A National Concern

According to the 2003 National Survey on Drug Use and Health (NSDUH) an estimated 119 million Americans aged 12 or older were current drinkers of alcohol in 2003 (50.1 percent). About 54 million (22.6 percent) participated in binge drinking at least once in the 30 days prior to the survey, and 16.1 million (6.8 percent) were heavy drinkers. Nearly 4 out of 10 violent victimizations involve the use of alcohol, about 4 in 10 fatal motor vehicle accidents are alcohol-involved and about 4 in 10 offenders, regardless of whether they are on probation, in local jail, or in State prison, self-report that they were using alcohol at the time of the current offense. Because their mothers drink during pregnancy, Fetal Alcohol Spectrum Disorders (FASD) affects 1 in 100 live births or as many as 40,000 infants each year. An individual with fetal alcohol syndrome can incur a lifetime health cost of over $800,000. In 2003, fetal alcohol syndrome cost the United States $5.4 billion.

What is Alcohol?

The active ingredient in all alcoholic beverages is ethyl alcohol (ethanol), which is produced by yeast cells acting on carbohydrates in fruits and grains. Fermentation occurs when the yeast breaks down certain starches in the sugars and ethyl alcohol and carbon dioxide are produced. Usually, in the fermentation process when the alcohol content reaches a potency of about 15% the process is over. Ethyl alcohol works much like ether, acting as an anesthetic to put the brain to sleep.

Alcohol is a central nervous system depressant that slows down body functions such as heart rate and respiration. Small quantities of alcohol may induce feelings of well being and relaxation; but in larger amounts, alcohol can cause intoxication, sedation, unconsciousness and even death.

There are three types of alcoholic beverages:

- **Beer** is fermented from grains and contains three to six percent alcohol.

- **Wine** is fermented from fruit and normally contains 12-14% alcohol. Fortified wines have additional alcohol added and contain 18 to 20 percent alcohol. Wine coolers are a mixture of fruit juice, sugar, and red or white wine, and contain four to seven percent alcohol (approximately the same alcoholic content as beer).

- **Liquor** is made from distilled (boiled off) alcohol and contains 40 to 50 percent alcohol. This is expressed as degrees of proof (two proof equals one percent alcohol). For example, 80 proof liquor is 40 percent alcohol.

A standard drink is one 12 ounce beer, one 5 ounce glass of wine, or one 1.5 ounce shot of distilled spirits. Each of these drinks contains about half an ounce of alcohol.

Factors That Influence Alcohol’s Effects

Drinking has different effects on different people, and the same amount of alcohol can affect the same person differently on different occasions. Factors that can influence how alcohol affects people:

- **Amount of Alcohol.** The more alcohol, the stronger the effects. A person may drink beer, wine, or whiskey; what matters is the amount of alcohol that is consumed.

- **Body Weight.** People who weigh more are less affected by the same amount of alcohol than people who weigh less. Alcohol is water-soluble. Heavier people have more blood and water in their bodies, so the same amount of alcohol will be more diluted. Gender also affects the influence of alcohol. Women have a higher proportion of body fat and a lower proportion of water in their bodies than men; therefore, a woman will have a higher blood alcohol content than a man who is of the same weight and who drinks the same amount.
When consumed, alcohol goes to the stomach and passes through to the small intestine, where it is absorbed into the bloodstream. It takes about 30 seconds for the first amounts of alcohol to reach the brain after ingestion. Once there, alcohol acts primarily on nerve cells deep in the brain.

One drink for the average person (a 12-ounce beer, five ounces of wine, or one and one-half ounces of 80-proof whiskey) will create a feeling of relaxation. Two and a half drinks in an hour can affect the drinker's judgment and lower inhibitions. Five drinks in two hours will raise the blood alcohol content (BAC) to .10, the point of legal intoxication in most states. In Florida, the unlawful BAC is .08.

After consumption of this amount of alcohol, the average drinker will experience blurred vision, slurred speech, poor muscle coordination, and a lack of rational judgment. Ten drinks will yield a BAC of .20. It will take 10 hours for the alcohol to be completely metabolized. After more than 12 drinks, the BAC will rise to .30 and the drinker will be in a stupor. A BAC of .40 to .50 will induce coma. A drinker in this condition may be near death because he could vomit and choke while unconscious. Breathing is likely to stop with a BAC of .60. The BAC can be measured by using a breath, urine or blood test. This amount is measured as a percentage -- how many parts of alcohol to how many parts of blood.

Eliminating alcohol from the body is a long process. About 90 percent must be metabolized through the liver. The remaining 10 percent is eliminated through the lungs and urine. It takes about one hour to eliminate one-half ounce of alcohol.

Heavy drinking in a short period of time will often cause a hangover the next day. A hangover is a sign of alcohol poisoning; it is the body's reaction to alcohol withdrawal. Symptoms of a hangover include nausea, disorientation, headache, irritability and tremors.

What is Alcoholism?

Alcoholism is a primary, chronic disease with genetic, psychosocial and environmental factors influencing its development and manifestations. The disease can be progressive and fatal. It is characterized by continuous or periodic impaired control over drinking, preoccupation with the drug alcohol, use of alcohol despite adverse consequences, and distortions in thinking, most notably denial.

Currently there are three different theories to explain alcoholism:

- **Genetic Theory** defines alcoholism as the result of a predisposed reaction to alcohol due to chromosomes, genes or hormonal deficiencies.
- **Psychological Theory** defines alcoholism as a condition that exists in which people have a preset disposition or personality that sets off a reaction to alcohol.
- **Sociological Theory** defines alcoholism as a learned response and believes that addiction is a result of the influences of society.

Whatever definition or theory is used, it is known that alcoholism is a progressive illness that can be treated. Each alcoholic has a different drinking pattern, but the one thing
all alcoholics have in common is an uncontrollable drinking habit.

Alcoholism has three distinct stages:

- **Early Stage.** A person in the early stage of alcoholism uses alcohol as a coping device to relieve tension or escape from problems. The alcoholic must drink more and more to achieve the same effect and has trouble stopping after one drink. The alcoholic makes promises to quit drinking but never follows through.

- **Middle Stage.** An alcoholic in the middle stage of alcoholism cannot get through the day without alcohol and may need a drink in the morning to overcome the "shakes." The middle-stage alcoholic will begin to manipulate others, lie about drinking, and may drink in secret or hide alcohol. It is harder and harder to get the same effects as tolerance increases. Irregular heartbeat, hypertension, loss of appetite, irritability and insomnia are physical and psychological problems at this stage. The alcoholic denies that drinking is a problem.

- **Late Stage.** The alcoholic now lives to drink and avoids and distrusts others. All ambition is lost and the drinker is unable to cope with responsibility and is often absent from work. A late-stage alcoholic may suffer from reverse tolerance: the brain and liver can no longer tolerate a high level of alcohol, so the drinker becomes impaired after even small amounts of alcohol. Malnutrition, nerve dysfunction, loss of memory, mental confusion, impaired vision, hypertension, heart disease and cirrhosis of the liver can occur during this stage. If drinking stops, there are severe withdrawal reactions. Late-stage psychological problems include shame, guilt, severe depression, violent behavior, low self-esteem, loss of control of emotions, loss of concentration and learning ability. At this point, the alcoholic "hits bottom." The alcoholic may continue to drink despite pain or disability. The only viable alternative is to seek treatment.

**Long-Term Effects of Alcohol**

Frequent and prolonged use of alcohol has many detrimental effects on the body. Heavy drinkers develop a tolerance for alcohol, which means that larger amounts of alcohol are needed to get the desired effect.

A drinker is physically dependent if withdrawal symptoms are experienced when alcohol use is discontinued abruptly. Symptoms vary but include delirium tremors (the "DTs"), cramps, vomiting, elevated blood pressure, sweating, dilated pupils, sleep problems, irritability and convulsions. Most of these symptoms will subside in two to three days, though irritability and insomnia may last two to three weeks. Psychological dependence occurs when the drinker becomes so preoccupied with alcohol that it is difficult to do without it.

Short-term memory loss and blackouts are common among heavy drinkers. A blackout, which is an amnesia-like period often confused with passing out or losing consciousness, results when the drinker appears normal and may function normally; however, the person has no memory of what has taken place. Research indicates that blackouts are associated with advanced stages of alcoholism, and there is a correlation between the extent and duration of alcohol consumption during any given drinking episode and the occurrence of blackouts.

**MEDICAL COMPLICATIONS OF HEAVY ALCOHOL USE**

**Gastrointestinal System**

Alcohol acts as an irritant and increases the amount of hydrochloric acid (a digestive juice) that is secreted from the stomach lining. Intoxicating amounts of alcohol cause the digestive process to stop, robbing the body of vital vitamins and minerals.

Alcohol in combination with other stomach irritants such as aspirin can cause gastritis, ulcers and severe bleeding.

**Liver Disorders**

The liver maintains the blood sugar level in the body. This sugar (glucose) is the only source of energy that brain cells can use. When alcohol is consumed, the liver's attention is diverted from maintaining the sugar level to ridding the body of the alcohol, thus denying the brain the energy it needs to function properly.

Liver disorders associated with heavy alcohol use are:

- **Fatty liver,** which gets its name from the deposits of fat that build up in normal liver cells. It is caused by the decreased breakdown of fatty acids by the liver and occurs when 30 to 50 percent or more of the drinker's dietary calories consist of alcohol. Acute fatty liver is reversible if alcohol use is stopped.

- **Alcoholic hepatitis,** which often follows a severe or prolonged bout of heavy drinking. The liver becomes inflamed, damaging many liver cells, and metabolism is seriously disturbed. Symptoms include jaundice (yellowish color of the skin and whites of the eyes), weakness, loss of appetite, nausea, vomiting, low-grade fever, dark urine, and mild weight loss. Alcoholics
hepatitis is usually reversible with abstinence from alcohol. In some drinkers, it can be fatal or can become chronic. Alcoholic hepatitis precedes cirrhosis in some cases.

- **Cirrhosis of the liver**, a condition in which there is major destruction of liver cells and a build-up of scar tissue which blocks the normal flow of blood through the liver preventing it from working as it should. One in 10 long-term heavy drinkers eventually develops cirrhosis of the liver. Cirrhosis is irreversible, but treatment can stop or delay further progression and reduce complications. In all cases regardless of the cause, following a healthy diet and avoiding alcohol are essential. When cirrhosis occurs, the body needs all the nutrients it can get and alcohol only leads to more liver damage. A person cannot live without a functioning liver.

**Heart Disease**

Moderate drinking causes a significant rise in blood pressure. Heavy alcohol use is an important factor in causing high blood pressure and an enlarged heart, which increase the risk of heart attack and stroke. As few as two drinks a day can lead to impaired muscle functioning of the heart.

**Reproduction and Pregnancy**

Effects of heavy alcohol use include missed menstrual periods in women and diminished libido (sexual desire) and possible sterility in men.

A woman who drinks alcohol during pregnancy risks the health of her unborn child. Alcohol passes freely through the placenta, creating a level in the fetus almost identical to that in the mother. Babies whose mothers drank frequently or heavily during pregnancy may be born with serious birth defects. These defects are termed Fetal Alcohol Spectrum Disorders (FASD). The effects of FASD may include physical, mental, behavioral, and/or learning disabilities with lifelong implications.

**Treating Alcoholism**

The sooner alcoholism is detected, the better the chances of recovery. There are several effective treatment methods for alcoholism, and what works for one person may not work for another. Many options should be explored when seeking help. Local or state health organizations can be contacted to find out what treatment alternatives exist in each community.

The important part of seeking treatment is the motivation and determination of the alcoholic to recover. It is also important for the family of the alcoholic to participate in treatment in order to understand the alcoholic’s problems and how family members also have been affected by alcohol.

**References**


**For More Information**

Florida Alcohol and Drug Abuse Association
http://www.fadaa.org

Join Together: http://www.jointogether.org/home/

National Institute on Drug Abuse:
http://www.nida.nih.gov/

Substance Abuse and Mental Health Services Administration, Center for Prevention:
http://prevention.samhsa.gov/

Substance Abuse and Mental Health Services Administration, Center for Substance Abuse Treatment
http://csat.samhsa.gov/

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