

alcoholism

The Columbia Encyclopedia, 6th ed. | 2013 | 700+ words | [Copyright](#)

alcoholism, disease characterized by impaired control over the consumption of alcoholic beverages. Alcoholism is a serious problem worldwide; in the United States the wide availability of alcoholic beverages makes alcohol the most accessible drug, and alcoholism is the most prevalent of the nation's addictions (see [drug addiction and drug abuse](#)).

The understanding of alcoholism, and hence its definition, continues to change. Many terms, often with hazy differences in meaning, have been used to describe different stages and manifestations of the disease. In 1992 the National Council on Alcoholism and Drug Dependence and the American Society of Addiction Medicine published a definition reflecting the current understanding of the disease: "Alcoholism is a primary, chronic disease with genetic, psychosocial, and environmental factors influencing its development and manifestations. The disease is often progressive and fatal. It is characterized by impaired control over drinking, preoccupation with the drug alcohol, use of alcohol despite adverse consequences, and distortions in thinking, most notably denial. Each of these symptoms may be continuous or periodic." This definition recognizes alcoholism as a disease, i.e., as an involuntary disability. It accepts a genetic vulnerability in some people and identifies the phenomenon of denial as both a psychological defense mechanism and a physiological outcome of alcohol's effect on the nervous system.

Physical Effects

Intoxication

Although anyone can become intoxicated while drinking, the alcoholic is less likely to recognize the signs and control his or her intake. Intoxication is produced by alcohol as it circulates in the blood and acts to depress the [central nervous system](#) (see [depression](#)). Alcohol can pass directly into the bloodstream. The absorption rate depends principally on the concentration of the drug in the stomach and small intestine. This concentration is limited by the presence of alcohol dehydrogenase. Because women normally carry less alcohol dehydrogenase in their intestines, they usually consume less alcohol than men before showing its effects.

Alcohol is not stored in the body or excreted but is metabolized in the liver at a fixed rate of between 0.25 and 0.33 oz (7.1–9.4 grams) per hour, varying with the individual. Thus alcohol is found in the bloodstream and signs of intoxication appear when the rate of alcohol consumption is greater than the rate at which it is metabolized in the liver. At a blood level of about .05%, alcohol impairs concentration, visual function, psychomotor performance, and reaction time. For many years the legal standard for drunkenness in most states was a blood alcohol level of .10%, but in many states it now is .08%. The lethal level, often given as .60%, may be as low as .40% in some people. Blood alcohol concentrations are measured by breath (the [Breathalyzer](#) test), blood, or urine tests.

Effects of Chronic Use

Alcohol abuse can result in broad range of medical problems. Alcohol can reduce production of the sex hormone testosterone in males, resulting in impotence and testicular atrophy. Alcohol has a high caloric value but a low nutritional value. Its "empty calories" may allow the alcoholic to feel satisfied while actually progressing toward a state of serious malnutrition. Ailments that can result from alcohol consumption include [cirrhosis](#), a liver ailment; diseases of the digestive system; damage to the heart; lowered resistance to infection; and [cancer](#) (larynx, esophagus, liver). Women who consume alcohol during pregnancy are at risk of delivering children with [fetal alcohol](#)

[syndrome](#), a syndrome of physical, developmental, and psychological problems.

Although the medical effects of alcoholism have long been known, the study of how alcohol acts on the brain to produce intoxication, dependence, and tolerance is still new. Most studies focus on the effect of alcohol on cellular communication. These have found that different regions of the brain differ in their sensitivity to alcohol. In addition, alcohol affects many different kinds of receptors (see [nervous system](#)) and [neurotransmitters](#), such as GABA, glutamate, and serotonin, creating different effects in each case. Whatever the exact mechanism, it is accepted that chronic consumption of alcohol results in disconnection of the fibers that connect brain cells, producing memory lapses, impaired learning ability, motor disturbances, and general disorientation. Two organic brain disorders, alcoholic dementia, characterized by general loss of intellectual abilities, and Wernicke-Korsakoff's syndrome, characterized by such symptoms as loss of physical coordination, incoherence, and mental confusion, are frequently seen in alcoholics.

Withdrawal

Alcohol, like all addictive drugs, produces physical dependence in the habitual user. A hangover, a combination of headache, nausea, fatigue, and depression, may be a mild type of withdrawal from alcohol. Sudden abstinence by the chronic alcoholic produces a severe withdrawal syndrome—including tremors, vomiting, and convulsions resembling those of epilepsy—that is more likely to cause death than withdrawal from narcotic drugs. The first and most dangerous phase in this withdrawal pattern is [delirium tremens](#), a toxic psychosis characterized by insomnia, hallucinations, seizure, and maniacal behavior.

Treatment

The treatment of alcoholism depends on how far the disease has progressed. Treatment typically begins with professional advice or self-motivation to abstain, often coupled with medical efforts to achieve sobriety. In the presence of withdrawal symptoms, anti-anxiety drugs such as [benzodiazepines](#) may be prescribed. A next step is often enrollment in a treatment program suitable to the severity of the disease and patient's social stability. Residential programs offer a supportive atmosphere and a structured environment in which the patient can begin to learn how to restructure his or her life and develop new habits. Many programs educate the family as well, alerting them to patterns within the family that may have enabled the patient to keep drinking. Because alcoholism is a chronic recurring and relapsing disease, treatment programs are usually followed by membership in a support group such as [Alcoholics Anonymous](#).

Medical treatment to help ensure continued sobriety includes self-administration of drugs such as [Antabuse](#), which produces severe discomfort if taken in the system when alcohol is consumed. Naltrexone, a drug formerly used in heroin abuse, and acamprostate are also now approved for use in the treatment of alcoholism. Naltrexone minimizes both the craving for alcohol and the "high" produced by its consumption. Acamprostate reduces the craving for alcohol in people who have stopped drinking. In addition to these standard treatments, many alcoholics are aided by alternative treatments such as [acupuncture](#) and hypnosis.

Costs to Society

Because alcohol can profoundly alter motor control and behavior (by blocking inhibitions, for example, and releasing aggressive behavior), it is one of the most dangerous drugs. A large proportion of arrests in the United States are for driving while under the influence of alcohol, and a high proportion of crimes of violence (e.g., child abuse, homicide, and suicide) are committed by people who have been drinking. In the United States, members of minority groups (with the exception of Asian Americans) are affected disproportionately by alcohol-related problems. At different stages in the course of the disease, the alcoholic may experience problems with family

and friends, absenteeism and reduced productivity, accidents, violent behavior, increased tolerance and consumption, or blackouts (periods of alcohol-induced memory loss). As the disease progresses, more and more serious physical and social problems may emerge.

Bibliography

See P. G. Bourne and R. Fox, ed., *Alcoholism* (1980); E. L. Gomberg et al., ed., *Alcohol: Science and Society Revisited* (1982); M. Grant and B. Ritson, ed., *Alcohol: The Prevention Debate* (1983); M. Elkin, *Families under the Influence* (1984); D. Gallant, *Alcoholism: A Guide to Diagnosis, Intervention, and Treatment* (1987).

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