

Alcoholism

Making a Difference Today

Excess consumption of alcohol can ruin a person's health, family life, and career. It also makes the world more dangerous for the rest of society. Many accidents, assaults, and robberies involve alcohol use by the offender. Society also pays a high financial price. Alcohol-related problems cost the country an estimated \$185 billion per year.

There are 17 million Americans at the heart of this crisis—abusers of alcohol, who cause harm to their health by drinking too much, and alcoholics, who cannot control their drinking anymore. Alcoholics' powerful cravings typically overpower their ability to stop drinking, even in the face of devastating consequences.

Research Equals New Treatments

Fortunately, the outlook is improving steadily. Until recently, little could be done to help keep problem drinkers off alcohol except for counseling programs, which can be costly and do not always work. However, because of recent discoveries about the neurochemical effects of alcohol, some biology-based treatments are now available.

A major step in the development of medications occurred in recent years when scientists discovered evidence that alcohol acts on several chemical systems in the brain to create its alluring effects. On the basis of studies funded by the National Institutes of Health (NIH), the drug naltrexone—which targets one of these systems, called the opioid system—was approved as a treatment for alcoholism in the mid-1990s. Alcohol's effect on the opioid system is thought to produce the euphoric feelings that make a person want to drink again. Naltrexone can block this reaction and help cut cravings for alcohol in some alcoholic individuals.

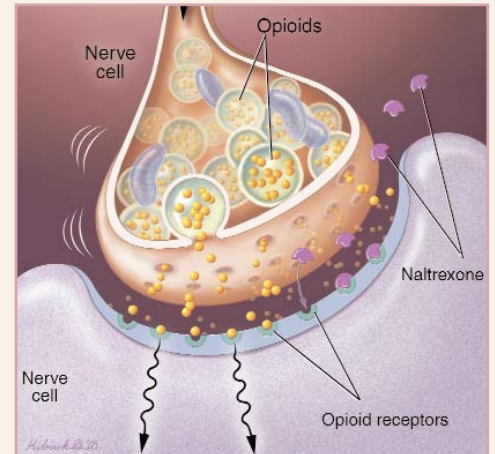
More recently, researchers have turned their focus to some of the other chemical systems. For example, careful basic science studies aided by NIH funding provide evidence that alcohol also targets the brain's glutamate system. Specifically, alcohol appears to create changes in the glutamate system that produce withdrawal symptoms, such as the shakes and anxiety, when alcohol use is cut off. These symptoms and other changes in glutamate function are thought to motivate people to return to drinking, and when they do, to drink more heavily. This finding led researchers to suspect that medications that rebalance the glutamate system could help people stay sober.

The notion was supported when research provided evidence that a European drug, acamprosate, targets the glutamate system and can help treat alcohol problems. Following these findings, the drug was approved in 2004 for use in the United States to help alcoholics who have stopped drinking remain alcohol free.

Continued Advances In Care

This progress is just the beginning. Additional research in earlier stages bodes well for the development of new and more refined treatment strategies. With sustained support from NIH, scientists will be able to improve therapy options and help increasing numbers of people battle serious alcohol problems.

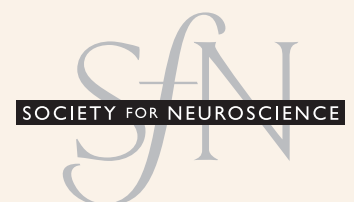
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Medications that target the chemical systems that contribute to alcohol's addictive effects are helping people stay sober. The first drug developed to target one of these systems and approved as a treatment for alcoholism was naltrexone. Alcohol, among its many actions, seems to trigger a release of chemicals called opioids in the brain. The opioids then act on receptors of nearby nerve cells. This activity is thought to produce the euphoric feelings that make a person want to drink again. Naltrexone blocks this reaction and helps cut cravings in some alcoholics.

Continued funding for research could lead to:

- New and refined treatment options for people with alcohol problems.
- A better understanding of how to combine various medications and counseling techniques to gain the most effective outcome.
- Decreased financial burdens for society and government.



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Making a Difference Tomorrow

Researchers have made significant progress in treating alcoholism, but obstacles remain. Available medications are not always effective, and many people find it difficult to adhere to treatment regimens. As a result, many problem drinkers continue to drink heavily.

Did you know that:

- More than 17 million Americans either abuse alcohol or have graduated to become alcoholics, where their control over their drinking is clearly impaired.
- Heavy drinking can increase the risk for certain cancers and can cause liver cirrhosis, immune system problems, and brain damage.
- Alcohol-related problems cost society approximately \$185 billion per year, and more than 70 percent of the estimated costs are attributed to lost productivity.
- Alcohol contributes to 100,000 deaths annually.
- According to victim reports, each year 183,000 rapes and sexual assaults involve alcohol use by the offender, as do just over 197,000 robberies, about 661,000 aggravated assaults, and nearly 1.7 million simple assaults.

With continued funding from NIH for research, health-care practitioners could soon have more options to help problem drinkers stay sober.

Research Equals Hope for the Future

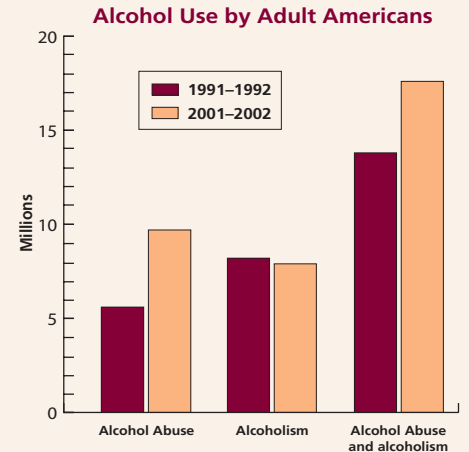
One promising new technique under study could help drinkers adhere to their treatment regimens. The drug naltrexone, which targets the brain's opioid system, can help cut cravings in some alcoholics, but compliance can be a problem. To overcome this obstacle, scientists developed an injectable, sustained-release form of the drug. Recently, a study found that alcoholics who received monthly injections of the long-acting formula had significantly fewer drinking days and a greater abstinence rate than people who received a dummy injection.

Other work highlights the potential of additional drugs that, like the newly approved acamprosate, target the brain's glutamate system. One study recently indicated that the medication topiramate, which blocks some effects of glutamate and is used to treat the disorder epilepsy, helped people with alcohol problems reduce their drinking. Animal research and some early findings from NIH-supported work in humans also indicate that another drug that targets the glutamate system, the Alzheimer's disease treatment memantine, may help treat alcoholics. Others have engineered a new compound that targets the glutamate system as well as the systems that synergize to promote glutamate's action, and have begun testing its ability to treat alcoholism.

Researchers also are studying combination strategies to see if they can boost benefits. One large NIH-funded study is testing the effectiveness of treating alcoholics with various counseling strategies and naltrexone together with acamprosate.

Clearly, more help for alcoholics and society at large is near, but it can become a reality only with continued investments in research.

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The number of adult Americans who abuse alcohol or are alcoholics and have impaired control of their drinking rose from 13.8 million in 1991-1992 to 17.6 million in 2001-2002, according to the National Institute on Alcohol Abuse and Alcoholism.

Already research has led to:

- Greater understanding of how alcohol creates its alluring effects.
- Development of the medication naltrexone, which targets the brain's opioid system and helps cut cravings for alcohol in some alcoholic individuals.
- Approval of the medication acamprosate, which targets the brain's glutamate system and can help alcoholics who have stopped drinking remain alcohol free.



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