ALCOHOLISM AS A DISEASE: BEYOND A CONCEPT

Today the idea that alcoholism is a disease is only partially accepted. Polls that ask people about the nature of alcoholism provide revealing results. In 1979, one study reported that 85 percent of general practitioners viewed alcoholism as a disease — the same percentage that regarded coronary artery disease, hypertension, and epilepsy as diseases.' When a 1988 Gallup Poll asked members of the general public if alcoholism is a disease,

- 78 percent of those who responded agreed strongly that it is.
- 10 percent agreed somewhat.
- 6 percent disagreed somewhat.
- 5 percent disagreed strongly.
- 1 percent had no opinion.

The same poll shows that the public is uncertain about the exact meaning of the term disease. When people were asked which of a number of options described their feelings about alcoholism,

- 60 percent said it is a disease or illness.
- 31 percent a mental or psychological problem.
- 23 percent a lack of willpower.
- 16 percent a moral weakness.
- 6 percent were unsure.2*

The reasons for people's ambivalence about the nature of alcoholism are complex. But the primary reason people are confused about the disease concept of alcoholism is that it requires an understanding not only of scientific evidence, but also of ideas about moral judgment, free will, and the stigma of addiction.

This pamphlet explores each of those areas.
THE DISEASE CONCEPT Of Alcoholism and Other Drug Addiction

Written by Abd Al-Rahman
Thursday, 22 November 1990 00:00

• First, we trace the history of the disease concept.
• Then, we define the terms addiction and disease, explaining how alcoholism fits the definitions of both.
• Following that, we look at alternatives to the disease concept and explore the idea of personal responsibility as it applies to disease.
• Finally, we list some questions not currently answered by the disease concept.

Alcoholism and addiction to other chemicals are similar in fulfilling the criteria for definition as a disease. Though each drug has a specific effect on an individual, the essential characteristics of addiction that allow us to diagnose and predict its progression remain consistent from drug to drug, including alcohol. Therefore, in this pamphlet, the term alcoholism includes addiction to other drugs as well.

Another point concerns the phrase the disease concept, particularly the word concept. The phrase has been used historically by people who regard alcoholism as a disease. It does not imply, however, that the status of alcoholism as a disease is tentative or lacks evidence — a mere concept. We hold that alcoholism fully qualifies as a disease, and our purpose is to explain what this means.

HISTORY OF THE DISEASE CONCEPT

The disease concept dates back to the early Greeks. Hippocrates, the father of medicine, set down explanations of disease in the fifth century B.c. He postulated that diseases were caused by an imbalance of the natural elements in the human body, particularly of earth, air, fire, and water. Throughout history, people who have theorized about the cause of disease have ascribed radically different causes to physical diseases than they have to psychiatric disorders. Prominent theorists, even up to the modern age, held that psychiatric disorders were caused by evil spirits, which overtook the body and mind and which required exorcism.

As recently as the nineteenth century, certain diseases were considered defects of character and moral degeneracies. Among them were syphilis; alcoholism; and most psychiatric disorders, including schizophrenia and manic-depressive illness. Not until the early twentieth century did mental illness acquire the legitimacy of disease.
Physicians in the United States first recognized alcoholism as a disease through the writings of Dr. Benjamin Rush, founder of the American Psychiatric Association. In the late eighteenth century, Dr. Rush identified alcoholism as a disease in which

- alcohol serves as the cause.
- loss of control over drinking behavior is the characteristic symptom.
- total abstinence is the only effective cure.

The field of alcoholism treatment has not surpassed this simple but brilliant clinical observation.

Alcoholism fully assumed the status of a disease in the mid-twentieth century. The American Medical Association officially declared that alcoholism is a disease, in a 1956 journal article titled "Hospitalization of Patients with Alcoholism," stating in part: Alcoholism must be regarded as within the purview of medical practice. The [American Medical Association's] Council on Mental Health, its Committee on Alcoholism, and the profession in general recognize this syndrome of alcoholism as an illness which justifiably should receive the attention of physicians.

This statement signalled official acceptance of the disease concept by the American medical profession, yet not all physicians accept this position. In reality, the disease concept of alcoholism has never been adopted on a large scale by physicians.

**Dr. Silkworth’s Simple Formula**
Throughout medical history, however, some physicians have enthusiastically supported the disease concept. In the 1930s, while working with alcoholics in Towns Hospital in New York, Dr. William Silkworth arrived at a simple formula to explain alcoholism. He stated that alcoholism was a physical allergy to alcohol, existing only in those who are destined to become alcoholics, and not in temperate drinkers.

**Refining the Disease Concept**
Dr. Harry Tiebout, a psychiatrist, worked closely with members of Alcoholics Anonymous (AA) in the 1940s and 1950s to refine the disease concept espoused by Dr. Silkworth and others in AA. Writing in leading medical journals, Tiebout applied Freud’s psychodynamic concepts in his description of alcoholism. In particular, he emphasized the significance of the defense mechanisms of denial, rationalization, and minimization in alcoholism. He distinguished surrender from compliance and the importance of achieving the former in establishing sustained recovery. He interviewed many alcoholics in his psychiatric practice.

Jellinek’s Work

The disease concept received its definitive statement from Elvin Morton Jellinek, a research professor in applied physiology at Yale University. In 1960, Jellinek published a scholarly book titled The Disease Concept of Alcoholism. He concluded that a majority of the evidence favors that alcoholism is a disease. Jellinek viewed alcoholism as an addiction similar to any other drug addiction. He also predicted that the term alcohol addiction would not gain favor because of the stigma attached to the word addiction.

Evidence Accumulates

The rapid growth of Alcoholics Anonymous, founded in 1935, representing the development of effective treatment for alcoholism based on the disease concept, has contributed greatly to the credibility of alcoholism as a disease. Also, a parallel accumulation of scientific evidence has provided conclusive support. Increasingly sophisticated studies of alcoholism clearly establish that alcoholism has important definitive characteristics of other diseases and provide substantial evidence that alcoholism is genetically transmitted. We will return to these points after pausing to consider the nature of the addiction and disease in more detail.

THE NATURE OF ADDICTION

The National Institute of Alcoholism and Alcohol Abuse recently defined alcohol abuse in these terms: “Alcohol abuse involves persistent patterns of heavy alcohol intake associated with health consequences and/or impairment of social functioning.” In contrast, we define
alcoholism (alcohol addiction) as preoccupation with acquiring alcohol, compulsive use of alcohol in spite of adverse consequences, and a pattern of relapse to alcohol use in spite of those consequences.

Underlying these three criteria for addiction is the alcoholic's loss of control; an alcoholic cannot control his or her drinking while drinking. As a result, addictive use of alcohol inevitably leads to adverse consequences. This loss of control over alcohol, once established, exists for the alcoholic's lifetime and destructively affects his or her life. The effects include disturbances in interpersonal relationships and employment, as well as a steady and sure decline in physical and mental health. For the alcoholic, the only means of control is abstinence.

Addiction to alcohol is a morbid process. Simply put, it will cause the alcoholic's death if left untreated.

THE NATURE OF DISEASE

Many dictionaries define disease simply as an illness or sickness. Webster's Ninth New Collegiate Dictionary states that a disease is "a condition of the living animal or plant body or one of its parts that impairs the performance of a vital function." A synonym is "sickness."9 This is a relatively inclusive definition that allows many conditions to qualify as diseases. Dorland's Illustrated Medical Dictionary defines disease as "any deviation from or interruption of the normal structure or function of any part, organ, or system (or combination thereof) of the body that is manifested by a characteristic set of symptoms and signs, and whose etiology, pathology and prognosis may be known or unknown."°

Alcoholism fits exactly into such definitions. Addiction to alcohol is a morbid process. Simply put, it will cause the alcoholic's death if left untreated. Alcoholism also produces identifiable pathological signs and symptoms, affecting many organ systems in the person's body.
Koch's postulates, created by Robert Koch, an eminent microbiologist, require that several criteria be fulfilled before something can be called the cause of disease, providing a stringent definition of disease." Koch's essential strategy, originally used in research with bacteria, was to first identify a bacterial agent thought to cause a sickness. He then isolated that agent from the host and gave it to another host to see if it caused the same disease. If it did, and it could be isolated again, he concluded the agent was the cause of the disease.

Alcoholism fulfills similar criteria. We can first observe the addictive behaviors that result when an alcoholic drinks. Then we can give alcohol to another person who is genetically vulnerable to it; drinking alcohol will commonly initiate alcoholism in the second person as it did in the first.

Though we take some liberty in transferring Koch's postulates from bacteria to alcohol, there is a clear analogy between introducing alcohol to a genetically vulnerable individual and infection by a bacterium in a susceptible person. Just as, bacteria may be identified as a cause of pneumonia, alcohol may be identified as a cause of alcoholism.

WHY ALCOHOLISM IS A DISEASE

Support for the disease theory of alcoholism comes from many perspectives besides dictionary definitions and Koch's postulates. These include

- scientific studies
- treatment experience
- legal precedent

The following sections examine each of these perspectives.

The Disease Concept Is Scientifically Valid
Knowing that alcoholism is a disease, we can accurately describe and predict an alcoholic's behavior. The description and prediction of behavior is the basic aim of the scientific method, and the disease concept fulfills that aim.

Furthermore, we call alcoholism a disease because it has been substantiated as such by scientific studies of human biology. This is important. In order for science to consider a condition a disease in the twentieth century, the condition must have a physical basis. The areas of science that provide insights into the physiology of alcoholism are biochemistry and genetics.

**Chemistry of Alcoholism and Other Drug Addiction**

We don't yet fully understand the physical basis of alcoholism (or other drug addiction). Nonetheless, the recent evolution in our knowledge of brain chemistry and the action of drugs on the brain has generated important theories regarding the preoccupation and compulsion to drink alcohol or use other drugs. These theories, based on both animal and human research, have further substantiated alcoholism as a disease. This counters the doubt of many people, especially alcoholics and addicts, who will not accept alcoholism or any other condition as a disease without an explanation based on physiology.

**The TIQ Theory**

This theory illustrates important similarities between alcohol and opiates (heroin). TIQs (tetrahydroisoquinolines) are formed by the joining of a brain neurotransmitter and a metabolic breakdown product of alcohol. Dopamine, one such neurotransmitter, is important in many functions in the brain: for example, in reward behavior and motor activity. And perhaps excessive dopamine stimulation is related to schizophrenia. Acetaldehyde is formed by the enzymatic action of alcohol dehydrogenase (alcohol dehydrogenase is the first enzyme in the chain reaction that breaks down to carbon dioxide and water) on alcohol. Dopamine and acetaldehyde then combine in the brain to form TIQs, and the chemical TIQ acts at opiate receptors.

In summary, alcohol is believed to be converted into a chemical that acts at the same place in...
the brain as does morphine or heroin. Other data suggests a link: (1) animals injected with TIQ will drink alcohol addictively; and (2) breakdown products of TIQs (salinsol) have been found in human alcoholics.12

Serotonin Deficiency

Another explanation for a physical basis for alcoholism is a serotonin deficiency.* Human alcoholics were found to have abnormally low levels of serotonin activity in their blood platelets (cells responsible for blood clotting). Serotonin levels are lower during drinking episodes, but increase during abstinence.

In studies involving animals, those given artificial serotonin stimulation will drink less alcohol than those not receiving the artificial serotonin. Further, animals bred to "prefer" alcohol to water have lower levels of serotonin in their brains.

Findings from these sources suggest that low levels of serotonin may "drive" an alcoholic to drink and may contribute to loss of control, as does the chemical TIQ.13

Alcoholism as a Drive State

Alcohol (and other drugs) may stimulate the drive states: hunger, thirst, sex, and other survival behaviors. The source of these drive states is in the limbic system, a primitive part of the brain that also contains mood and memory functions. It appears that satisfaction of these drive states becomes associated in the user's memory with the satiation promised by alcohol and other drugs; alcohol or other drug use may then become as urgent to the addicted person as these basic drives.

This is how the preoccupation with acquiring, compulsive use, and relapse become driven behaviors for the alcoholic or addict — similar to a drive such as hunger or sex. The recurrent autonomous use of alcohol and drugs is similar to drive states and illustrates the loss of control that underlies addiction to alcohol or other drugs. In this way, alcoholism and drug addiction have been regarded as a disease of the limbic system.
Genetic Studies — the Breakthrough

In recent years, one discovery has provided the most important breakthrough confirming alcoholism as a disease: the finding that alcoholism may be an inherited disorder. Many scientific studies have clearly documented that alcoholism is among those diseases that may be genetically transmitted. Scientists now echo Plutarch, the ancient historian, in saying "drunkards beget drunkards."

According to the disease concept, the way alcohol interacts with the neurochemistry in an alcoholic's brain initiates alcoholism. Genetic vulnerability plays a large role in this interaction. Certain individuals have a tendency to develop an addiction when exposed to alcohol. The unique interaction of alcohol with neurochemicals usually does not occur in a nonalcoholic's brain.

Familial Alcoholism

Genetic studies have used four major methods for studying alcoholism as a primary disease. The first method was used by Jellinek, who wrote about familial alcoholism. Jellinek and many others found that alcoholism ran in families; an alcoholic has a much greater chance than a nonalcoholic of having a family member who is alcoholic. In fact, studies have disclosed that more than 50 percent of alcoholics have a family history of alcoholism — at least one other family member is an alcoholic. And if an alcoholic has at least one family member who is alcoholic, he or she is likely to have other family members who are alcoholics.

Put more simply, alcoholics are born and not made.
Adoption Studies

Such studies led to a second method for studying alcoholism as a disease: looking at the role of the biological parent that produces the alcoholic. Adoption studies in several countries have shown dramatically that biology determines the development of alcoholism. These studies followed adopted children who were separated from their biological parents before the children were six months old. The children who later became alcoholic often had biological parents who were alcoholics — far more often than the nonalcoholic children. Furthermore, alcoholism in the children’s foster parents did not predict which adopted children became alcoholic.

In other words, it appeared that genetic makeup from the biological parents determined alcoholism in the adopted children, not the family environment provided by the foster parents. Put more simply, alcoholics are born and not made.

Studies of Twins

Studies of twins are a third method of research. Here the evidence is strong that a genetic predisposition to alcoholism exists. Identical twins are more likely to be concordant for alcoholism than fraternal twins. Identical twins have the same genetic makeup; fraternal twins do not. The greater rate of alcoholism among identical twins demonstrates that genetic predisposition could be central in determining whether a person will develop alcoholism.

Studies of High-Risk People

A fourth method of genetic study focuses on high-risk people — those who are not alcoholic, but have a blood relative who is. According to these studies, people at risk for alcoholism share certain characteristics with alcoholics and also have characteristics that differ significantly from those of nonalcoholics. They may even have markers specific to alcoholism before the onset of the disease. Possible markers are prolonged brain stem auditory evoked response and P-3 waves. Another is more alpha rhythm in the electroencephalogram (EEG) in response to ingested alcohol. In addition, high-risk individuals can drink more without getting as drunk by showing greater tolerance to alcohol on subjective and objective signs than nonalcoholics.
High-risk individuals report less sensation of intoxication, can perform more coordinated motor acts, have greater muscle relaxation, and show lower levels of blood platelet serotonin levels.

*Gene for Alcoholism*

Genes contain DNA which is the genetic material that is responsible for transmission of inheritance from generation to generation. There are studies which, while inconclusive, seem to point to the possibility of isolating genes that occur more predictably in alcoholics than in nonalcoholics. The dopamine 132 receptor gene was the focus of attention in one such study."

If specific genes prove to be reliable indicators of alcoholism, yet another diagnostic tool will be available that further substantiates the disease model.

*The Disease Concept Is Therapeutically Valid*

Accepting alcoholism as a disease has extended and refined our approach to treating the condition. Evidence comes from the growth of Alcoholics Anonymous, a program compatible with the disease concept. In 1939, membership of AA numbered about one hundred people. By 1976, AA estimated its membership at one million people who participated in twenty-eight thousand AA groups. The latest estimates are seventy-three thousand groups, meeting in 114 countries. The millions of people in AA implicitly endorse the concept that alcoholism is a disease.

---

Once drinking, an alcoholic has no more control over alcohol consumption than a cancer patient has over the growth of malignant cells.
The AA program is based on a set of principles known as the Twelve Steps.* According to Step One of AA, the alcoholic must accept a loss of control over alcohol that, by implication and experience, extends over a lifetime: "We admitted we were powerless over alcohol — that our lives had become unmanageable." The word powerless points to loss of control, and the word unmanageable points to the adverse consequences of alcoholism. It is the loss of control that is central to the definition of alcoholism as a disease. Once drinking, an alcoholic has no more control over alcohol consumption than a cancer patient has over the growth of malignant cells. Thus, the disease concept is imbedded in the language of the Twelve Steps.

In order for alcoholics to begin recovery, they must confront their loss of control. For an alcoholic, relying on willpower in order to stop alcohol consumption after the first drink is ultimately ineffective. In fact, a common reason for relapse is the alcoholic's inability or unwillingness to accept this fundamental aspect of the disease. Without accepting loss of control, an alcoholic may relapse anywhere from a few days to many years after beginning abstinence from alcohol.

From the perspective of treatment, it is crucial to alcoholics' acceptance of their loss of control over alcohol that they know that alcoholism is a disease — not a lack of willpower or moral fortitude. The alcoholic is already filled with self-condemnation. Theories of alcoholism that increase this shame by making alcoholics at fault for their abnormal drinking have not successfully supported sobriety.

The Disease Concept Is Legally Valid

Our courts have supported the idea that alcoholism is an addiction and that addiction to alcohol is a disease. In one case, the United States Supreme Court ruled "that the drinking of intoxicating liquor might develop from a harmless indulgence into a baneful disease of chronic alcoholism." This decision further stated that it is "common knowledge and the warning is evident that indulgence in intoxicating liquors, unless restrained. . . leads to excessive indulgence. One need not be warned that if continued, the craving for alcoholic liquor may lead to habitual drunkenness and the unfortunate self-imposed consequences." Here the court admits not only that alcoholism is a disease, but that this is common knowledge.19

Recently, the United States Supreme Court ruled that two alcoholics were not entitled to benefits from the Veterans Administration. But the court was clear in stating that this ruling was
not a decision on whether alcoholism is a disease. It restricted its decision to whether the alcoholics were guilty of "willful misconduct," as defined by a previous law. In this case, the court did not deny that the source of the "willful misconduct" was the disease of alcoholism. In doing so, the court actually supported the disease concept — and avoided a useless legal argument against a position that rests on scientific and medical evidence.20

Some people have glossed over this point, citing the Veterans Administration case as evidence against the disease concept. More specifically, they quote the phrase "willful misconduct," which seems to contradict the notion of loss of control. At times, however, alcoholics can and must be held responsible for conduct that is willful. Such a view is compatible with our knowledge that alcoholism is a disease. True, alcoholics have no control over their genetic vulnerability to alcohol. But this does not mean they lose control over all aspects of their behavior. Even the authors of Alcoholics Anonymous, the basic text of AA, speak of the "self-will run riot" that characterizes the alcoholic. Indeed, the Twelve Steps call on the alcoholic to take concrete actions toward recovery — which implies personal responsibility.

A Maryland court ruling expressed its belief in the legal validity of the disease concept even more strongly than the Supreme Court did:

There is no evidence on the record legally sufficient for the jury to find that the chronic alcoholism of the insured is the result of his conscious purpose or design. . . . On the contrary, the testimony tends to show that he had vainly exercised his will to restrain and control his desire. The result of his disease is a weakness of will and of character which caused him to yield to liquors. The drinking in the first stages was voluntary but there was not testimony that the drinker was then aware of the latent danger in his habit; and so while his consumption of liquor was a voluntary act, yet his ignorance of its insidious effect does not make the act a voluntary exposure of himself to the unapprehended and unexpected danger of the disease of chronic alcoholism. The result of the indulgence of an appetite does not necessarily determine that the result was self-inflicted because if the actor does not apprehend or is ignorant of the danger of his act, he may not be held to have voluntarily inflicted upon himself the consequences.22

In rendering their decisions, courts on many levels — municipal, county, state, and federal — regularly consider alcoholism as a disease. The courts do not excuse the alcoholic from the consequences of the alcoholism; this would only enable him or her to continue drinking. Instead, the courts offer the alcoholic a choice: face the full punishment for the offense related to the alcoholism, or accept a plan for rehabilitation.
The legal system allows for an alcoholic offender's remorse and restitution for many crimes, frequently adjusting sentences accordingly. Commonly, a judge will allow alcoholics to accept responsibility for their disease, express regret for criminal consequences, and voluntarily enter a formal treatment program. Here the courts provide society with a corrective to a widespread disease. Thousands of alcoholics have begun recovery with this legal intervention.

ALTERNATIVES TO THE DISEASE CONCEPT

Alcoholism as a Moral Defect

People who deny that alcoholism is a disease often hold that it springs instead from moral degeneration. Underlying the moral concept of alcoholism is this thought process:

- The alcoholic's ability to exercise free will over drinking is unimpaired.
- This person chooses with an unimpeded will to drink excessively and has complete control over that decision.
- Alcoholism then is a willful expression of an immoral character, such as other "sins" of self-indulgence and self-destruction.

This view has some merit. As we pointed out earlier, personal responsibility plays a key role in recovery from alcoholism — and in recovery from many other diseases, diabetes and arthritis among them. Also, loss of control over alcohol use does create moral dilemmas.

Even so, alcoholics cannot control their vulnerability to alcohol. This is supported by

- clinical experience with the AA model.
- self-reports of thousands of alcoholics.
- genetic research.
Recovery from this disease rests not on the alcoholic's futile attempt to control his or her drinking, but on the alcoholic's decision to begin a new life based on abstinence. In short, the moral-defect concept of alcoholism becomes untenable once we acknowledge the alcoholic's loss of control over alcohol.

Several studies examining this loss of control demonstrate that alcoholics cannot use alcohol normally or nonaddictively. One longitudinal study confirmed that fewer than 1 percent of the alcoholics studied drank without serious consequence.

The Denial Factor
Some studies present findings that alcoholics do not show a loss of control over alcohol. The researchers involved bring alcoholics into the laboratory, ask them questions about their history and their ability to control their drinking, and observe their behavior. They conclude that some alcoholics can be taught to drink normally over time.

The central problem with this approach is denial — the alcoholic's refusal to admit loss of control. This denial may lead to difficulties in diagnosing alcoholics as well as identifying the adverse consequences of their abusive drinking. Underestimating the alcoholic's denial leads to problems in confirming his or her loss of control.

To penetrate or circumvent denial, researchers need additional history of the alcoholic's drinking from sources who know him or her. Not all studies take these precautions.

Moreover, loss of control varies over time for each alcoholic. As a result, cross-sectional studies of loss of control (which take place during only certain periods of an alcoholic's life) may miss the key features of the drive to drink.

One obstacle to nonalcoholics' understanding alcoholism as a disease is related to the moralist view. Nonalcoholics often look at alcoholics from their own perspective and experience — that of people who can control their drinking. By definition, normal drinkers control the amount they drink and have few adverse consequences from their drinking. They cannot comprehend the alcoholic's drive to drink uncontrollably. When this fact is overlooked, alcoholism appears as a lack of willpower. In reality, the alcoholic's genetic predisposition to the disease completely undercuts his or her ability to drink consistently with control.
THE DISEASE CONCEPT Of Alcoholism and Other Drug Addiction

Written by Abd Al-Rahman
Thursday, 22 November 1990 00:00

Alcoholism as "Heavy Drinking"

Another alternative to the disease concept is to characterize alcoholism as just another form of heavy drinking. Herb Fingarette's book, Heavy Drinking: The Myth of Alcoholism as a Disease is a classic example of this way of thinking. In fact, he claims alcoholism does not exist, though heavy drinking does. He further argues that heavy drinkers do not lose control over alcohol, and therefore do not suffer from the disease of alcoholism. He cites several studies to support his contention?

Unfortunately, Fingarette ignores many studies that do show loss of control in alcoholics. He also ignores statements of thousands of recovering alcoholics who attest to their powerlessness over alcohol. Further, Fingarette discounts the vast amount of genetic evidence that points to alcoholism as a disease. Beyond this, he fails to account for the multitude of alcoholics with a family history of alcoholism.

In reality, alcoholism can be distinguished from heavy drinking that is not addictive. Though alcohol is, by definition, central to the heavy drinker's life, loss of control over alcohol is not necessarily a factor. What distinguishes heavy drinking per se from alcoholic heavy drinking is that the nonalcoholic heavy drinker can, and often will, abstain from drinking when the consequences are likely to be serious enough. In sharp contrast, the heavy drinker who is alcoholic continues to drink in spite of adverse consequences.

In actual practice, though, it can be hard to distinguish the strictly heavy drinker from the alcoholic. One large national study speaks directly to this issue. In the Epidemiological Catchment Area study, twenty thousand people were interviewed in five cities. Researchers found about the same percentage of people who were strictly heavy drinkers as those who were alcoholics. The study showed that the overall rate of alcoholism was 15 percent — the same as for strictly heavy drinking. How many people who are just heavy drinkers and progress to alcoholism is not known, though drinking heavily is a risk factor for alcoholism.26

The Definition Factor

Fingarette's deftnition of heavy drinking is the same as many clinicians' deftnition of alcoholism. He affirms that heavy drinking becomes a central activity with consequences in the drinker's life.
He also speaks of preoccupation with and compulsive use of alcohol. This description of heavy drinking is essentially one of addictive use. Curiously enough, he falls short of calling this kind of drinking a disease.

Fingarette asserts that "alcoholics are not helpless; that they can take control of their lives. . . . In the last analysis, alcoholics must want to change and choose to change." He concludes that "alcoholism is not a disease; the assumption of personal responsibility, however, is a sign of health, while needless submission to spurious medical authority is a pathology."

Proponents of the disease concept would agree with Fingarette on these latter points. As stated earlier, the cornerstone of recovery, according to the disease concept, is personal responsibility. Alcoholics must accept their alcoholism and begin new behavior before recovery can even start.

Although he uses the current definition of alcoholism as his description of heavy drinking, Fingarette does not want to consider alcoholism a disease. In rejecting alcoholism as a disease, he also arbitrarily rejects the basic definitions of addiction, which are supported by the predominant scientific evidence. His resistance to the disease concept is neither new nor rare; the stigma of being an alcoholic — of having no control over one's drinking — is old. It's one thing to dismiss the evidence that points to alcoholism as a disease and to dismiss the disease concept itself. But Fingarette also fails to offer a helpful alternative to those who lead chaotic lives because of their drive to drink.

Alcoholism as Adapting to Problems

The adaptive model of alcohol abuse is another alternative to the view that alcoholism is a disease. This model states that individual and social problems cause addictive use of alcohol. Examples of those problems are poverty, crime, unemployment, domestic violence, and sexual abuse. Further, the model proposes that the alcoholic has failed to achieve maturity — he or she lacks economic independence, self-reliance, and responsibility toward others. Because of these shortcomings, alcoholics are said to adapt to their environment through addictive drinking.

Since it echoes the moralist view of alcoholism, the adaptive model is popular. It is based on an ancient concept used to understand alcoholism: free will, or willpower. This concept has been with us for centuries; we see it in religious philosophies and in concepts of social morality. It
then found its way into theories of late nineteenth- and early twentieth-century psychology, such as those of Freud, Fromm, and the neo-Freudians. Many of these theories point to a moral cause for illness. People become ill because of a lack of character and true grit. In this case, the theory is that people choose to drink to cope with difficulties, rather than choose a healthier or more productive means of coping.

The adaptive model does have certain strengths. Its emphasis on cause and effect has encouraged scientific research. This model also reminds us that there are many factors determining exposure to potentially addicting chemicals. In addition, the adaptive model is intuitively appealing because it points to excuses for the alcoholic's drinking, rather than accepting alcoholism as a disease. The practicing alcoholic can nearly always rationalize his or her behavior and cite some problem that drives him or her to continue drinking.

The Scientific Examination Factor

Even so, the adaptive model does not hold up under scientific examination. Although the model may be appealing, it does not explain why some people exposed to social problems become addicted to alcohol and others do not. It also fails to account for the numbers of people who are not socially deprived but develop alcoholism. Most alcoholics have jobs and families and are reasonably integrated into society. It is the minority of alcoholics who are disadvantaged and deprived.

Social stress, availability of alcohol, attitudes toward alcohol use, moral injunctions regarding alcohol use — all are important factors determining a person's exposure to alcohol. Yet none of them has been confirmed through experiments as a necessary and sufficient cause of addiction, thus refuting the core claim of the adaptive model.

The disease model states that economic, family, individual, social, and moral problems result from addictive drug abuse; they do not cause addiction, as the adaptive model claims. In short, the adaptive model has got the causal chain backward.

The disease concept is consistent with the goals of the scientific method — to predict behavior and establish the causes of behavior. As such, it has allowed medical research on alcoholism to advance. To revert to the adaptive model, with its emotional and religious overtones, would
impede medical progress and rely on an ineffective treatment model -- one that assumes that resolving the alcoholic's social and other external problems will make the alcoholism disappear.

**Alcoholism as Self-Medication**

Many people see alcoholism as merely the by-product of another condition and not as a primary disease. Those who support the self-medication hypothesis share this viewpoint. Instead of regarding alcoholism as a fundamental condition, proponents of this hypothesis see alcoholism as a manifestation of a psychological condition. The alcoholic uses drinking as self-medication, as a way to relieve psychological conflict such as anxiety or depression. It is the conflict that requires treatment; when it is treated successfully, the alcoholism will resolve itself.

The self-medication hypothesis has deeply influenced two areas where it has been applied: psychoanalysis and biological psychiatry.

*The Self-Medication Hypothesis in Psychoanalysis*

In psychoanalytic theory, the ego is the intermediary between the powerful drives of the impulsive id and the punitive superego — two factors at work in the unconscious mind. Whenever there is a conflict between these drives, the ego, caught in the middle, is in conflict. This tension in the ego, resulting from its attempts to resolve conflict, motivates the ego to seek relief. One way for the alcoholic to forget the tension, to relieve the distressed ego, is to escape through drinking.

Psychoanalytic theory reflects a popular view that has existed for centuries: alcoholism may exist, but it is not a disease as such. Rather, it is secondary to an underlying psychological disorder. This is where psychoanalytic theory ties to the self-medication hypothesis.

However, psychoanalytic theory has provided useful terms for describing some of the mental processes involved in alcoholism. The concepts of the conscious mind, the unconscious mind, denial, minimization, rationalization, and defense mechanisms are particularly helpful in describing the addictive process.
Nonetheless, psychoanalytic theory does not offer a framework for treating addiction. Extensive clinical evidence has shown us that uncovering and resolving these conflicts does not arrest the addiction. More likely, continued use of alcohol leads to more serious psychological conflicts. And resolving these requires treatment for addiction as a first step.

Beyond this, psychoanalytic theory fails to explain addiction. Although this theory may be valid for describing alcohol use, it does not account for addictive drinking — behavior that is the key indicator for dependency, a disease. Psychoanalytic theory only provides a rationale for willful use of alcohol and drugs; it does not explain why alcoholics continue to drink long after the negative consequences outweigh the benefits. Conflicts caused by addictive drinking often exceed those that may have first motivated the drinking. The original distress to the ego is lost amid the overwhelming disruption from diseased drinking.

The Personality Factor

Further evidence against the psychoanalytic theory as an explanation for alcoholism comes from research on personality. We might expect psychological conflict to produce a certain type of personality — one vulnerable to alcohol addiction. George Valliant followed a large group of people, representing many personality types, over a long period to determine if a particular type was likely to develop alcoholism. This study, and others like it, found no significant link between personality type and the development of alcoholism.

Instead, a core personality seems to evolve from having the disease of alcoholism over time. This alcoholic personality is characterized by egocentric, antisocial, immature, and dependent traits. Of course, these traits exist to some extent in many people other than alcoholics. And the traits may have been predominant in alcoholics even before the disease developed. But they become exaggerated when the alcoholic develops the disease.

Psychological principles predict that ego conflicts can be resolved through psychotherapy — a process that may be extensive and prolonged. Once psychotherapy is completed, the alcoholic drinker should no longer need to drink to self-medicate the underlying distress. There is a major drawback to this approach: it often fails to work until and unless alcoholic drinking stops. In fact, it is invariably true that therapy cannot progress if the patient is still drinking.
Here enters the strength of the disease concept, which says that the first consideration is that the alcoholic stop drinking and begin behaving in ways that will maintain abstinence. Only then can the alcoholic's conflicts be assessed and resolved through therapy. In other words, a change in behavior — stopping drinking — must be made before changes in thinking and feeling can be expected. As long as the drinking continues, meaningful change in thinking, feeling, and other behaviors is severely handicapped by the individual's alcoholism. Psychotherapy is, however, valuable for some alcoholics in recovery, especially when paired with treatment for addiction.

This is the approach that the Twelve Steps of AA take. The Steps ask the recovering alcoholic to become aware of conflicts by taking a moral inventory, and then to resolve them through restitution by making amends to others whenever possible. But resolving these conflicts is done only after abstinence has been achieved.

*The Self-Medication Hypothesis in Biological Psychiatry*

The self-medication hypothesis is also used in biological psychiatry. Biological psychiatry, like psychoanalytic theory, sees alcoholism as the by-product of other conditions. These conditions include depression, anxiety, or personality disorders that stem from the biochemistry of the brain. Again, alcoholism is not considered a primary disorder. Because depression or anxiety — the primary disorders — produce psychological pain, the sufferer uses alcohol and other drugs to get relief.

Biological psychiatry does have merits in regard to alcoholism. It counsels us to look to brain biochemistry to understand behavior and mental states. As Silkworth pointed out, alcoholism represents in part a physical "allergy" to alcohol. The basis of the allergy is a change in brain chemistry that occurs when alcohol interacts with the alcoholic's brain cells. Further inquiries into the biological origins of psychiatric disease can help us understand alcoholism.

Again, biological psychiatry explains alcoholism based on the popular and ancient concept of willful use of alcohol, thus avoiding to deal with the stigma of alcoholism and focusing on the more "preferred" conditions of anxiety or depression.
The Primary Factor

But biological psychiatry in this context does not fit the clinical picture. Studies clearly show that alcohol often produces depression, but they do not indicate that alcohol relieves depression. In one study, three groups of people were given alcohol: (1) depressed alcoholics, (2) depressed nonalcoholics, and (3) nondepressed nonalcoholics.

Afterward, their mood and affect (outward expression of emotion) were measured. Surprisingly, the depressed alcoholics showed the least benefit in terms of euphoria and improved affect from drinking.29

These observations from studies, such as the one just described, confirm that alcoholics do not drink to feel better, drinking, in fact, may make them feel worse. It appears that alcoholics drink in spite of depression — not because of it. Moreover, the assumption that alcoholics drink because of depression comes from observations of the drinking behaviors of depressed nonalcoholics, not alcoholics.

We come to similar conclusions when examining the drinking behavior of nonalcoholic people with manic-depressive illnesses. People with this diagnosis often reduce their drinking during depressive episodes, and they increase their drinking during manic episodes. Increased drinking during mania comes with hyperactivity and poor judgment. Reduced drinking during depression is related to alcohol's overall effect on the brain, where it acts as a depressant.

The situation is similar with anxiety. No studies have demonstrated that anxiety leads to addictive drinking. In fact, there are some studies that show that anxious people shun alcohol and actually reduce their drinking. This may be because other studies clearly show that alcohol — rather than relieving anxiety — actually creates anxiety, either during intoxication or withdrawal. For instance, chronic drinking produces recurring withdrawal, and anxiety is a symptom of withdrawal. Similarly, cocaine induces the sympathetic nervous system to produce severe states of anxiety, including the panic disorders also experienced with alcoholism.30

Alcoholism treatment is more effective when we dismiss the self-medication hypothesis and accept that alcoholism is a primary disorder — not a secondary condition caused by a primary one — and that it is a disease caused by an interaction between alcohol and the brain chemistry.
of a person with a genetic predisposition to alcoholism.

The self-medication hypothesis, either in psychoanalytic theory or biological psychiatry, has certain strengths. But in practice it prolongs alcoholism and risks further injury to the alcoholic. In addition, it promotes useless treatment, as when a client undergoes therapy while still drinking. Further, it can lead to harmful treatment as when antidepressants are prescribed for actively drinking alcoholics. Alcoholics as a group are highly prone to depression, overdose, and suicide. Twenty-five percent of alcoholics commit suicide and many more attempt it. Finally, applying the self-medication hypothesis distracts alcoholics from focusing on their alcoholism as the problem and seeking specific treatment for it.

**THE PARADOX OF PERSONAL RESPONSIBILITY**

A paradox is a principle contrary to generally accepted opinion or common sense that is perhaps true. Many paradoxes arise in the diagnosis and treatment of alcoholism. They may be difficult to accept unless we believe that the principles of treatment based on the disease concept actually do help the alcoholic to recover. That is, the proof exists in the fact that treatment based on some paradoxes works to keep alcoholics from drinking.

One paradox that is central to treatment and is based on the disease concept has to do with control. In order to recover from alcoholism, a person must exercise some control: a commitment to abstain from alcohol. Yet, the term disease implies loss of control. Alcoholics cannot consistently control how much and how often they drink. Nor can they accurately predict the consequences of their drinking. At first glance we seem to say that alcoholics are in control — and yet they are not in control. How is it, then, that alcoholics recover?

**Disease as a Victim State**

The very concept of disease implies a physical condition that someone cannot control. In effect, a diseased person seems to become a victim. This notion is historic, echoed in biblical stories and ancient myth. We read of tales where evil spirits possess a helpless victim, causing a physical malady. An example comes from the stories of Jesus curing blind and disabled people by exorcism — casting out "unclean spirits." Or, an omnipotent Greek god grew angry and decided to punish someone by giving that person a disease. As in the Old Testament story of
Job, this punishment may be unrelated to anything the person has done, or the severity of the disease may far exceed the scope of the victim's wrongdoing. At any rate, the God produces a victim, and victims are not responsible for their maladies.

The loss of control is over vulnerability to a chemical, not over a change in lifestyle or attitudes. The alcoholic is powerless over alcohol but not over alcoholism.

This notion of victimization is often applied to alcoholism. On the one hand, recovery from the disease of alcoholism relies heavily on personal responsibility: the alcoholic actively participates in his or her rehabilitation. On the other hand, as the disease concept makes clear, the alcoholic cannot exercise willpower to overcome addiction. Instead, he or she is a victim within a network of forces that undercut willpower.

**The Meaning of Responsibility in Treating Disease**

There is a way to unravel this paradox of personal responsibility. It is important to note that the alcoholic's responsibility extends only up to a well-defined line: the pledge not to take the first drink. If the alcoholic does take the first drink, he or she loses control over alcohol. This responsibility, then, calls for abstinence — a total and voluntary remake of the alcoholic's lifestyle. The loss of control is over vulnerability to a chemical, not over a change in lifestyle or attitudes. The alcoholic is powerless over alcohol but not over alcoholism, just as the diabetic didn't bring on the disease but can participate in the treatment of diabetes mellitus.

Without proper treatment, the alcoholic is often helpless against the disease, just as is the person who dies from untreated hypertension. Neither person is at fault for having these diseases; disease is truly a "no-fault" proposition. But when alcoholics accept alcoholism as a disease and undergo treatment, they assume a new destiny. The alcoholic's acceptance represents a fundamental change, which occurs over time, in attitude and personality — a
change that results from active and voluntary involvement in a treatment program. Ultimately the alcoholic can — and must — choose to change. When this happens, he or she ceases to be a victim of the consequences of the disease, alcoholism.

In short, the disease concept is fully compatible with the notion that alcoholics have some control over their behavior and, ultimately, the treatment of their disease. Alcoholics are not responsible for being genetically vulnerable to alcoholism. Yet, alcoholics are responsible for their disease, if we take "responsibility" to mean acceptance that the disease exists and that the alcoholic is accountable for a change in lifestyle.

We often assert that people are responsible for recovery from disease, even if they have no control over the organic condition that led to the disease. In reality, people with diseases are seldom victims in the pure sense of that word. They often have some control over the onset and progression of the disease. During treatment, self-will and responsibility may play an active role. Comparing alcoholism to other conditions makes this point clear.

**Personal Responsibility In Alcoholism and Other Diseases**

*Coronary Heart Disease*

One example is coronary heart disease. In recent years, it has become increasingly difficult for physicians to view coronary heart disease in the way they view other diseases. Traditionally, disease implies that the patient is a victim of forces outside his or her control and cannot control either getting the disease or recovering from it. This often is not the case with coronary heart disease. The root causes of this disease frequently relate to lifestyle factors under the patient's control. Among them are diets high in fats, obesity, stress-oriented personalities, smoking, and high blood pressure. Effective treatment of early coronary heart disease depends much more on changing these factors than on medical treatments. This — changing lifestyle factors — is also often the case for recovery from alcoholism, where medical models and treatments do not extend beyond detoxifying the alcoholic and caring for acute and chronic complications.

*Hypertension*
Alcoholism is also similar to essential hypertension. Neither condition has a known, specific origin, but both cause physical disease. The physical and psychological complications caused by hypertension are just as devastating as those caused by alcoholism. Like alcoholism, hypertension is heavily affected by the person's lifestyle, which may even include chronic alcohol consumption. Moreover, alcohol withdrawal often causes an elevation of blood pressure and heart pulse.

The preferred treatment of hypertension is frequently through diet, weight loss, and stress reduction — lifestyle changes that are thought to come under the power of a person's will. This strongly parallels treatment of alcoholism.

Cancer

Cancer treatment is another vivid example of the role of personal responsibility in disease. A cancer patient has developed a malignancy, an uncontrolled growth of a tissue in the body. This tissue growth overtakes the normal functions of the organs and, if unchecked, the ability of the body to sustain life.

We do not ordinarily hold people with cancer at fault for their disease. But we do assign them the responsibility for participating in treatment. Those who deny that they have cancer, or that they are at risk for cancer, often do not seek early diagnosis and treatment. These are choices — conscious decisions over which the individual has control. How many people who succumb to cancer and see themselves as invincible, deny the diagnosis, and thereby avoid responsibility for entering treatment?

Moreover, studies show that people may have more control over the onset and development of cancer than previously thought. For many types of cancer, prevention is becoming a reality. This becomes possible as we learn more about the causes of various cancers. For example, lung cancer is usually caused by cigarette smoking, and cervical cancer in women may result from certain sexual practices. Stomach cancer is associated with particular types of diet, and some breast cancer with taking birth control pills.

Diabetes
Diabetes mellitus is still another relevant example. This disease has a physical basis: elevated blood sugar (hyperglycemia); a medication, insulin, is used in treatment. But the diabetic must take responsibility for the disease in order to self-administer insulin. If he or she is unwilling or unable to do so, serious consequences may follow — just as for alcoholics who refuse to accept responsibility for their disease and its treatment.

Personal Responsibility in the Twelve Steps

Another way to understand these concepts is to review the Twelve Steps of AA (see page 35). The Steps are a powerful statement of personal responsibility. They call for the alcoholic to admit powerlessness over alcohol. At the same time, the Steps ask him or her to act to promote recovery from alcoholism. In doing so, the Steps strike a balance between loss of control and the alcoholic's choice to reorient his or her life — a balance that has guided recovery for millions of people.

Step One asks the alcoholic to accept powerlessness over alcohol and the consequences of alcohol use. The core of this Step is loss of control — the inability to control the amount and frequency of alcohol use. Choosing a new way of life requires alcoholics to admit loss of control. Then, this admission makes it possible for them to abstain from alcohol and avoid the consequences of its use.

In the same way, many diseases call on people to give up their illusions of control. An example is coronary artery disease. The first step for heart attack patients in rehabilitation programs is to acknowledge their condition and admit the need for alternative behaviors — especially to those that led to the disease. Those disease-based behaviors often include stress, incorrect diet, and lack of exercise.

Step Two makes clear what is needed for the alcoholic to refrain from taking the first drink: a "Power greater than ourselves."

Step Three asks alcoholics to act on this realization — to turn their lives and wills over to the God of their understanding. The important point is that the loss of control extends beyond the
alcoholic's compulsive use of alcohol and to his or her inability to consistently abstain from alcohol. The sanity of these Steps is that they bring the fundamental choice — to drink or not to drink — to the foreground once the consequences of alcoholism are accepted.

Here, again, is the issue of control. In order to become abstinent, alcoholics must be willing to give up control: to "turn our will and our lives over to the care of God as we understood Him." This is done in a spiritual way, not in a dogmatically religious or subservient way. The Higher Power is a source of inner strength, not external controls imposed by an outside authority. Surrendering control reflects the alcoholic's desire for sober living by accepting dependence on proven principles — the Twelve Step program. In a similar way, someone with another disease, such as cancer, may draw on such spiritual strength to endure the uncertainties of that disease and accept treatments.

Step Four asks the alcoholic to make a moral self-inventory and squarely face the consequences of his or her alcoholism. This is a unique approach: recovery from other diseases may require that the patient make a lifestyle assessment, but what other disease requires a moral inventory as part of its treatment? One reason other diseases don't require this is that other diseases may not produce the same degree of moral conflict as alcoholism. And in some diseases, such as senility, the patient loses the capacity to make moral judgments.

Step Five asks that the alcoholic share the moral inventory with another person and with his or her Higher Power. This act of confession is essential to many therapeutic processes, including psychotherapy, group therapy, and spiritual and religious practices. The opportunity to reveal and discuss conflicts that have arisen from alcoholism — or even those that occurred before alcoholism — is a direct benefit of this Step.

Steps Six and Seven ask the alcoholic for a willingness to have his or her Higher Power remove sources of conflict — referred to as shortcomings and defects of character. Furthermore, the alcoholic must ask a Higher Power to remove these shortcomings and defects of character. Once again, treatment for other diseases may require a similar attitude. For example, cancer or heart attack patients must acknowledge a certain degree of helplessness before they can accept treatments. A great deal of ego deflation or pride reduction must be accepted before some patients make the lifestyle changes needed to reduce the risk of another heart attack.

Steps Eight and Nine ask alcoholics to take full responsibility for their actions while they were drinking by making amends to people they have harmed. These amends can also help free the
alcoholic from conflicts that could trigger a relapse to drinking.

Finally, Steps Ten, Eleven, and Twelve ask him or her to solidify the gains made in the preceding nine Steps. This comes through continuing to take personal inventories, promptly admitting wrongs, improving “conscious contact” with God through prayer and meditation, and carrying the message of the Twelve Steps to other alcoholics. This approach is rare: other diseases do not generally entail a treatment that explicitly calls for a "spiritual awakening." It's also unique that the Steps include working with other people as a condition for recovery, although similar practices have been found useful in treating other diseases, such as cancer.32

UNANSWERED QUESTIONS

To say that alcoholism is a disease and can be studied scientifically does not mean we understand it fully. In fact, there are several questions presently not answered by the disease concept of alcoholism.

For example, how can we describe, in scientific terms, the idea of surrender to a Higher Power found in Twelve Step programs? This points to a factor that we cannot explain: how, during treatment, does the intellect get control over the drive to drink? Alcoholics who participate in Twelve Step programs often say that this comes not from their willpower, but from "conscious contact" with a Higher Power. So far, we cannot explain this phenomenon in purely rational terms, and it is not necessary to, as it constitutes the spiritual aspect of the Twelve Step program.

Other unanswered questions relate to the origin of the disease. We do not fully understand all the processes that cause alcoholism.

- Why do some people develop alcoholism and other people do not?
- What underlies the genetic vulnerability to alcohol?
- What are the underlying neurochemical factors in developing alcoholism?

Currently we cannot answer these questions completely."
Yet another difficulty is that today there are no known medications that specifically treat alcoholism. Often a major factor in determining whether or not a clinical state is accepted as a disease is the use of pharmacological agents in treatment. This also makes the disease concept less appealing to the scientifically oriented physician — one who seeks a solution to disease in medication. In this respect, however, alcoholism is similar to other diseases, such as hypertension, coronary artery disease, and cancer. There are medications that treat the symptoms or consequences of these diseases but, as with alcoholism, none that treat the root causes.

CONCLUSION

In summary, most definitions of disease easily accommodate alcoholism as a disease. This position has been confirmed by clinical experience, scientific experiment, and legal precedent. The disease concept has gained a firm hold because it fits the principle of scientific inquiry, promotes medical progress, and, most importantly, works for the alcoholic.

We hope that with continued research and accumulated knowledge, the true nature of the disease of alcoholism will emerge with even more precision. Even now, though, alcoholism as a disease is much more than a concept for those who must diagnose and treat it. And for those who must live with alcoholism, its status as a disease is one of the keys to recovery.

ENDNOTES

part of "The Tiebout Papers," order number 4981.)
15. Ibid.
16. Ibid.
20. Ibid.
27. Fingarette, Heavy Drinking.
32. Alcoholics Anonymous.
THE DISEASE CONCEPT Of Alcoholism and Other Drug Addiction

Written by Abd Al-Rahman
Thursday, 22 November 1990 00:00


THE TWELVE STEPS OF ALCOHOLICS ANONYMOUS*
1. We admitted we were powerless over alcohol — that our lives had become unmanageable.
2. Came to believe that a Power greater than ourselves could restore us to sanity.
3. Made a decision to turn our will and our lives over to the care of God as we understood Him.
4. Made a searching and fearless moral inventory of ourselves.
5. Admitted to God, to ourselves, and to another human being the exact nature of our wrongs.
6. Were entirely ready to have God remove all these defects of character.
7. Humbly asked Him to remove our shortcomings.
8. Made a list of all persons we had harmed, and became willing to make amends to them all.
9. Made direct amends to such people wherever possible, except when to do so would injure them or others.
10. Continued to take personal inventory and when we were wrong promptly admitted it.
11. Sought through prayer and meditation to improve our conscious contact with God as we understood Him, praying only for knowledge of His will for us and the power to carry that out.
12. Having had a spiritual awakening as the result of these steps, we tried to carry this message to alcoholics, and to practice these principles in all our affairs.

* Respondents to the poll were allowed to give more than one response; therefore, the percentages cited total more than 100 percent.

* Serotonin is the neurotransmitter that regulates the five senses (sight, hearing, touch, taste, smell), sleep, aggression, and hunger.

* Concordance for alcoholism means that both twins are alcoholic. Discordance means that only one is alcoholic.

* The Twelve Steps are listed at the end of this pamphlet.

* The origin of alcoholism may be genetic vulnerability, but it is not known why some people are vulnerable while others are not.