

# Alcoholism and Alcohol Abuse (alcohol dependence, DSM-IV 303.90; alcohol abuse, DSM-IV 305.00)

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Alcoholism, also known as alcohol dependence, is a common disorder. Lifetime prevalence rates vary widely according to the methodology used, but probably close to 10% of the U.S. population is affected. Asians, however, particularly those from China, Korea, and Japan, appear to have much lower rates. At all ages alcoholism is more common among males than females; however, given the somewhat later age of onset in females, the ratio tends to decrease in higher age groups. Overall the ratio is probably 3:1.

Alcoholics and alcohol abusers are recurrently and persistently beset with an urge to drink, an urge that is of sufficient compellingness for them to continue to drink despite the fact that because of their drinking they sustain substantial damage to their health and personal or business affairs. Amongst alcoholics, but not in alcohol abusers, one also sees the development of both craving and of neuroadaptation, with either tolerance or withdrawal.

This chapter deals with alcoholism and alcohol abuse in an overall sense. The following chapters cover alcohol intoxication, alcohol withdrawal, delirium tremens, and other alcohol-related disorders.

## ONSET

The onset of alcoholism or alcohol abuse is generally insidious and spans many years. For men, onset is generally dated to the late teens or the early twenties; however, most alcoholics are not recognized as such until their late twenties or early thirties, and many more years may pass before the alcoholic or someone else recognizes the need for treatment. Although some otherwise typical onsets have been described in patients over 60, it is rare for the onset to occur past the age of 45.

The onset in women tends to be later than that in men.

Alcoholics who concurrently have an antisocial personality disorder seem to have an earlier onset, generally in the teenage years.

Although precisely dating the onset is very difficult, many alcoholics, in retrospect, can point to a period in their lives when they "crossed the line," after which their efforts to control their drinking became futile.

## CLINICAL FEATURES

In a full-blown case of alcoholism, drinking has become the primary need in an alcoholic's life, to the detriment or neglect of almost all other activities. The urge to drink may be experienced as a craving, an imperious need, or a compulsion; at times, however, when the alcoholic is off guard it may merely sneak up insidiously, and the alcoholic may begin drinking without knowing why.

Denial is ubiquitous in alcoholism. Almost all alcoholics deny they have a problem with drinking or rationalize it one way or another. They are often quick to lay blame for their drinking on situations or other people. Upon close inquiry, however, one often sees that drinking is in large part autonomous. Although stressful events may be followed by increased alcohol consumption, the alcoholic is also intoxicated during the good times, or simply the neutral times of life.

Most alcoholics make attempts to control their drinking, and although they may have some successes, these are generally short-lived. This "loss of control" was at one point considered the hallmark of the alcoholic. However, it may be just as fair to say that the hallmark is rather a sense of a need to control. Normal people do not experience a need to control their drinking; they simply stop, without giving it a second thought.

When alcoholics do drink, most eventually become intoxicated, and it is this recurrent intoxication that eventually brings their lives down in ruins. Friends are lost, health deteriorates, marriages are broken, children are abused, and jobs terminated. Yet despite these consequences the alcoholic continues to drink. Many undergo a "change in personality." Previously upstanding individuals may find themselves lying, cheating, stealing, and engaging in all manner of deceit to protect or cover up their drinking. Shame and remorse the morning after may be intense; many alcoholics progressively isolate themselves to drink undisturbed. An alcoholic may hole up in a motel for days or a week, drinking continuously. Most alcoholics become more irritable; they have a heightened sensitivity to anything vaguely critical. Many alcoholics appear quite grandiose, yet on closer inspection one sees that their self-esteem has slipped away from them. Most alcoholics also display an alcohol withdrawal syndrome when they either reduce or temporarily cease consumption. Awakening with the "shakes" and with the strong urge for relief drinking is a common occurrence; many alcoholics eventually succumb to the "morning drink" to reduce their withdrawal symptoms.

Some degree of tolerance occurs in all alcoholics. Here the alcoholic finds that progressively larger amounts must be consumed to get the desired degree of intoxication; if the amount is not increased, the alcoholic finds that the degree of intoxication becomes less and less. Some alcoholics, however, late in the course of the disorder may experience a relatively abrupt loss of tolerance that can be profound. The alcoholic who routinely drank a quart of bourbon a day now finds that a couple of shots of bourbon leads to hopeless intoxication.

Excessive use of other intoxicants is common among alcoholics. Benzodiazepines are popular among those past their late twenties; in younger patients, marijuana, cocaine, and opioids may be preferred. For most alcoholics, however, these substances are merely ancillary; alcohol remains the "drug of choice."

Other disorders are often seen concurrent with alcoholism, including major depression, panic disorder (with or without agoraphobia), social phobia (of the generalized type), and, somewhat less commonly, bipolar disorder and schizophrenia. Of the personality disorders, antisocial personality disorder occurs in male alcoholics more often than one would expect by chance; the same is true for borderline personality disorder among female alcoholics.

Alcohol abusers are similar to alcoholics in that they continue to drink despite serious adverse consequences. But abusers are different from alcoholics in two ways. First, most alcohol abusers do not develop neuroadaptation as manifested by tolerance or withdrawal; the sustained drinking generally required to produce these phenomena is for the most part seen only in alcoholism. Exceptions, however, exist as some people seem particularly prone to developing withdrawal and may in fact have the shakes after only a few weeks of drinking, only then to become and remain abstinent. Such people probably do not have alcoholism. Second, one may inquire as to whether the drinker experiences a craving for alcohol rather than merely a desire for it. The alcohol abuser wants to drink and looks forward to it. The same may be true of the alcoholic at times; however, the alcoholic also has a craving for alcohol and because of that craving the ability to choose whether to drink or not is lost. At times the alcoholic simply "has to" drink. Consequences may deter the alcohol abuser, and the abuser may decide to stop because of them and then go ahead and stop. For the alcoholic, however, drinking persists despite the most disastrous consequences; some may continue to drink even while they lie on their death-bed in the hospital.

## COURSE

Alcoholism may run an episodic or a chronic course. The alcoholic who experiences an episodic course is often referred to as a binge drinker. The binges themselves may last for days or weeks; in between them the alcoholic may go for months or a year or more without drinking at all. The alcoholic with a chronic course may drink on a regular daily basis or have brief periods of abstinence. The "weekend alcoholic" falls in this category. The pattern may change from episodic to chronic over many years. In most cases the complications of alcoholism tend to add up after 10 to 15 years: women tend to experience a more rapid progression than men.

Spontaneous remissions do occur in alcoholism, and they may be missed in epidemiologic surveys, as patients are generally reluctant to discuss their previous drinking. The general clinical impression, however, is that a full spontaneous remission is relatively rare.

The overall course of alcohol abuse is not as clearly understood: some may stop or successfully moderate their drinking; some may continue to drink abusively for an indefinite period of time without ever developing a craving and neuroadaptation, while some may develop these phenomena, thereby prompting a revision of the diagnosis to one of alcoholism.

## COMPLICATIONS

The complications of alcoholism and alcohol abuse are exceedingly numerous. The population of our jails and hospitals would be dramatically reduced without alcoholism.

Both alcoholics and alcohol abusers are liable to arrests for public intoxication and driving while intoxicated, and both are more likely to have motor vehicle accidents, to lose jobs and to face separation from their loved ones. Other complications seen in both groups (albeit more commonly in the heavier-drinking alcoholics) include blackouts, alcohol withdrawal (the "shakes"), gastritis and fatty liver.

Alcoholics, in addition to the foregoing complications, are also at much higher risk for other complications, including the following.

Suicide is relatively common in active alcoholics, occurring in perhaps 15%. Risk factors include male sex, depression, unemployment, lack of social supports, and significant general medical illnesses, such as pancreatitis, cirrhosis, and others. An alcohol-induced depression may occur, and indeed such a "secondary" depression is seen in at least one-half of all alcoholics.

Drinking during pregnancy exposes unborn children to the risk of prematurity, low birth weight, and fetal alcohol syndrome.

Other complications of alcoholism include seizures ("rum fits"), delirium tremens, alcohol hallucinosis, alcoholic paranoia and alcoholic dementia. Head trauma, often with subdural hematoma, may be quite common.

Thiamine deficiency may be followed by Wernicke's encephalopathy, with a subsequent Korsakoff's syndrome.

Alcoholic cerebellar degeneration, polyneuropathy, and myopathy may completely disable the patient.

Alcoholic hepatitis is common, and cirrhosis may occur in something less than 10% of alcoholics with the subsequent development of bleeding esophageal varices. Recurrent bouts of pancreatitis are not uncommon.

Alcoholics are more prone to infections of all sorts; aspiration pneumonia is common, bacterial meningitis less so.

Laboratory abnormalities are common and may or may not be associated with symptoms. These include the following: hypomagnesemia, hypoprothrombinemia, megaloblastic anemia, thrombocytopenia, hypoglycemia, and ketoacidosis. The combination of an otherwise unexplained increase in mean corpuscular red blood cell volume and an elevation of the serum gamma-glutamyl transferase (SGGT) level is very suggestive of alcoholism. Another "marker" for alcoholism is an elevated carbohydrate-deficient transferrin (CDT) level in the absence of significant hepatic disease.

Alcoholic cardiomyopathy is a rare but often fatal complication.

Central pontine myelinolysis and Marchiafava-Bignami disease are extremely rare complications but carry a high morbidity and mortality. Tobacco-alcohol amblyopia may occur. Occasionally, desperate alcoholics may seek intoxication with isopropyl (rubbing) alcohol or with methanol (wood alcohol), with consequences as described in their respective chapters.

## ETIOLOGY

Family history, twin and adoption studies leave little doubt as to the importance of inheritance in alcoholism, which may account for up to 60% of the risk. Genetic studies, however, have not as yet yielded conclusive results. Earlier studies suggesting an association with certain polymorphisms at the dopamine D2 receptor (DRD2) gene have not been consistently replicated; whether more recent studies suggesting associations with various polymorphisms at the genes for the serotonin transporter or for neuropeptide Y will stand the test of time is uncertain.

Clinical studies of the non-alcoholic sons of alcoholics have yielded some interesting findings, as might be expected given the evidence for inheritance. Electrophysiologic studies have demonstrated a reduced P300 wave and a reduction in alpha activity while not drinking coupled with an increase in alpha activity while drinking. Of more interest from a clinical point of view, however, is the response of sons of alcoholics to a drink as compared to controls. As a group, these non-alcoholic sons of alcoholics had a lower degree of intoxication than did controls. Furthermore, over long-term follow-up the sons with the lowest response had a 60% chance of developing alcoholism; by contrast, in the sons with the most normal response the chance of developing alcoholism was only 15%. Clearly, among sons of alcoholics, being able to “hold one’s liquor” is an ominous prognostic sign.

The reduced prevalence of alcoholism among some Asian groups, noted earlier, is related to a differential inheritance pattern of certain normally occurring alleles for aldehyde dehydrogenase. Ethanol is normally metabolized by alcohol dehydrogenase to acetaldehyde, which in turn is rapidly metabolized by aldehyde dehydrogenase to acetic acid. A majority of Asians, however, have forms of aldehyde dehydrogenase which are slow acting, thus allowing for an accumulation of this toxic intermediary metabolite with the production of an extremely dysphoric “Antabuse” reaction as described in the chapter on disulfiram. Naturally such individuals would be unlikely to pursue further intoxication, and thus less likely to become alcoholics.

## DIFFERENTIAL DIAGNOSIS

The main impediments to the diagnosis of alcoholism are the denial seen in alcoholics and the low index of suspicion held by most physicians. All patients should be directly asked how much they drink, and whenever there is a history of arrests, job loss or separation and divorce, this point should be pursued with vigor: when appropriate, this history should be pursued with significant others. Other “red flags” include any of the other complications mentioned earlier, including especially otherwise unaccounted for tremor, gastritis or hepatitis. Another “red flag” of some note is a combination of an elevated MCV and SGGT, which is strongly suggestive of alcoholism.

In cases where the course of alcoholism or alcohol abuse is clearly episodic, one must consider whether these might be occurring “secondary” to some other disorder which also has an episodic course, such as major depression or bipolar disorder. Patients with a depression of major depression or bipolar disorder may “drink to drown their sorrows” and patients with mania, as in bipolar disorder, in their overall exuberant excessiveness, often also drink to excess. In these cases a careful history may reveal the onset of a mood disturbance before the onset of excessive drinking, and a subsequent spontaneous moderation of alcohol intake when the mood disturbance resolves. In cases of concurrent alcoholism and depression where it is not clear whether the depression is primary or occurring secondary to the alcoholism, it may be necessary to observe the patient into abstinence to make the correct diagnosis: whereas a depression of major depression typically persists well into abstinence, an alcohol-induced secondary depression generally undergoes a spontaneous remission within four weeks.

A similar diagnostic strategy may be adopted in cases where there is significant antisocial or “borderline” behavior and it is not clear whether these represent an independent personality disorder or complications of alcoholism. This is especially true when the onset of alcoholism occurs in middle or early teenage years. Alcoholics often commit many antisocial acts to continue drinking: lying, stealing, using aliases (if under age), and consistently failing to meet family or work responsibilities are common. Repeated intoxication also seriously impairs the alcoholic’s ability to form lasting relations or a stable sense of identity. Whether a personality disorder diagnosis is warranted depends on whether these symptoms persist despite a prolonged period of abstinence.

## TREATMENT

The goal of treating alcoholism is abstinence. Attempts have been made to enable the alcoholic to continue drinking in a controlled fashion, but without sustained success. This goal must be stated to alcoholics clearly, simply, and unmistakably. With regard to alcohol abuse, there is debate as to whether the goal should be abstinence or controlled drinking. Although some alcohol abusers are able to moderate their drinking to a “social” level, it is not possible to predict which of them will be able to accomplish this. Given this unpredictability, and the potentially grievous complications of alcohol abuse, it may be prudent to approach alcohol abusers in the same way as alcoholics.

Some alcoholics, by an extraordinary act of will, are able to stop on their own, but this is rare, and the vast majority of

alcoholics will continue to drink unless they receive help. In such cases various psychosocial measures are helpful and may be offered. Drugs, such as disulfiram, naltrexone and topiramate, are discussed later, but it must be borne in mind that their usefulness here is limited.

Various counseling methods, including notably cognitive-behavioral therapy, have been successful in a minority of cases. For patients who fail to achieve abstinence with counseling, the physician should consider referral to Alcoholics Anonymous (AA).

Alcoholics Anonymous is the oldest treatment approach to alcoholism, and, if participated in fully, has the best success. Patients should be instructed to attend "ninety meetings in ninety days" and to get an AA "sponsor." Given the wide variety of AA meetings, most patients, by sampling a large number, will find somewhere they feel "at home." Many patients, though initially accepting such a prescription for AA, will fail to follow through, and attend only a few meetings. Here, a failure to achieve sobriety, rather than serving as evidence for the ineffectiveness of AA, is simply a manifestation of non-compliance.

At some point most alcoholics are hospitalized, either to effect a period of enforced abstinence or to treat one of the complications of alcoholism. The goal of an admission, in addition to treatment of any complications, should be to engage the patient in a psychosocial treatment program, such as AA. Although 4-week inpatient rehabilitation programs were once popular throughout the United States, they have not been shown to increase the chances of long-term abstinence. Questions have been raised as to whether most alcoholics are even capable of understanding the sort of educational program offered during these 4-week stays. Most recently detoxified alcoholics experience a very mild delirium, the "fog," that may last for weeks. Until this "mental fog" lifts, truly the only new idea that befogged alcoholics may be able to grasp is that if they want to stay sober they should go to 90 meetings in the 90 consecutive days after discharge, starting with a meeting on the day of discharge.

Family and friends should be encouraged to stop "enabling" patients by rescuing them or otherwise shielding them from the consequences of their drinking. Most family and friends hate to see alcoholics suffer, but in alcoholism the experience of consequences is the best, and sometimes the only, effective teacher. Thus when family or friends "protect" alcoholics, they only enable them to stay in denial and continue drinking, thus hastening the alcoholic's demise. Those family and friends who find it difficult to stop "enabling" may benefit from attendance at Al-Anon, a group for family and friends that is allied with AA.

Three drugs, namely disulfiram, naltrexone, and, possibly, topiramate, may be of some benefit to some patients, but cannot be relied on in the absence of psychosocial methods.

Disulfiram, by inspiring patients with a fear of an "Antabuse" reaction should they drink, may make for enough sober time for patients to benefit from a psychosocial approach. Given the risks associated with disulfiram, cases must be highly selected, and disulfiram should generally not be prescribed to patients who are not committed to sobriety, as they generally end up drinking while taking it. This includes patients who want disulfiram so that they can "dry out" for a few weeks

and recover their health preparatory to resuming drinking, and also patients who are requesting the drug at the behest of others, whether it be a spouse or an employer. The use of disulfiram is discussed in detail in that chapter.

Naltrexone, in a dose of 50 mg daily, may, by reducing craving and damping the reinforcing euphoria of a drink should the patient "slip", reduce the number of drinking days and increase the chances of abstinence. These effects, however, are modest at best, and may, indeed, in the case of severe alcoholism, be negligible.

Topiramate, in a dose of from 100 to 200 mg, was recently demonstrated, in one double-blind comparison with placebo, to reduce drinking days, and the amount consumed on drinking days, and to increase the number of abstinent days. If these results are replicated, then topiramate will assume a place in the treatment on alcoholism: its effectiveness relative to either disulfiram or naltrexone, however, remains to be seen.

Although the role of the physician in the treatment of alcoholism per se is limited, medical attention to concurrent psychiatric disorders may be critically important. Depression, mania, frequent panic attacks, or schizophrenia may all so incapacitate patients that they are unable to participate in rehabilitative efforts. By relieving patients of the symptoms of the concurrent disorder, the physician may enable them to fully involve themselves in their efforts at sobriety. If medications are used, their purpose must be clearly stated. Many patients fondly hope that taking a medicine will obviate the need for rehabilitative psychosocial work. Such hopes must be dashed; patients must understand clearly that no medicine for alcoholism itself exists. One must not prescribe sedative-hypnotics, including benzodiazepines, to outpatient alcoholics. Although these have a place in the treatment of alcohol withdrawal, as described in that chapter, they are contraindicated for outpatients. Furthermore, when nonhabituating medicines, such as antidepressants or antipsychotics, are prescribed patients must be informed that they cannot get "hooked" on them. It is also prudent to tell patients that some members of AA, lumping nonhabituating and habituating medicines in the same group, frown on taking medication of any sort. Patients therefore should be advised to confine their discussions about medication to their prescribing physician.

During the first few months of abstinence, patients who went through alcohol withdrawal often complain of persisting symptoms, such as insomnia, easy startability, and other autonomic symptoms, and difficulty remembering or thinking clearly. In such cases, patient's may be reassured that these symptoms generally clear in a matter of months, generally never lasting more than six months. In cases, however, where such symptoms are disruptive to the patient's rehabilitative efforts, treatment with divalproex, as discussed in the chapter on alcohol withdrawal, may be indicated. If symptoms persist beyond six months despite abstinence, then another disorder must be sought.

Relapses are common; most occur in the first 6 months. Only about 50% of alcoholics achieve a year of continuous abstinence. The physician therefore must guard against becoming frustrated and must likewise help the patient avoid demoralization. A "slip" should not be taken as an indication of failure but rather as an indication to redouble one's efforts at treatment.

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