

## **Youth Drinking: Risk Factors and Consequences**

Despite a minimum legal drinking age of 21, many young people in the United States consume alcohol. Some abuse alcohol by drinking frequently or by binge drinking—often defined as having five or more drinks\* in a row. A minority of youth may meet the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV) criteria for alcohol dependence (1,2). The progression of drinking from use to abuse to dependence is associated with biological and psychosocial factors. This *Alcohol Alert* examines some of these factors that put youth at risk for drinking and for alcohol-related problems and considers some of the consequences of their drinking.

*Alcohol Alert, a publication of the National Institute on Alcohol Abuse and Alcoholism, provides timely information on alcohol research and treatment to health professionals and other interested people. This issue is the thirty-seventh in the series.*

### **Prevalence of Youth Drinking**

Thirteen- to fifteen-year-olds are at high risk to begin drinking (3). According to results of an annual survey of students in 8th, 10th, and 12th grades, 26 percent of 8th graders, 40 percent of 10th graders, and 51 percent of 12th graders reported drinking alcohol within the past month (4). Binge drinking at least once during the 2 weeks before the survey was reported by 16 percent of 8th graders, 25 percent of 10th graders, and 30 percent of 12th graders.

Males report higher rates of daily drinking and binge drinking than females, but these differences are diminishing (3). White students report the highest levels of drinking, blacks report the lowest, and Hispanics fall between the two (3).

A survey focusing on the alcohol-related problems experienced by 4,390 high school seniors and dropouts found that within the preceding year, approximately 80 percent reported either getting "drunk," binge drinking, or drinking and driving. More than half said that drinking had caused them to feel sick, miss school or work, get arrested, or have a car crash (5).

Some adolescents who drink later abuse alcohol and may develop alcoholism. Although these conditions are defined for adults in the DSM, research suggests that separate diagnostic criteria may be needed for youth (6).

**Distinct criteria may be needed to diagnose alcoholism among youth.**

### **Drinking and Adolescent Development**

While drinking may be a singular problem behavior for some, research suggests that for others it may be an expression of general adolescent turmoil that includes other problem behaviors and that these behaviors are linked to unconventionality, impulsiveness, and sensation seeking (7-11).

Binge drinking, often beginning around age 13, tends to increase during adolescence, peak in young adulthood (ages 18-22), then gradually decrease. In a 1994 national survey, binge drinking was reported by 28 percent of high school seniors, 41 percent of 21- to 22-year-olds, but only 25 percent of 31- to 32-year-olds (3,12). Individuals who increase their binge drinking from age 18 to 24 and those who consistently binge drink at least once a week during this period may have problems attaining the goals typical of the transition from adolescence to young adulthood (e.g., marriage, educational attainment, employment, and financial independence) (13).

### **Risk Factors for Adolescent Alcohol Use, Abuse, and Dependence**

**Genetic Risk Factors.** Animal studies (14) and studies of twins and adoptees demonstrate that genetic factors influence an individual's vulnerability to alcoholism (15,16). Children of

\*A standard drink is 12 grams of pure alcohol, which is equal to one 12-ounce bottle of beer or wine cooler, one 5-ounce glass of wine, or 1.5 ounces of 80-proof distilled spirits.

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alcoholics are significantly more likely than children of nonalcoholics to initiate drinking during adolescence (17) and to develop alcoholism (18), but the relative influences of environment and genetics have not been determined and vary among people.

**Biological Markers.** Brain waves elicited in response to specific stimuli (e.g., a light or sound) provide measures of brain activity that predict risk for alcoholism. P300, a wave that occurs about 300 milliseconds after a stimulus, is most frequently used in this research. A low P300 amplitude has been demonstrated in individuals with increased risk for alcoholism, especially sons of alcoholic fathers (19,20). P300 measures among 36 preadolescent boys were able to predict alcohol and other drug (AOD) use 4 years later, at an average age of 16 (21).

**Childhood Behavior.** Children classified as "undercontrolled" (i.e., impulsive, restless, and distractible) at age 3 were twice as likely as those who were "inhibited" or "well-adjusted" to be diagnosed with alcohol dependence at age 21 (22). Aggressiveness in children as young as ages 5–10 has been found to predict AOD use in adolescence (23,24). Childhood antisocial behavior is associated with alcohol-related problems in adolescence (24–27) and alcohol abuse or dependence in adulthood (28,29).

**Psychiatric Disorders.** Among 12- to 16-year-olds, regular alcohol use has been significantly associated with conduct disorder; in one study, adolescents who reported higher levels of drinking were more likely to have conduct disorder (30,31).

Six-year-old to seventeen-year-old boys with attention deficit hyperactivity disorder (ADHD) who were also found to have weak social relationships had significantly higher rates of alcohol abuse and dependence 4 years later, compared with ADHD boys without social deficiencies and boys without ADHD (32).

Whether anxiety and depression lead to or are consequences of alcohol abuse is unresolved. In a study of college freshmen, a DSM-III (33) diagnosis of alcohol abuse or dependence was twice as likely among those with anxiety disorder as those without this disorder (34). In another study, college students diagnosed with alcohol abuse were almost four times as likely as students without alcohol abuse to have a major depressive disorder (35). In most of these cases, depression preceded alcohol abuse. In a study of adolescents in residential treatment for AOD dependence, 25 percent met the DSM-III-R criteria for depression, three times the rate reported for controls. In 43 percent of these cases, the onset of AOD dependence preceded the depression; in 35 percent, the depression occurred first; and in 22 percent, the disorders occurred simultaneously (36).

**Suicidal Behavior.** Alcohol use among adolescents has been associated with considering, planning, attempting, and completing suicide (37–39). In one study, 37 percent of eighth-grade females who drank heavily reported attempting suicide, compared with 11 percent who did not drink (40). Research does not indicate whether drinking causes suicidal behavior, only that the two behaviors are correlated.

## **Psychosocial Risk Factors**

**Parenting, Family Environment, and Peers.** Parents' drinking behavior and favorable attitudes about drinking have been positively associated with adolescents' initiating and continuing drinking (41,42). Early initiation of drinking has been identified as an important risk factor for later alcohol-related problems (43). Children who were warned about alcohol by their parents and children who reported being closer to their parents were less likely to start drinking (42,44,45).

Lack of parental support, monitoring, and communication have been significantly related to frequency of drinking (46), heavy drinking, and drunkenness among adolescents (47). Harsh, inconsistent discipline and hostility or rejection toward children have also been found to significantly predict adolescent drinking and alcohol-related problems (46).

Peer drinking and peer acceptance of drinking have been associated with adolescent drinking (48,49). While both peer influences and parental influences are important, their relative impact on adolescent drinking is unclear.

**Expectancies.** Positive alcohol-related expectancies have been identified as risk factors for adolescent drinking. Positive expectancies about alcohol have been found to increase with age (50) and to predict the onset of drinking and problem drinking among adolescents (51–53).

**Trauma.** Child abuse and other traumas have been proposed as risk factors for subsequent alcohol problems. Adolescents in treatment for alcohol abuse or dependence reported higher rates of physical abuse, sexual abuse, violent victimization, witnessing violence, and other traumas compared with controls (54). The adolescents in treatment were at least 6 times more likely than controls to have ever been abused physically and at least 18 times more likely to

**Antisocial behavior in childhood has been linked to alcohol problems in adolescence and adulthood.**

**Parents influence their children's drinking through their own drinking, attitudes, and parenting practices.**

have ever been abused sexually. In most cases, the physical or sexual abuse preceded the alcohol use. Thirteen percent of the alcohol dependent adolescents had experienced posttraumatic stress disorder, compared with 10 percent of those who abused alcohol and 1 percent of controls.

**Advertising.** Research on the effects of alcohol advertising on adolescent alcohol-related beliefs and behaviors has been limited (55). While earlier studies measured the effects of exposure to advertising (56), more recent research has assessed the effects of alcohol advertising awareness on intentions to drink. In a study of fifth- and sixth-grade students' awareness, measured by the ability to identify products in commercials with the product name blocked out, awareness had a small but statistically significant relationship to positive expectancies about alcohol and to intention to drink as adults (57). This suggests that alcohol advertising may influence adolescents to be more favorably predisposed to drinking (57).

### **Consequences of Adolescent Alcohol Use**

**Drinking and Driving.** Of the nearly 8,000 drivers ages 15–20 involved in fatal crashes in 1995, 20 percent had blood alcohol concentrations above zero (58). For more information about young drivers' increased crash risk and the factors that contribute to this risk, see *Alcohol Alert No. 31: Drinking and Driving* (59).

**Sexual Behavior.** Surveys of adolescents suggest that alcohol use is associated with risky sexual behavior and increased vulnerability to coercive sexual activity. Among adolescents surveyed in New Zealand, alcohol misuse was significantly associated with unprotected intercourse and sexual activity before age 16 (60). Forty-four percent of sexually active Massachusetts teenagers said they were more likely to have sexual intercourse if they had been drinking, and 17 percent said they were less likely to use condoms after drinking (61).

**Risky Behavior and Victimization.** Survey results from a nationally representative sample of 8th and 10th graders indicated that alcohol use was significantly associated with both risky behavior and victimization and that this relationship was strongest among the 8th-grade males, compared with other students (62).

**Puberty and Bone Growth.** High doses of alcohol have been found to delay puberty in female (63) and male rats (64), and large quantities of alcohol consumed by young rats can slow bone growth and result in weaker bones (65). However, the implications of these findings for young people are not clear.

### **Prevention of Adolescent Alcohol Use**

Measures to prevent adolescent alcohol use include policy interventions and community and educational programs. *Alcohol Alert No. 34: Preventing Alcohol Abuse and Related Problems* (66) covers these topics in detail. See the National Institute on Alcohol Abuse and Alcoholism's (NIAAA's) World Wide Web site at <http://www.niaaa.nih.gov>.

### **Youth Drinking: Risk Factors and Consequences—A Commentary by NIAAA Director Enoch Gordis, M.D.**

Alcohol, the most widely used and abused drug among youth, causes serious and potentially life-threatening problems for this population. Although alcohol is sometimes referred to as a "gateway drug" for youth because its use often precedes the use of other illicit substances, this terminology is counterproductive; youth drinking requires significant attention, not because of what it leads to but because of the extensive human and economic impact of alcohol use by this vulnerable population.

For some youth, alcohol use alone is the primary problem. For others, drinking may be only one of a constellation of high-risk behaviors. For these individuals, interventions designed to modify high-risk behavior likely would be more successful in preventing alcohol problems than those designed solely to prevent the initiation of drinking. Determining which influences are involved in specific youth drinking patterns will permit the design of more potent interventions. Finally, we need to develop a better understanding of the alcohol treatment needs of youth. Future questions for scientific attention include, what types of specialized diagnostic and assessment instruments are needed for youth; whether treatment in segregated, "youth only" programs is more effective than in general population programs; and, irrespective of the setting, what types of specific modalities are needed by youth to increase the long-term effectiveness of treatment.

**Adolescents who have been abused or traumatized are at risk for alcohol problems.**

**Adolescent drinking has been associated with risky sex.**

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