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Alcohol and Other Drugs

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Drug and alcohol dependence often go hand in hand. Research shows that people who are dependent on alcohol are much more likely than the general population to use drugs, and people with drug dependence are much more likely to drink alcohol (1). For example, Staines and colleagues (2) found that, of 248 alcoholics seeking treatment, 64 percent met the criteria for a drug use disorder at some point in their lifetime.

Patients with co-occurring alcohol and other drug use disorders also are likely to have more severe dependence-related problems than those without combined disorders—that is, they meet a higher number of diagnostic criteria for each disorder (three out of seven criteria are required to meet the diagnosis of dependence) (3). People with co-occurring alcohol and other drug use disorders are more likely to have psychiatric disorders such as personality, mood, and anxiety disorders; they are more likely to attempt suicide and to suffer health problems (3). People who use both alcohol and drugs also are at risk for dangerous interactions between these substances. For example, a person who uses alcohol with benzodiazepines, whether these drugs are prescribed or taken illegally, is at increased risk of fatal poisoning (3).

This *Alcohol Alert* features the latest research on alcohol and other drug use disorders, examining the frequency with which these disorders occur and overlap, evidence for common genetic risk factors, and how co-occurring disorders can be most effectively diagnosed and treated.

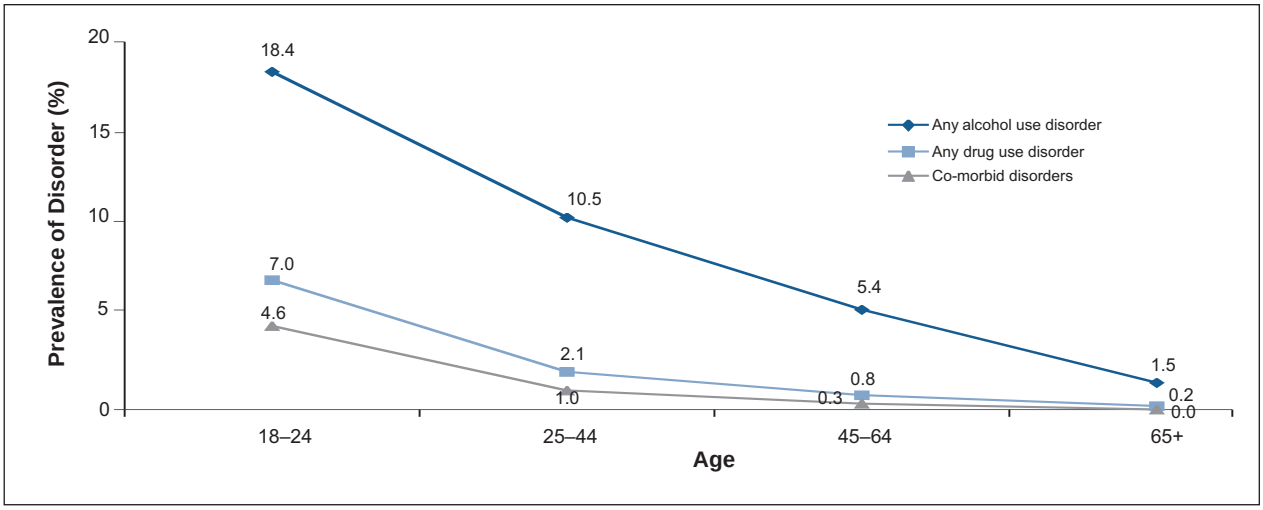
"Because many people suffer from both alcohol and drug dependence, scientists speculate that these disorders may have some common causes and risk factors."

Epidemiology: How Common Is Alcohol and Other Drug Addiction?

How common is alcohol and other drug use, and how often do alcohol and drug use disorders co-occur? To answer these questions, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) conducted the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), one of the largest surveys of its kind ever performed. It examined the prevalence of alcohol and other drug use and abuse in the United States. According to NESARC, 8.5 percent of adults in the United States met the criteria for an alcohol use disorder, whereas 2 percent met the criteria for a drug use disorder and 1.1 percent met the criteria for both. People who are dependent on drugs are more likely to have an alcohol use disorder than people with alcoholism are to have a drug use disorder. Young people ages 18–24 had the highest rates of co-occurring alcohol and other drug use disorders (see figure). Men were more likely than women to have problems with alcohol, drugs, or the two substances combined (1).

Because many people suffer from both alcohol and drug dependence, scientists speculate that these disorders

Prevalence of alcohol and drug use disorders by age in the United States



Source: 2001–2002 NESARC

may have some common causes and risk factors, as described below.

The Genetics of Alcohol and Other Drug Use Disorders—Shared Risk Factors?

Research has established that some of the risk for addiction to both drugs and alcohol is inherited. Children of alcoholics are 50 to 60 percent more likely to develop alcohol use disorders than people in the general population (4). Similarly, children of parents who abuse illicit drugs may be 45 to 79 percent more likely to do so themselves than the general public (5–7). This suggests that some of the risk factors for alcohol and other drug use are rooted in genetics, though studies of specific families have not proven a genetic contribution.

Researchers believe that some of the same genes that increase a person's risk for problems with alcohol also might put him or her at greater risk for drug dependence. Moreover, those same genes might increase the risk for other psychiatric problems, such as conduct disorder and adult antisocial behavior (i.e., externalizing behaviors) (8).

Much of the most compelling evidence for this apparent genetic link is based on twin and adoption studies.[1] For example, in 2003, Kendler and colleagues (9) analyzed data from the Virginia Twin Registry. They compared rates of alcohol, drug, and other externalizing disorders in identical and fraternal twins. They found that, in identical twins, when one twin was dependent on alcohol or on drugs, the second twin was much more likely (than a second fraternal twin) to have a problem with drugs or alcohol or to have an externalizing disorder. The study suggested that certain genes put people at risk for both alcohol and other drug use disorders, as well as externalizing disorders, whereas other genes put people at risk for specific types of disorders. These disorder-specific genes often are linked to how the body breaks down (or metabolizes) specific drugs and alcohol (8).

Diagnosing Substance Use Disorders: Barriers and Challenges

An accurate diagnosis is the first step toward treatment and recovery. However, diagnosing people with drug and alcohol disorders can be complicated, especially when these disorders occur concurrently. There are barriers to diagnosis: For example, patients may be unwilling to talk about their addiction, and clinicians may be unaware of the signs and symptoms of abuse and dependence.

Clinicians should screen patients for alcohol and other drug use disorders in a systematic, step-by-step fashion. One resource that can help is NIAAA's publication *Helping Patients Who Drink Too Much: A Clinician's Guide.* The *Guide* takes clinicians through a series of steps, outlining what questions to ask patients. It presents information—such as defining a standard drink and the recommended daily and weekly drinking limits—that can help both clinicians and

[1] Adoption studies compare the risk of alcoholism in biological relatives with the risk in adoptive relatives of alcoholics (e.g., an adopted-away child of an alcoholic parent). Twin studies compare the risk of alcoholism in pairs of twins reared in the same environment, examining both identical twins (i.e., twins who share 100 percent of their genes) and fraternal twins (i.e., twins who share, on average, only 50 percent of their genes).

patients identify problem-drinking behaviors. (For more information on the *Guide*, see the resources section of this *Alert*.)

Clinicians also may screen patients for drug problems using instruments such as the Drug Abuse Screening Test (DAST) or the CAGE Adapted to Include Drugs (CAGE–AID), or using a urine drug test (3). Clinicians should take a full history of any patient suspected of having a problem with drugs, asking, for example, about which drugs are used, age of first use, pattern of use, consequences of use, attempts to quit, and treatment history. It also is crucial to evaluate patients for signs of intoxication or withdrawal. Clinicians should assess the patient's psychiatric history, medical history, family history, and social and developmental history. With this information, clinicians will be better equipped to determine whether the patient fits the DSM–IV–TR[2] criteria for substance abuse or dependence (3).

Despite careful screening, however, some substance use disorders go undetected. Patients often misreport their substance use because of the stigma associated with an alcohol or other drug use disorder diagnosis, or they may fear legal reprisals. To address these fears, clinicians should make sure patients know the scope of confidentiality required by law. Clinicians also should make an effort to be empathic, accepting, and nonjudgmental; to ask questions in a direct and straightforward manner; and to deal with their own discomfort regarding drug use so as not to communicate their anxiety to their patients (3).

Although not as common, some patients overreport their substance use. For example, a patient suffering from untreated or inadequately treated pain may exaggerate his or her use of opiates in order to obtain methadone or buprenorphine (drugs used to treat opioid addiction) to alleviate that pain. Such patients would benefit from treatment by a pain specialist (3).

Additionally, clinicians may fail to recognize substance use disorders because they do not routinely screen for substance use, especially in patients who do not look like "typical substance users." According to NESARC data, there is no typical substance user; problem alcohol and drug use occurs in people across genders, age-groups, and ethnic backgrounds (3). It is important that clinicians evaluate all patients for substance use disorders.

[2] *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition, Text Revision. American Psychiatric Association, 2000.

The Terminology of Addiction

In the American Psychiatric Association's (APA's) latest revision of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM–IV–TR), substance use disorders fall into two categories: *substance abuse* and *substance dependence*. A person can be diagnosed with abuse only if he or she does not fit the criteria for dependence, and a person who meets the criteria for both abuse and dependence is diagnosed with dependence. According to the APA, a dependent person cannot control his or her substance use; substance dependence is "a cluster of cognitive, behavioral and physiological symptoms indicating that the individual continues use of the substance despite significant substance-related problems" (23).

Some scientists believe that, rather than thinking about abuse and dependence as distinct phenomena, it might be more useful to consider a broader concept of "addiction." In a recent study, Saha and colleagues (24) found that alcohol problems occur on a continuum rather than falling into the categories of abuse and dependence. They suggest that having two diagnostic categories may be misleading.

Additionally, O'Brien and colleagues (25) argue that the term "dependence" itself might create confusion, because it has more than one meaning. In the DSM–IV–TR, drug and alcohol dependence involve chronic, relapsing, and compulsive substance use associated with addiction. However, the term dependence can simply refer to changes in the body and brain that cause signs of withdrawal but which are not necessarily associated with addiction—changes which might, for example, occur in patients who are taking pain medication or antidepressants as prescribed for legitimate medical reasons. Because of such ambiguity, clinicians may be reluctant to prescribe substances such as pain medications that can lead to physical dependence (23).

The term "addiction" also has disadvantages, however. As noted by Drs. Henry Kranzler and T.-K. Li in NIAAA's journal *Alcohol Research & Health* (23), addiction carries a stigma that might make clinicians less likely to use this term for fear of alienating their patients. Additionally, like the term "alcoholism," addiction is so widely used in such different contexts that its meaning is imprecise and unclear (23).

Clinicians also may have problems interpreting the DSM–IV–TR criteria, making it difficult to accurately diagnose substance use disorders. As described in the accompanying sidebar, the DSM–IV–TR uses terminology that may be confusing. Some clinicians confuse physical dependence on a substance (i.e., experiencing withdrawal) with the DSM–IV–TR diagnosis of substance dependence. In fact, the vast majority of people who meet criteria for alcohol dependence do not experience withdrawal symptoms when they abruptly discontinue drinking. Additionally, some patients whose substance use is hazardous or harmful may not meet the criteria for substance abuse (3). Such patients still should be evaluated and considered for an intervention aimed at reducing their drinking or otherwise modifying their behavior.

Treatment

Behavioral therapies

For most patients, the most effective treatment approaches combine behavioral treatments (i.e., motivation enhancement therapy [MET] and cognitive-behavioral therapy [CBT]) and pharmacological treatments. MET seeks to motivate patients who are resistant to treatment, and CBT gives people the skills to reduce their drinking or to abstain from drinking. Contingency management interventions are another tool. These interventions center on rewarding positive behavior. Behavioral therapy also is an important tool for helping patients comply with medication regimens (10). For more information on behavioral therapies, see Volume 1 of the *Project Combine* monograph series, listed in the resources section of this *Alert*.

Pharmacotherapies

In addition to behavioral therapy, pharmacotherapies can help patients to curb their use of alcohol and other drugs. This section explores traditional and new medications available to treat alcohol and drug dependence. Volume 2 of the *Project Combine* monograph series provides additional information on medication management (see the resources section of this *Alert*).

Disulfiram. Disulfiram interferes with the breakdown of alcohol. When a person taking disulfiram drinks alcohol, it causes a buildup of *acetaldehyde*—a toxic byproduct of alcohol—in the body. This causes a variety of unpleasant effects, including reddening or flushing of the face and neck, nausea, and nervousness. The U.S. Food and Drug Administration (FDA) approved disulfiram in 1949 for the treatment of alcohol use disorders (10). In a study of 600 male veterans, overall, disulfiram had no effect on long-term abstinence (11). Among individuals who drank, however, the active dosage of the medication (250 mg/day) reduced the number of days the subjects spent drinking. Disulfiram can cause potentially serious effects when combined with alcohol, so the patient's goal must be abstinence (10). Patients who respond well to disulfiram tend to be older, with greater social stability and motivation for recovery; they tend to have a longer drinking history, attend Alcoholics Anonymous meetings, and be free of alcohol-related dementia and other cognitive problems (12,13).

Disulfiram may be useful in treating cocaine addiction, both by producing an adverse reaction similar to that produced with alcohol and by reducing the euphoria associated with the drug (10). Successful treatment with disulfiram requires strict adherence to the medication regimen—patients who take disulfiram must be highly motivated to continue treatment.

Naltrexone. Naltrexone blocks the activity of a class of molecules (i.e., opiate receptors). These molecules are involved in relaying chemical messages in the brain that are involved in addiction. In addition to an oral form, the FDA has approved a long-acting, injectable form of naltrexone for the treatment of alcohol dependence (10). Research shows that naltrexone reduces the risk of relapse in heavy drinkers; however, there is less evidence that it reduces the number of drinking days or that it helps patients to maintain total abstinence (14,15).

Studies also have shown that naltrexone may be useful in treating drug use disorders, including opioid and cocaine dependence (16). Naltrexone has been approved by the FDA for the treatment of opioid dependence; however, because it can cause acute withdrawal from opiates (potentially making the patient feel very ill), patients should be drug-free for at least 7 days before beginning treatment. Additionally, patients should be warned that if they return to using opiates heavily, they run the risk of death because naltrexone will reduce their tolerance to opiates and put them at risk for overdose (10).

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Acamprosate. Acamprosate also affects certain chemical messengers (i.e., neurotransmitters) in the brain (10). Although the FDA approved acamprosate for the treatment of alcohol dependence, research with this medication has produced mixed results. European studies (17–19) have shown that acamprosate not only reduces the risk of heavy

drinking, but nearly doubles the likelihood that patients will achieve abstinence. These studies suggest that acamprosate is most useful in patients who develop alcohol dependence later in life, who do not have a family history of alcohol dependence, and who display physical dependence and higher than usual levels of anxiety (20). It is important to note that other studies show that acamprosate is no more effective than placebo (21,22).

Anticonvulsant medications. Topirimate has been shown to be an effective treatment for alcohol dependence and may be beneficial for cocaine dependence treatment. Other anticonvulsants, including carbamazepine and valproate, also have shown some effectiveness in treating alcohol use disorders, and they may be especially useful in patients with co-occurring alcohol dependence and bipolar disorder (10).

Serotonergic and other medications. Although studies are scarce, some research has shown that medications which target other mechanisms in the brain (selective serotonin reuptake inhibitors [SSRIs], atypical antipsychotic medications, or lithium) may be useful in treating substance use disorders. The medications appear to be particularly useful for treating certain subgroups of alcohol-dependent patients, based on the age of onset of problem drinking (10).

Conclusion

Addictive disorders represent a major health issue both in the United States and worldwide. Because alcohol and drug dependence are likely to co-occur, exploring how alcohol addiction may relate to and interact with other addictions is important. Current research is exploring the underlying causes of addiction, and why alcohol and other drug use disorders co-occur so frequently, as well as how behavioral and drug therapies can best treat these disorders. There is no "magic bullet" for treating addiction—no treatment will work for everyone in every situation. More research is needed to identify effective treatments for different populations, especially youth, older people, and patients with co-occurring psychiatric disorders. Such research is vital to better understand the mechanisms and course of addiction as well as its diagnosis and treatment.

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Resources

Source material for this *Alcohol Alert* originally appeared in *Alcohol Research & Health*, Volume 31, Number 2, 2008. Articles in that issue explore the causes, diagnosis, and treatment of alcohol and other drug addiction. Other resources include:

- ***Helping Patients Who Drink Too Much: A Clinician's Guide*. The *Guide* is a screening tool that helps clinicians recognize and diagnose alcohol use disorders. It is available in book form and as an accredited electronic-learning course.**
- ***Project Combine, Volume 1. Combined Behavioral Intervention Manual: A Clinical Research Guide for Therapists Treating People With Alcohol Abuse and Dependence*. Highlights the use of Combined Behavioral Intervention, an intensive treatment that combines several previously evaluated interventions.**
- ***Project Combine, Volume 2. Medical Management Treatment Manual: A Clinical Research Guide for Medically Trained Clinicians Providing Pharmacotherapy as Part of the Treatment for Alcohol Dependence*. Describes the use of medical management and brief counseling sessions to enhance medication adherence and abstinence from alcohol.**

The *Clinician's Guide*, the *Project Combine* manuals, and full-text articles from each issue of *Alcohol Research & Health* are available on the NIAAA Web site at www.niaaa.nih.gov. Subscriptions to *Alcohol Research & Health* are available from the Superintendent of Documents for $25. Write to New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250–7954; or fax 202/512–2250.

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