NCADD
NATIONAL COUNCIL ON ALCOHOLISM AND DRUG DEPENDENCE, INC.

Family History and Genetics

Why do some people become addicted to alcohol and drugs and others do not?

Whether a person decides to use alcohol or drugs is a choice, influenced by their environment--peers, family, and availability. But, once a person uses alcohol or drugs, the risk of developing alcoholism or drug dependence is largely influenced by genetics. Alcoholism and drug dependence are not moral issues, are not a matter of choice or a lack of willpower. **Plain and simple, some people's bodies respond to the effects of alcohol and drugs differently.**

FACT: The single most reliable indicator of risk for future alcohol and drug problems is FAMILY HISTORY.

Research has shown conclusively that family history of alcoholism or drug addiction is in part genetic and not just the result of the family environment. And, millions of Americans are living proof, based on personal, firsthand experience, that alcoholism and drug addiction run in families.

Plain and simple, alcoholism and drug dependence run in families.

What do we mean by family history?: Although the definition of "family history" has differed among researchers, we mean when either or both of the person's parent has had an alcohol or

drug problem.

What About Genetics and Disease?: Genes provide the information that directs how our bodies respond at the cellular level. Research indicates that over 99% of our genes are the same and the 1% that are different account for visible differences (hair color, height, etc.) and invisible differences, such as our risk of diabetes, heart disease or addiction to alcohol or drugs.

Our Health: NOT Nature vs. Nurture BUT, Nature and Nurture:

Individual health is the result of the interaction between genes and environment. As an example, our risk of developing high blood pressure is influenced by both genetics and environment, including diet, stress, and exercise.

Genetically Complex: Some diseases, like sickle cell anemia or cystic fibrosis, are caused by an error in a single gene. However, most diseases, like alcoholism and drug dependence, are considered genetically complex and involve variations in a number of different genes.

"Alcohol dependence and dependence on other drugs frequently co-occur, and strong evidence suggests that both disorders are, at least in part, influenced by genetic factors. In recent years, researchers have identified numerous genes as affecting risk for dependence on alcohol and drugs. These include genes involved in alcohol metabolism as well as in the transmission of nerve cell signals and modulation of nerve cell activity."

From *"The Genetics of Alcohol and Other Drug Dependence,"* by Danielle M. Dick, Ph.D., and Arpana Agrawal, Ph.D.

Twin Studies and Adoption Studies: Is Alcoholism Inherited

"Relatives of alcoholics have higher rates of the disease than do relatives of non-alcoholics. But is this nature or nurture? Perhaps some of each, but let's look at the evidence for heredity.

"**Twin studies** offer a chance to compare the influence of genetics versus environment. Identical twins (one-egg twins) share exactly the same set of genes while fraternal twins (two-egg twins), like ordinary siblings, share only one-half their genes. A higher rate of concordance (similarity) between identical twins compared with fraternal twins would argue for heredity. In other words, how often are both twins affected together rather than only one. The evidence favors heredity with figures like 60% (identical) versus 39% (fraternal) in one Scandinavian study.

"Even more interesting are the results from **adoption studies**. When adopted in infancy and studied into adulthood, sons of alcoholics were 4 times as likely to be alcoholic as were sons of non-alcoholics. And this risk was not affected by the alcoholism status of the adopted parent!

"Certainly heredity cannot account for all causation in alcoholism but in that manner it is much like diabetes or heart disease that also have an inherited component."

From **ASK DR. BOB,** published by NCADD and written by Robert M. Morse, MD, former Director of Addictive Disorders Services at the Mayo Clinic, NCADD Board Member and member of NCADD's Medical/Scientific Committee.

For additional information, Learn About Alcohol, Learn About Drugs or Get Help may be helpful.

Genetic factors and family history influence the risk of alcohol and drug dependence being passed down from parents to children.