughout the population, several studies have suggested increased risk among some communities and demographic groups that may merit a heightened need for prevention and screening in clinical settings. For example, the NESARC and several other studies have shown drug use disorders to be much more common among men than among women.^{2,3,28,29} Data from the NESARC have also suggested increased risk of drug use disorders among those who are younger; have less income; have less education; and have never married or are widowed, separated, or divorced.³ Data from the NESARC further suggest an especially high prevalence of drug use disorders among Native Americans: 18.4% of Native Americans reporting a drug use disorder at some point in their lifetime (11.6% abuse, 6.9% dependence).³

These findings are similar to those found in regional studies among Native Americans and call attention to the tremendous need of this community for improved access to substance abuse prevention and treatment services.^{3,30-33} Although younger age does continue to be generally associated with drug use disorders, recent data from the NESARC and other studies suggest that rates have also increased among older adults who came of age during the height of the drug epidemic of the 1970s.^{2,3,29,34-36} These data suggest the possibility of rising rates of drug use disorders among future cohorts of older adults and highlight the need for geriatric clinicians to integrate drug abuse screening and referral into their assessments.³⁴⁻³⁸

Multiple studies have found that gay, lesbian, and bisexual individuals are at increased risk for drug use, drug use disorders, and a range of conditions that are commonly comorbid with drug use disorders, including depression and suicidality.³⁹⁻⁴⁴ This disproportionate drug use among sexual minorities seems to emerge in adolescence and continue into adulthood, and has been found across multiple classes of substances.³⁹⁻⁴³

In addition, a high proportion of persons who enter into the criminal justice system in the United States have a history of substance abuse or dependence.^{45,46} As such, criminal justice systems can serve as important settings for integrated drug abuse screening, brief intervention, and treatment.⁴⁵⁻⁴⁷ Integrating such services in the criminal justice setting holds the promise not only to improve rates of drug use relapse among offenders, but also to reduce criminal recidivism related to illicit drug use.⁴⁵⁻⁴⁷ It is important for clinicians to understand the unique epidemiologic risk profiles of the communities whom they serve and when appropriate to provide targeted screening and assessment for those at greatest risk.

COMORBID PSYCHIATRIC DISORDERS

Large-scale epidemiologic studies have also consistently shown a high degree of comorbidity of substance use disorders with other psychiatric disorders. Nationally representative studies such as the National Comorbidity Survey,⁴⁸ the Epidemiologic Catchment Area Surveys,⁴⁹ the National Longitudinal Alcohol Epidemiologic Survey,⁵⁰ and the NESARC^{3,51} have all indicated that a wide range of psychiatric disorders, including mood, anxiety, and some personality disorders, are highly associated with drug use disorders. Findings from several of these studies have further suggested that anxiety, mood, and antisocial personality disorders are more highly associated with substance dependence than substance abuse.^{3,52,53} In addition, when these analyses controlled for the presence of

multiple psychiatric disorders, the associations between individual psychiatric disorders and drug use disorders were reduced but overall remained substantial (Table 1).³ This finding of the decreased magnitude of these associations suggests that common etiologies may underlie drug use disorders and other psychiatric disorders, findings consistent with twin and genetic studies.⁵⁴ Of note, numerous studies have found drug use disorders to be strongly associated with suicidal ideation and attempts, independent of other axis I and axis II disorders.^{2,55-59} These findings also further highlight the importance of integrated drug abuse prevention, screening, and referral services in psychiatric treatment settings.^{8,9,60-63} It is especially important for clinicians to recognize co-occurring substance use and psychiatric disorders and to treat them in an integrated and coordinated fashion.^{8,9,61-64} Optimal treatment of either substance use or psychiatric disorders will not be achieved unless both are adequately treated.^{8,9,60-63}

COMORBID HIV INFECTION WITH DRUG USE

Research on substance abuse epidemiology has also continued to examine the high degree of comorbidity of drug use with the ongoing HIV epidemic. Injection drug use remains an important risk factor for HIV infection, with an estimated 12% of persons with newly diagnosed HIV infections in the United States in 2009 reporting this as a contributing risk factor.⁶⁵ In addition, epidemiologic research has called increasing attention to the role that noninjection drug use has also played in fueling the epidemic.⁶⁶ Drugs such as methamphetamine are well-known to increase libido, reduce inhibitions, and cloud judgment, increasing the likelihood of high-risk behaviors that individuals might not have otherwise engaged in were it not for their drug use.^{67,68}

A recent randomized, controlled trial among men who have sex with men who were methamphetamine dependent found that the addition of mirtazapine to substance use counseling significantly decreased not only methamphetamine use, but was also associated with decreases in a range of sexual risk behaviors.⁶⁹ Reductions in sexual risk behavior outcomes were associated with reductions in methamphetamine use among participants.⁶⁹ Larger scale replication trials are suggested, but the study findings highlight the importance of integrated prevention and treatment strategies for HIV and drug use disorders.

Multiple researchers now emphasize the importance of studying these comorbid epidemics of HIV and drug use disorders, along with other psychiatric disorders, as uniquely intertwined and fueled by a host of related social factors, referring to the combined phenomenon as a “syndemic.”⁷⁰⁻⁷² Examining the multiplicity of factors related to these combined epidemics holds promise to shed new insights into the unique burden of these epidemics on some communities, in particular men who have sex with men and ethnic/racial minorities.^{70,72,73} Multiple studies have suggested the value of combined, integrated approaches to the treatment of HIV, substance abuse, and mental health, with benefits including improved adherence to HIV treatment and improved HIV outcomes.⁷⁴⁻⁷⁷ In particular, several studies have shown that combined opioid use disorder and HIV treatment is feasible and can be associated with improved initiation of antiretroviral therapy and improved CD4 counts.⁷⁴⁻⁷⁶

GENETIC EPIDEMIOLOGY OF DRUG USE DISORDERS

Of the various risk factors for drug use disorders, family history has been identified as one of the most consistently and strongly associated factors. Large-scale family studies have consistently suggested the clustering of drug use disorders in families, and twin and adoption studies have provided support for the important role of genetic factors in this clustering.^{54,78} Multiple such studies have shown significantly increased risk of substance use disorders in first-degree relatives and children of persons with a substance use

disorder.^{79–81} Moreover, genetic studies have provided substantial evidence for the combined role of genetic and environmental factors in drug use disorders.

Several studies have indicated that drug use disorders, but not drug use itself, are significantly associated with genetic factors.⁵⁴ This finding suggests the important role of developmental and environmental factors in determining who is exposed to and initiates illicit drug use, with genetic factors then contributing in determining an individual's risk of going on to develop a drug use disorder. For example, findings from several studies, including a large, longitudinal cohort study, suggest that childhood self-control—which itself is likely influenced by genetic, developmental, and other environmental factors—is strongly predictive of adult drug use disorders and a range of other outcomes, including adult physical health, income, and criminal involvement.^{82–86} Such research suggests that interventions that target improved childhood self-control could have profound influence on a range of individual and societal outcomes, including rates of substance use, despite the role of other genetic and environmental factors in influencing these outcomes.^{85,86} As with many common human disorders, it is likely that factors associated with drug use disorders include a large host of multiple possible genes, each exerting a small degree of influence, multiple developmental and environmental factors, and complex interactions among these factors.^{54,81,86–88} Although still in its infancy, this research promises one day to improve clinicians understanding of the unique risk and protective factors affecting individual patients, for example, possibly allowing providers to assess which patients have unique opioid receptor polymorphisms that might place them at increased risk of prescription opioid misuse.^{89–91}

SUMMARY

Research on the epidemiology of illicit drug use disorders provides continued critical insights into the distribution and determinants of drug use and drug use disorders in the United States. This research serves as a foundation for understanding the etiology of these disorders, helping to disentangle the complex interrelationship of developmental, genetic, and environmental risk and protective factors. Building on an understanding of this research in substance abuse epidemiology, it is important for clinicians to understand the unique trends in drug use in the overall communities that they serve and the unique risk factors for given individuals. The generally high prevalence of substance use disorders, along with their high comorbidity with other psychiatric disorders and with the HIV epidemic, make prevention, evaluation, and referral for treatment for drug abuse an important part of routine clinical practice in a range of clinical settings, including primary care, psychiatric, and emergency department settings. Ongoing efforts to ensure insurance coverage parity for the treatment of mental health and substance use disorders offer the promise of continued improvements in the integration and availability of such services in the broader US health care system.^{92,93}

References

1. Johnston, LD.; O'Malley, PM.; Bachman, JG., et al. Monitoring the future: National Survey Results on Drug Use, 1975–2011. Bethesda (MD): National Institute on Drug Abuse; 2011.
2. Substance Abuse and Mental Health Services Administration. Results From the 2010 National Survey on Drug Use and Health: National Findings. Rockville (MD): DHHS; 2011.
3. Compton WM, Thomas YF, Stinson FS, et al. Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Arch Gen Psychiatry.* 2007; 64:566–76. [PubMed: 17485608]

4. Babor TF, McRee BG, Kassebaum PA, et al. Screening, Brief Intervention, and Referral to Treatment (SBIRT): toward a public health approach to the management of substance abuse. *Subst Abus.* 2007; 28:7–30. [PubMed: 18077300]
5. Gryczynski J, Mitchell SG, Peterson TR, et al. The relationship between services delivered and substance use outcomes in New Mexico's Screening, Brief Intervention, Referral and Treatment (SBIRT) Initiative. *Drug Alcohol Depend.* 2011; 118:152–7. [PubMed: 21482039]
6. Odgers CL, Caspi A, Nagin DS, et al. Is it important to prevent early exposure to drugs and alcohol among adolescents? *Psychol Sci.* 2008; 19:1037–44. [PubMed: 19000215]
7. [Accessed November 22, 2011] American Academy of Pediatrics Substance Use Screening, Brief Intervention, and Referral to Treatment for Pediatricians. 2011. Available at: <http://aappolicy.aappublications.org/cgi/content/full/pediatrics;128/5/e1330>
8. Davoudi M, Rawson RA. Screening, brief intervention, and referral to treatment (SBIRT) initiatives in California: notable trends, challenges, and recommendations. *J Psychoactive Drugs.* 2010; 6(Suppl):239–48. [PubMed: 21138200]
9. Madras BK, Compton WM, Avula D, et al. Screening, brief interventions, referral to treatment (SBIRT) for illicit drug and alcohol use at multiple healthcare sites: comparison at intake and 6 months later. *Drug Alcohol Depend.* 2009; 99:280–95. [PubMed: 18929451]
10. Ballesteros MF, Budnitz DS, Sanford CP, et al. Increase in deaths due to methadone in North Carolina. *JAMA.* 2003; 290:40. [PubMed: 12837709]
11. Hall AJ, Logan JE, Toblin RL, et al. Patterns of abuse among unintentional pharmaceutical overdose fatalities. *JAMA.* 2008; 300:2613–20. [PubMed: 19066381]
12. Compton WM, Volkow ND. Major increases in opioid analgesic abuse: concerns and strategies. *Drug Alcohol Depend.* 2006; 81:103–7. [PubMed: 16023304]
13. Ling W, Mooney L, Hillhouse M. Prescription opioid abuse, pain and addiction: clinical issues and implications. *Drug Alcohol Rev.* 2011; 30:300–5. [PubMed: 21545561]
14. Paulozzi LJ, Jones CM, Mack KA, et al. Overdoses of prescription opioid pain relievers: United States, 1999–2008. *Morbidity Mortality Wkly Rep (MMWR).* 2011; 60:1487–92.
15. Boyd CJ, McCabe SE, Cranford JA, et al. Adolescents' motivations to abuse prescription medications. *Pediatrics.* 2006; 118:2472–80. [PubMed: 17142533]
16. McCabe SE, Boyd CJ, Young A. Medical and nonmedical use of prescription drugs among secondary school students. *J Adolesc Health.* 2007; 40:76–83. [PubMed: 17185209]
17. Lewis ET, Trafton JA. Opioid use in primary care: asking the right questions. *Curr Pain Headache Rep.* 2011; 15:137–43. [PubMed: 21222243]
18. Meltzer EC, Rybin D, Saitz R, et al. Identifying prescription opioid use disorder in primary care: diagnostic characteristics of the Current Opioid Misuse Measure (COMM). *Pain.* 2011; 152:397–402. [PubMed: 21177035]
19. Cheattle MD, O'Brien CP. Opioid therapy in patients with chronic noncancer pain: diagnostic and clinical challenges. *Adv Psychosom Med.* 2011; 30:61–91. [PubMed: 21508626]
20. McCarberg BH. Pain management in primary care: strategies to mitigate opioid misuse, abuse, and diversion. *Postgrad Med.* 2011; 123:119–30. [PubMed: 21474900]
21. Litt MD, Shafer DM, Kreutzer DL. Brief cognitive-behavioral treatment for TMD pain: long-term outcomes and moderators of treatment. *Pain.* 2010; 151:110–6. [PubMed: 20655662]
22. Thorn BE, Day MA, Burns JW, et al. Randomized trial of group cognitive behavioral therapy compared with a pain education control for low-literacy rural people with chronic pain. *Pain.* 2011; 152:1–11.
23. Lamb SE, Hansen Z, Lall R, et al. Group cognitive behavioural treatment for low-back pain in primary care: a randomised controlled trial and cost-effectiveness analysis. *Lancet.* 2010; 375:916–23. [PubMed: 20189241]
24. Grant BF, Dawson DA, Stinson FS, et al. The 12-month prevalence and trends in DSM-IV alcohol abuse and dependence: United States, 1991–1992 and 2001–2002. *Drug Alcohol Depend.* 2004; 74:223–34. [PubMed: 15194200]
25. Mark TL, Coffey RM, King E, et al. Spending on mental health and substance abuse treatment, 1987–1997. *Health Aff (Millwood).* 2000; 19:108–20. [PubMed: 10916964]

26. Dilonardo J, Chalk M, Mark TL, et al. Team CCSE. Recent trends in the financing of substance abuse treatment: implications for the future. *Health Serv Res.* 2000; 35:60–71. [PubMed: 16148952]
27. Office of National Drug Control Policy. The economic costs of drug abuse in the United States, 1992–1998. Washington, DC: Executive Office of the President; 2001.
28. Grant BF. Prevalence and correlates of drug use and DSM-IV drug dependence in the United States: results of the National Longitudinal Alcohol Epidemiologic Survey. *J Subst Abuse.* 1996; 8:195–210. [PubMed: 8880660]
29. Teesson M, Baillie A, Lynskey M, et al. Substance use, dependence and treatment seeking in the United States and Australia: a cross-national comparison. *Drug Alcohol Depend.* 2006; 81:149–55. [PubMed: 16043307]
30. Costello EJ, Farmer EM, Angold A, et al. Psychiatric disorders among American Indian and white youth in Appalachia: the Great Smoky Mountains Study. *Am J Public Health.* 1997; 87:827–32. [PubMed: 9184514]
31. Wu L-T, Woody GE, Yang C, et al. Racial/ethnic variations in substance-related disorders among adolescents in the United States. *Arch Gen Psychiatry.* 2011; 68:1176–85. [PubMed: 22065533]
32. Gilder DA, Wall TL, Ehlers CL. Comorbidity of select anxiety and affective disorders with alcohol dependence in southwest California Indians. *Alcohol Clin Exp Res.* 2004; 28:1805–13. [PubMed: 15608596]
33. Beals J, Novins DK, Whitesell NR, et al. Prevalence of mental disorders and utilization of mental health services in two American Indian reservation populations: mental health disparities in a national context. *Am J Psychiatry.* 2005; 162:1723–32. [PubMed: 16135633]
34. Arndt S, Clayton R, Schultz SK. Trends in substance abuse treatment 1998–2008: increasing older adult first-time admissions for illicit drugs. *Am J Geriatr Psychiatry.* 2011; 19:704–11. [PubMed: 21785290]
35. Arndt S, Gunter TD, Acion L. Older admissions to substance abuse treatment in 2001. *Am J Geriatr Psychiatry.* 2005; 13:385–92. [PubMed: 15879587]
36. Lofwall MR, Schuster A, Strain EC. Changing profile of abused substances by older persons entering treatment. *J Nerv Ment Dis.* 2008; 196:898–905. [PubMed: 19077857]
37. Gfroerer J, Penne M, Pemberton M, et al. Substance abuse treatment need among older adults in 2020: the impact of the aging baby-boom cohort. *Drug Alcohol Depend.* 2003; 69:127–35. [PubMed: 12609694]
38. Colliver JD, Compton WM, Gfroerer JC, et al. Projecting drug use among aging baby boomers in 2020. *Ann Epidemiol.* 2006; 16:257–65. [PubMed: 16275134]
39. Cochran SD, Ackerman D, Mays VM, et al. Prevalence of non-medical drug use and dependence among homosexually active men and women in the US population. *Addiction (Abingdon, England).* 2004; 99:989–98.
40. Cochran SD, Mays VM. Burden of psychiatric morbidity among lesbian, gay, and bisexual individuals in the California Quality of Life Survey. *J Abnorm Psychol.* 2009; 118:647–58. [PubMed: 19685960]
41. Corliss HL, Grella CE, Mays VM, et al. Drug use, drug severity, and help-seeking behaviors of lesbian and bisexual women. *J Womens Health (Larchmt).* 2006; 15:556–68. [PubMed: 16796483]
42. Corliss HL, Rosario M, Wypij D, et al. Sexual orientation and drug use in a longitudinal cohort study of U.S. adolescents. *Addict Behav.* 2010; 35:517–21. [PubMed: 20061091]
43. Grella CE, Greenwell L, Mays VM, et al. Influence of gender, sexual orientation, and need on treatment utilization for substance use and mental disorders: findings from the California Quality of Life Survey. *BMC Psychiatry.* 2009; 9:52. [PubMed: 19682355]
44. Almeida J, Johnson RM, Corliss HL, et al. Emotional distress among LGBT youth: the influence of perceived discrimination based on sexual orientation. *J Youth Adolesc.* 2009; 38:1001–14. [PubMed: 19636742]
45. Zarkin GA, Cowell AJ, Hicks KA, et al. Benefits and costs of substance abuse treatment programs for state prison inmates: results from a lifetime simulation model. *Health Econ.* 2011; 14:1133–50. [PubMed: 15880389]

46. French MT, Fang H, Fretz R. Economic evaluation of a prerelease substance abuse treatment program for repeat criminal offenders. *J Subst Abuse Treat.* 2010; 38:31–41. [PubMed: 19631489]
47. Chandler RK, Fletcher BW, Volkow ND. Treating drug abuse and addiction in the criminal justice system: improving public health and safety. *JAMA.* 2009; 301:183–90. [PubMed: 19141766]
48. Warner LA, Kessler RC, Hughes M, et al. Prevalence and correlates of drug use and dependence in the United States. Results from the National Comorbidity Survey. *Arch Gen Psychiatry.* 1995; 52:219–29. [PubMed: 7872850]
49. Regier DA, Farmer ME, Rae DS, et al. Comorbidity of mental disorders with alcohol and other drug abuse: Results from the Epidemiologic Catchment Area (ECA) Study. *JAMA.* 1990; 264:2511–8. [PubMed: 2232018]
50. Grant BF. Comorbidity between DSM-IV drug use disorders and major depression: results of a national survey of adults. *J Substance Abuse.* 1995; 7:481–97.
51. Grant BF, Stinson FS, Dawson DA, et al. Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Arch Gen Psychiatry.* 2004; 61:807–16. [PubMed: 15289279]
52. Merikangas KR, Mehta RL, Molnar BE, et al. Comorbidity of substance use disorders with mood and anxiety disorders: results of the International Consortium in Psychiatric Epidemiology. *Addict Behav.* 1998; 23:893–907. [PubMed: 9801724]
53. Swendsen JD, Merikangas KR. The comorbidity of depression and substance use disorders. *Clin Psychol Rev.* 2000; 20:173–89. [PubMed: 10721496]
54. Kendler KS, Prescott CA, Myers J, et al. The structure of genetic and environmental risk factors for common psychiatric and substance use disorders in men and women. *Arch Gen Psychiatry.* 2003; 60:929–37. [PubMed: 12963675]
55. Cheatle MD. Depression, chronic pain, and suicide by overdose: on the edge. *Pain Med.* 2011; 12(Suppl 2):S43–8. [PubMed: 21668756]
56. Hakansson A, Schlyter F, Berglund M. Associations between polysubstance use and psychiatric problems in a criminal justice population in Sweden. *Drug Alcohol Depend.* 2011; 118:5–11. [PubMed: 21419580]
57. Gao K, Tolliver BK, Kemp DE, et al. Correlates of historical suicide attempt in rapid-cycling bipolar disorder: a cross-sectional assessment. *J Clin Psychiatry.* 2009; 70:1032–40. [PubMed: 19653978]
58. Overholser JC, Braden A, Dieter L. Understanding suicide risk: Identification of high-risk groups during high-risk times. *J Clin Psychol.* 2011; 2:1–15.
59. Nordentoft M, Mortensen PB, Pedersen CB. Absolute risk of suicide after first hospital contact in mental disorder. *Arch Gen Psychiatry.* 2011; 68:1058–64. [PubMed: 21969462]
60. Kessler RC, Nelson CB, McGonagle KA, et al. The epidemiology of co-occurring addictive and mental disorders: implications for prevention and service utilization. *Am J Orthopsychiatry.* 1996; 66:17–31. [PubMed: 8720638]
61. RachBeisel J, Scott J, Dixon L. Co-occurring severe mental illness and substance use disorders: a review of recent research. *Psychiatr Serv.* 1999; 50:1427–34. [PubMed: 10543851]
62. Havassy BE, Alvidrez J, Owen KK. Comparisons of patients with comorbid psychiatric and substance use disorders: implications for treatment and service delivery. *Am J Psychiatry.* 2004; 161:139–45. [PubMed: 14702262]
63. Curran GM, Sullivan G, Williams K, et al. The association of psychiatric comorbidity and use of the emergency department among persons with substance use disorders: an observational cohort study. *BMC Emerg Med.* 2008; 8:17. [PubMed: 19055761]
64. Durell J, Lechtenberg B, Corse S, et al. Intensive case management of persons with chronic mental illness who abuse substances. *Hosp Community Psychiatry.* 1993; 44:415–6. [PubMed: 8509070]
65. U.S. Centers for Disease Control and Prevention (CDC). [Accessed October 25, 2011] HIV incidence. Available at: <http://www.cdc.gov/hiv/topics/surveillance/incidence.htm>
66. Woody GE, Donnell D, Seage GR, et al. Non-injection substance use correlates with risky sex among men having sex with men: data from HIVNET. *Drug Alcohol Depend.* 1999; 53:197–205. [PubMed: 10080045]

67. Mansergh G, Purcell DW, Stall R, et al. CDC consultation on methamphetamine use and sexual risk behavior for HIV/STD infection: summary and suggestions. *Public Health Rep.* 2006; 121:127–32. [PubMed: 16528944]
68. Krawczyk CS, Molitor F, Ruiz J, et al. Methamphetamine use and HIV risk behaviors among heterosexual men: preliminary results from five northern California counties, December 2001–November 2003. *MMWR.* 2006; 55:273–7. [PubMed: 16543881]
69. Colfax GN, Santos G-M, Das M, et al. Mirtazapine to reduce methamphetamine use: a randomized controlled trial. *Arch Gen Psychiatry.* 2011; 68:1168–75. [PubMed: 22065532]
70. Walkup J, Blank MB, Gonzalez JS, et al. The impact of mental health and substance abuse factors on HIV prevention and treatment. *J Acquir Immune Defic Syndr.* 2008; 47(Suppl 1):S15–9. [PubMed: 18301129]
71. Des Jarlais DC, Semaan S. HIV prevention for injecting drug users: the first 25 years and counting. *Psychosom Med.* 2008; 70:606–11. [PubMed: 18519886]
72. Mustanski B, Garofalo R, Herrick A, et al. Psychosocial health problems increase risk for HIV among urban young men who have sex with men: preliminary evidence of a syndemic in need of attention. *Ann Behav Med.* 2007; 34:37–45. [PubMed: 17688395]
73. Friedman, SR.; Tempalski, B.; Cooper, H., et al. Metropolitan area characteristics, injection drug use and HIV among injectors. In: Thomas, YF.; Richardson, D.; Cheung, I., editors. *Geography and drug addiction.* Washington, DC: Springer; 2008. p. 255–65.
74. Batkis MF, Treisman GJ, Angelino AF. Integrated opioid use disorder and HIV treatment: rationale, clinical guidelines for addiction treatment, and review of interactions of antiretroviral agents and opioid agonist therapies. *AIDS Patient Care STDS.* 2010; 24:15–22. [PubMed: 20095910]
75. Altice FL, Bruce RD, Lucas GM, et al. HIV treatment outcomes among HIV-infected, opioid-dependent patients receiving buprenorphine/naloxone treatment within HIV clinical care settings: results from a multisite study. *J Acquir Immune Defic Syndr.* 2011; 56(Suppl 1):S22–32. [PubMed: 21317590]
76. Uhlmann S, Milloy MJ, Kerr T, et al. Methadone maintenance therapy promotes initiation of antiretroviral therapy among injection drug users. *Addiction (Abingdon, England).* 2010; 105:907–13.
77. Waldron PR, Angelino AF, Treisman GJ. Substance use disorders and HIV: common comorbidities requiring co-ordinated management. *European Infectious Disease.* 2009; 24:44–51.
78. Bierut LJ, Dinwiddie SH, Begleiter H, et al. Familial transmission of substance dependence: alcohol, marijuana, cocaine, and habitual smoking: a report from the Collaborative Study on the Genetics of Alcoholism. *Arch Gen Psychiatry.* 1998; 55:982–8. [PubMed: 9819066]
79. Chassin L, Pitts SC, Prost J. Binge drinking trajectories from adolescence to emerging adulthood in a high-risk sample: predictors and substance abuse outcomes. *J Consult Clin Psychol.* 2002; 70:67–78. [PubMed: 11860058]
80. Moss HB, Lynch KG, Hardie TL, et al. Family functioning and peer affiliation in children of fathers with antisocial personality disorder and substance dependence: associations with problem behaviors. *Am J Psychiatry.* 2002; 159:607–14. [PubMed: 11925299]
81. Compton WM, Cottler LB, Ridenour T, et al. The specificity of family history of alcohol and drug abuse in cocaine abusers. *Am J Addict.* 2002; 11:85–94. [PubMed: 12028739]
82. Bouchard TJ Jr, McGue M. Genetic and environmental influences on human psychological differences. *J Neurobiol.* 2003; 54:4–45. [PubMed: 12486697]
83. Ebstein RP. The molecular genetic architecture of human personality: beyond self-report questionnaires. *Mol Psychiatry.* 2006; 11:427–45. [PubMed: 16534505]
84. Kochanska G, Coy KC, Murray KT. The development of self-regulation in the first four years of life. *Child Dev.* 2001; 72:1091–111. [PubMed: 11480936]
85. Caspi A, Moffitt TE, Newman DL, et al. Behavioral observations at age 3 years predict adult psychiatric disorders. Longitudinal evidence from a birth cohort. *Arch Gen Psychiatry.* 1996; 53:1033–9. [PubMed: 8911226]
86. Moffitt TE, Arseneault L, Belsky D, et al. A gradient of childhood self-control predicts health, wealth, and public safety. *Proc Natl Acad Sci U S A.* 2011; 108:2693–8. [PubMed: 21262822]

87. Caspi A, McClay J, Moffitt TE, et al. Role of genotype in the cycle of violence in maltreated children. *Science*. 2002; 297:851–4. [PubMed: 12161658]
88. Foley DL, Eaves LJ, Wormley B, et al. Childhood adversity, monoamine oxidase a genotype, and risk for conduct disorder. *Arch Gen Psychiatry*. 2004; 61:738–44. [PubMed: 15237086]
89. Nagashima M, Katoh R, Sato Y, et al. Is there genetic polymorphism evidence for individual human sensitivity to opiates? *Curr Pain Headache Rep*. 2007; 11:115–23. [PubMed: 17367590]
90. Fukuda, K-i; Hayashida, M.; Ikeda, K., et al. Diversity of opioid requirements for postoperative pain control following oral surgery: is it affected by polymorphism of the mu-opioid receptor? *Anesth Prog*. 2010; 57:145–9. [PubMed: 21174568]
91. Tremblay J, Hamet P. Genetics of pain, opioids, and opioid responsiveness. *Metabolism*. 2010; 59(Suppl 1):S5–8. [PubMed: 20837195]
92. Barry CL, Huskamp HA. Moving beyond parity: mental health and addiction care under the ACA. *N Engl J Med*. 2011; 365:973–5. [PubMed: 21848453]
93. Garfield RL, Zuvekas SH, Lave JR, et al. The impact of national health care reform on adults with severe mental disorders. *Am J Psychiatry*. 2011; 168:486–94. [PubMed: 21285138]

KEY POINTS

- Illicit drug use and drug use disorders are relatively common with initial use typically starting in mid to late adolescence and with marijuana as the most commonly used substance.
- Multiple studies have shown elevated prevalence of misuse of prescription drugs, such as hydrocodone and oxycodone, along with elevated rates for the problems associated with their misuse, including fatal and nonfatal opioid overdose.
- Large-scale epidemiologic studies have consistently shown a high degree of comorbidity of substance use disorders with other psychiatric disorders.
- Optimal treatment of either substance use or comorbid psychiatric disorders will not be achieved unless both are adequately treated.
- Genetic factors play an important role in the development of drug use disorders.
- Screening, Brief Intervention, and Referral to Treatment (SBIRT) programs for drug use should be an integral part of routine clinical care in a range of clinical settings, including primary care, psychiatric, and emergency department settings.

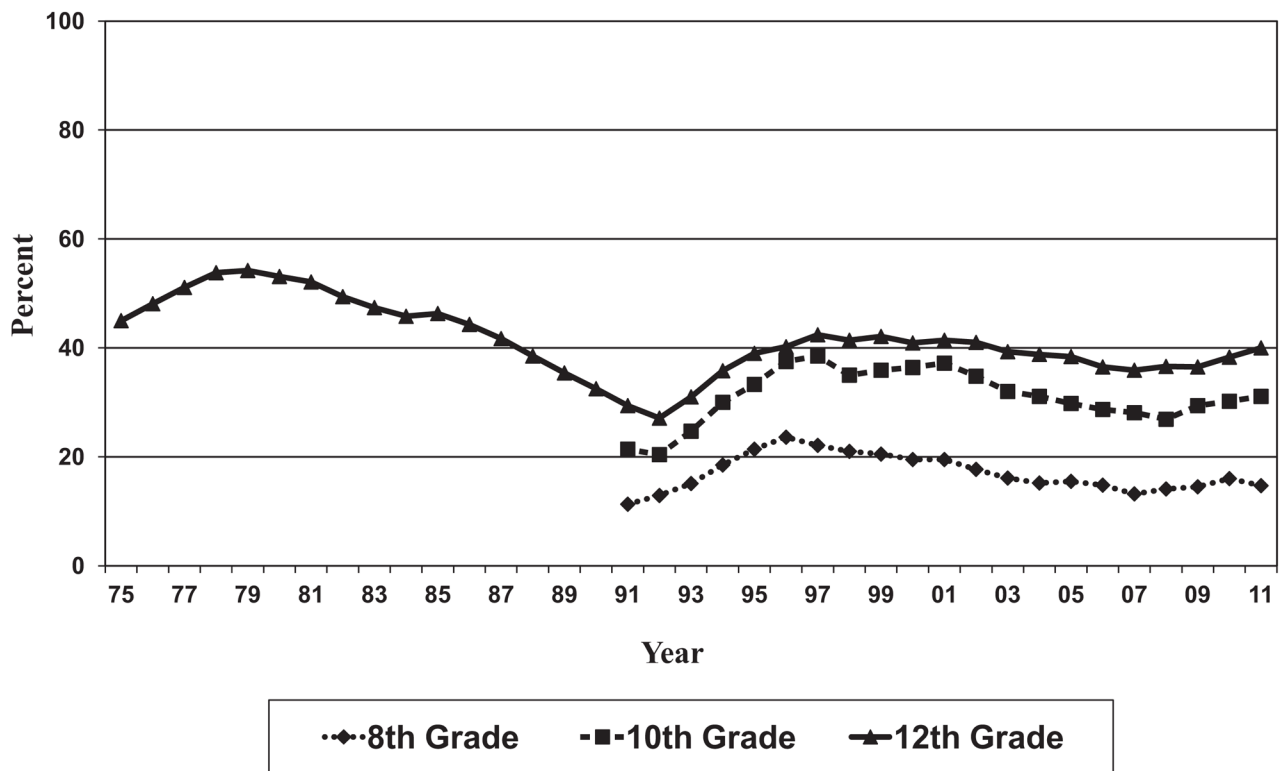


Fig. 1. Trends in annual prevalence of illicit drug use, grades 8, 10, and 12. (Data from Johnston LD, O'Malley PM, Bachman JG, et al. *Monitoring the future: National Survey Results on Drug Use, 1975–2011*. Bethesda (MD): National Institute on Drug Abuse; 2011.)

Table 1

Adjusted odds ratios (ORs) of 12-month DSM-IV drug use disorders and other psychiatric disorders controlling for demographic characteristics and comorbid psychiatric disorders in the NESARC study

Comorbid Disorder	ORs Adjusted for Demographic Characteristics ^a			ORs Adjusted for Demographic Characteristics and Other Psychiatric Disorders ^b		
	Drug Use Disorder OR (CI) ^c	Drug Abuse OR (CI)	Drug Dependence OR (CI)	Drug Use Disorder OR (CI)	Drug Abuse OR (CI)	Drug Dependence OR (CI)
Alcohol use disorder	9.0 (6.94–11.70)	6.4 (4.75–8.65)	15.0 (8.57–26.59)	5.6 (4.28–7.42)	4.5 (3.25–6.25)	7.0 (3.89–12.48)
Alcohol abuse	2.7 (1.98–3.71)	3.1 (2.18–4.50)	1.6 (0.88–3.01)	4.2 (3.03–5.85)	4.2 (2.87–6.13)	3.7 (1.79–7.58)
Alcohol dependence	9.7 (7.13–13.10)	5.7 (3.95–8.27)	18.7 (10.83–32.34)	6.8 (4.86–9.63)	4.8 (3.11–7.31)	9.0 (4.66–17.16)
Nicotine dependence	5.8 (4.41–7.63)	4.0 (2.86–5.69)	11.0 (6.89–17.56)	3.2 (2.38–4.38)	2.6 (1.76–3.79)	4.4 (2.63–7.42)
Any mood disorder	3.5 (2.66–4.53)	1.9 (1.34–2.70)	8.5 (5.27–13.64)	1.8 (1.33–2.41)	1.1 (0.73–1.67)	3.3 (1.92–5.56)
Major depressive disorder	2.2 (1.56–3.07)	1.4 (0.88–2.32)	3.8 (2.18–6.48)	1.4 (0.97–1.96)	1.0 (0.63–1.69)	2.2 (1.20–4.10)
Bipolar I	5.1 (3.35–7.80)	2.4 (1.38–4.21)	10.3 (5.75–18.62)	2.3 (1.49–3.67)	1.2 (0.61–2.24)	4.2 (2.14–8.35)
Bipolar II	2.4 (1.23–4.49)	2.1 (1.02–4.32)	2.6 (0.92–7.33)	1.2 (0.58–2.63)	1.2 (0.50–2.68)	1.4 (0.40–4.59)
Dysthymia	4.0 (2.17–7.20)	2.1 (0.85–5.25)	6.9 (3.28–14.67)	2.1 (1.15–3.84)	1.5 (0.62–3.76)	2.8 (1.16–6.67)
Any anxiety disorder	2.7 (2.05–3.67)	1.6 (1.15–2.25)	6.0 (3.74–9.55)	1.2 (0.88–1.73)	0.9 (0.62–1.34)	1.9 (1.07–3.24)
Any panic disorder	3.9 (2.58–5.87)	1.9 (1.02–3.62)	7.8 (4.31–14.05)	1.5 (0.91–2.39)	1.0 (0.49–2.10)	1.8 (0.85–3.81)
Panic with agoraphobia	5.6 (3.01–10.34)	3.2 (1.20–8.33)	9.2 (3.98–21.24)	1.7 (0.80–3.57)	1.4 (0.51–4.03)	1.5 (0.44–4.93)
Panic without agoraphobia	3.1 (1.87–5.14)	1.4 (0.62–3.32)	6.4 (3.21–12.58)	1.3 (0.75–2.28)	0.8 (0.32–2.13)	1.8 (0.85–3.94)
Social phobia	2.6 (1.69–4.15)	1.7 (0.94–3.00)	4.5 (2.53–8.16)	1.2 (0.71–1.93)	1.1 (0.58–2.04)	1.2 (0.58–2.48)
Specific phobia	2.3 (1.65–3.21)	1.6 (1.06–2.47)	3.8 (2.14–6.73)	1.0 (0.68–1.41)	0.9 (0.58–1.46)	1.0 (0.53–2.00)
Generalized anxiety	4.5 (2.80–7.09)	2.0 (0.98–4.00)	9.5 (4.82–18.83)	1.7 (0.97–2.92)	1.1 (0.51–2.28)	2.5 (1.02–5.88)
Any personality disorder	4.1 (3.27–5.15)	2.6 (1.94–3.49)	9.6 (6.44–14.43)	2.2 (1.71–2.91)	1.8 (1.26–2.48)	3.3 (2.00–5.33)

Comorbid Disorder	ORs Adjusted for Demographic Characteristics ^a		ORs Adjusted for Demographic Characteristics and Other Psychiatric Disorders ^b			
	Drug Use Disorder OR (CI) ^c	Drug Abuse OR (CI)	Drug Dependence OR (CI)	Drug Use Disorder OR (CI)	Drug Abuse OR (CI)	Drug Dependence OR (CI)
Avoidant	3.4 (2.25–5.12)	2.0 (1.05–3.69)	6.0 (3.19–11.34)	1.3 (0.85–2.05)	1.1 (0.56–2.30)	1.3 (0.63–2.60)
Dependent	7.3 (3.65–14.54)	2.4 (0.89–6.67)	14.9 (6.36–34.71)	2.2 (1.02–4.80)	1.1 (0.37–3.20)	2.4 (0.75–7.77)
Obsessive-compulsive	2.3 (1.65–3.15)	1.4 (0.87–2.17)	4.6 (2.91–7.34)	0.9 (0.57–1.33)	0.7 (0.40–1.23)	1.2 (0.69–2.10)
Paranoid	3.5 (2.49–4.86)	2.0 (1.28–3.00)	6.7 (4.09–11.07)	1.1 (0.66–1.68)	0.9 (0.48–1.50)	1.1 (0.59–2.22)
Schizoid	3.4 (2.33–5.03)	2.1 (1.26–3.56)	5.8 (3.35–10.11)	1.5 (0.88–2.44)	1.2 (0.66–2.32)	1.5 (0.74–3.21)
Histrionic	4.5 (2.98–6.77)	2.5 (1.45–4.21)	8.4 (4.69–14.92)	1.3 (0.79–2.20)	1.0 (0.58–1.86)	1.4 (0.63–3.03)
Antisocial	6.4 (4.77–8.56)	4.3 (2.84–6.50)	9.7 (6.29–15.10)	2.9 (2.08–4.12)	2.5 (1.57–3.99)	2.6 (1.45–4.53)

Note: Significant odds ratios are highlighted in boldface.

^a Odds ratios adjusted for age, race-ethnicity, sex, education, income, marital status, urbanicity, and geographic region.

^b Odds ratios adjusted for age, race-ethnicity, sex, education, income, marital status, urbanicity, geographic region, and other psychiatric disorders.

^c CI = 99% confidence interval.

Data from Compton WM, Thomas YF, Stinson FS, et al. Prevalence, correlates, disability, and comorbidity of DSM-IV drug abuse and dependence in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. Arch Gen Psychiatry 2007;64:566–76.