

# Impact of Alcoholism and Alcohol Induced Disease on America

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Alcoholism is a serious disease that affects the lives of millions of Americans, devastates families, compromises national preparedness, depresses economic vitality, and burdens the country's health care systems. This disease touches virtually all Americans. More than half of all adults have a family history of alcoholism or problem drinking. Three in ten adults 18 years of age and over have had alcoholism and/or engaged in alcohol abuse at some point in their lives and their drinking will impact their families, communities, and society as a whole. Untreated addiction costs America \$400 billion annually and recent research indicates that alcoholism and alcohol abuse alone cost the nation's economy approximately \$185 billion each year. Fifteen percent of this amount is the cost of medical consequences and alcohol treatment; more than 70 percent is due to reduced, lost and forgone earnings; and the remainder is the cost of lost workforce productivity, accidents, violence, and premature death.<sup>1</sup>

This paper documents the deleterious impact of heavy drinking, alcohol abuse and alcoholism on the United States. As explained more fully below, heavy drinking (defined as having five or more drinks in a single day at least once a week for males, and 4 or more for females), contributes to illness in each of the top three causes of death: heart disease, cancer, and stroke. The Centers for Disease Control and Prevention (CDC) ranks alcohol as the third leading cause of preventable death in the United States.<sup>2</sup> According to the National Institute on Alcohol Abuse and Alcoholism (NIAAA), 3 in 10 U.S. adults engage in at-risk drinking patterns and thus would benefit from counseling or a referral for further evaluation.<sup>3</sup>

The CDC also links excessive alcohol use, such as heavy drinking and binge drinking, to numerous immediate health risks that pose a menace not only to those consuming alcohol, but also to those around them including traffic fatalities, unintentional firearm injuries, domestic violence and child maltreatment, risky sexual behaviors, sexual assault, miscarriage and stillbirth, and a combination of physical and mental birth defects that last a lifetime.

## **HYPERTENSION AND HEART DISEASE**

People who drink alcohol excessively have a one and a half to two times increased frequency of high blood pressure. The association between alcohol and high blood pressure is particularly clear when alcohol intake exceeds 5 drinks per day, and the prevalence of hypertension is doubled at 6 or more drinks per day. Among the risk factors for hypertension that have the potential to be modified, alcohol is second only to obesity in its observed contribution to the prevalence of hypertension in men. These findings have yet to be verified in women.<sup>4</sup> When managing hypertensive patients, however, relevant counseling can bring about a reduction in high blood pressure.

Numerous studies suggest that moderate alcohol consumption (no more than 2 drinks/day for men and 1 drink/day for women) helps protect against heart disease by raising HDL (good)

cholesterol and reducing plaque accumulations in the arteries. Alcohol also has a mild anti-coagulating effect, keeping platelets from clumping together to form clots. Both actions can reduce the risk of heart attack but exactly how alcohol influences either one still remains unclear. On the other hand, consumption of more than three drinks a day has a direct toxic effect on the heart. Heavy drinking, particularly over time, can damage the heart and lead to high blood pressure, alcoholic cardiomyopathy, congestive heart failure, and hemorrhagic stroke. Heavy drinking also impairs fat metabolism and raises triglyceride levels.

## **CANCER AND STROKE**

According to the NIAAA, considerable evidence suggests a connection between heavy alcohol consumption and increased risk for cancer, with an estimated 2 to 4 percent of all cancer cases thought to be caused either directly or indirectly by alcohol.<sup>5</sup> A strong association exists between alcohol use and cancers of the esophagus, pharynx, and mouth, whereas a more controversial association links alcohol with breast cancer. Together, these cancers kill more than 125,000 people annually in the United States.<sup>6</sup>

## **ALCOHOL'S EFFECTS DURING PRENATAL DEVELOPMENT**

Data from the CDC indicate that 12 percent of pregnant women drink alcohol. Approximately one in 100 babies is born with one of the Fetal Alcohol Spectrum Disorders (FASD). Alcohol's effects on the developing brain are life-long and impact many behaviors including motor and sensory skills, social skills, and learning abilities. As individuals with FASD grow up, they are at greater risk for a variety of secondary disabilities including other psychiatric problems, illicit drug use, delinquent or criminal behavior, precocious or risky sexual activity, and academic failure. There is no known stage of pregnancy or quantity of alcohol consumption that is safe during pregnancy.<sup>7</sup> Current research on the effects of early alcohol exposure include not only prevention but also early life interventions, establishing and implementing more effective diagnostic tools, and understanding the mechanisms underlying the tragic outcomes associated with FASD.

## **TRAUMA AND BURNS**

Alcohol plays a significant role in trauma by increasing both the likelihood and severity of injury. Alcohol abusers are more likely than sober persons to be involved in a trauma event – i.e. heavy drinkers have a higher risk for accidents than non-drinkers.<sup>8</sup> Given similar circumstances, a drinker is also likely to be hurt more seriously than a non-drinker. Moreover, an estimated 27 percent of all trauma patients treated in emergency departments and hospitals are candidates for a brief alcohol intervention.<sup>9</sup>

Alcohol exposure can also alter inflammatory responses and immune function and this can be exacerbated if there is an existing or concurrent injury. Research suggests that chronic heavy drinking depresses estrogen levels, nullifying estrogen's beneficial effects on the immune system and weakening a woman's ability to fight infections and tumors. Additionally, some research suggests that this detrimental effect may be compounded by an alcohol-induced elevation in steroidal hormones, known as glucocorticoids, which suppress immune responses in both men and women.<sup>10</sup>

## **DOMESTIC VIOLENCE AND CRIMES**

The relationship between alcohol or other substance abuse and domestic violence is complicated. Frequently either the perpetrator, the victim or both have been using alcohol heavily. According to the National Woman Abuse Prevention Project, some abusers rely on substance use (and abuse) as an excuse for becoming violent. Alcohol allows the abuser to “justify” abusive behavior. While an abuser's use of alcohol may have an effect on the severity of the abuse or the ease with which the abuser can justify their actions, an abuser does not become violent “because” drinking causes them to lose control of their temper.

According to the 1998 Department of Justice Report on Alcohol and Crime, alcohol abuse was a factor in 40 percent of violent crimes committed in the United States. About 3 million violent crimes occur each year in which victims perceive the offender to have been drinking at the time of the offense. Among those victims who provided information about the offender's use of alcohol, about 35 percent of the victimizations involved an offender who had been drinking. About two-thirds of the alcohol-involved crimes were characterized as simple assaults. Two-thirds of victims who suffered violence by an intimate (a current or former spouse, boyfriend, or girlfriend) reported that alcohol had been a factor. Among spouse victims, 3 out of 4 incidents were reported to have involved an offender who had been drinking. By contrast, an estimated 31 percent of stranger victimizations where the victim could determine the absence or presence of alcohol was perceived to be alcohol-related.

## **AUTOMOBILE RELATED ACCIDENTS**

In 2006, 13,470 people were killed in alcohol-impaired-driving crashes. These alcohol-impaired-driving fatalities accounted for 32 percent of the total motor vehicle traffic fatalities in the United States; and represented an average of one alcohol-impaired-driving fatality every 39 minutes. Traffic fatalities in alcohol-impaired-driving crashes fell by 0.8 percent, from 13,582 in 2005 to 13,470 in 2006, almost the same as the 13,451 alcohol-impaired-driving fatalities reported in 1996. Drivers are considered to be alcohol-impaired when their blood alcohol concentration (BAC) is .08 grams per deciliter (g/dL) or higher.<sup>11</sup>

In 2006, 1,794 children age 14 and younger were killed in motor vehicle crashes in the US. Of those 1,794 fatalities, 306 (17 percent) occurred in alcohol-impaired driving crashes. Children riding in vehicles with drivers who had a BAC level of .08 or higher accounted for half (153) of these deaths. Another 45 children age 14 and younger who were killed in traffic crashes in 2006, were pedestrians or pedalcyclists who were struck by drivers with a BAC of .08 or higher.<sup>11</sup>

## **UNDERAGE DRINKING**

According to the NIAAA, approximately 5,000 people under the age of 21 die as a result of underage drinking each year; this includes about 1,900 deaths from motor vehicle crashes, 1,600 as a result of homicides, 300 from suicide, as well as hundreds from other injuries such as falls, burns, and drownings.<sup>12-16</sup>

The NIAAA, along with the National Institute on Drug Abuse (NIDA), and the Substance

Abuse & Mental Health Services Administration (SAMSHA), have conducted research that demonstrates that substance abuse is particularly problematic in younger adolescents because it is the time when individuals are most vulnerable to addiction. According to the CDC, people aged 12 to 20 years drink almost 20 percent of all alcohol consumed in the United States. The NIAAA's *National Epidemiologic Survey on Alcohol-Related Conditions* (NESARC) found that 18 million Americans (8.5 percent of the population age 18 and older) suffer from alcohol use disorders (AUD), and only 7.1 percent of these individuals have received any treatment for their AUD in the past year.

NIAAA's NESARC survey sampled across the adult lifespan to allow researchers to identify how the emergence and progression of drinking behavior are influenced by changes in biology, psychology, and exposure to social and environmental inputs over a person's lifetime. Scientists at NIH are supporting research to promulgate pre-emptive care for fetuses, early childhood, and adolescents because children who engage in early alcohol use also typically display a wide range of adverse behavioral outcomes such as teenage pregnancy, delinquency, other substance use problems, and poor school achievement.

In 2006, 30 percent of high school seniors reported exposure to a drinking or drugged driver in the past 2 weeks, down from 35 percent in 2001. Exposure was demonstrated to be widespread as defined by demographic characteristics (population density, region of the country, socioeconomic status, race/ethnicity, and family structure). Individual lifestyle factors (religiosity, grade point average, truancy, frequency of evenings out for fun, and hours of work) showed considerable association with the outcome behaviors.<sup>17</sup>

### **SPECIAL POPULATIONS: ACTIVE MILITARY AND VETERANS**

The prevalence of heavy drinking is higher in the military population (16.1 percent) than in a similar age and gender civilian population (12.9 percent). About one in four Marines (25.4 percent) and Army soldiers (24.5 percent) engages in heavy drinking; such a high prevalence of heavy alcohol use may be cause for concern about military readiness. Furthermore, the Army showed an increasing pattern of heavy drinking from 2002 to 2005. According to the Department of Defense's (DoD) *2005 Survey of Health Related Behaviors among Active Duty Military Personnel*, these patterns of alcohol abuse, which are often acquired in the military, frequently persist after discharge and are associated with the high rate of alcohol-related health disorders in the veteran population

### **COSTS TO BUSINESSES AND ECONOMIC PRODUCTIVITY**

Employee alcohol use causes a variety of problems. It reduces productivity, impairs job performance, increases health care costs and can threaten public safety. Because 85 percent of heavy drinkers work, employers who aggressively address this problem can improve their employees' health while improving company performance. The federal government estimates that 8.9 percent of full-time workers (12.7 million people) have drinking problems. Alcohol costs American business an estimated \$134 billion in productivity losses, mostly due to missed work; 65.3 percent of this cost was caused by alcohol-related illness, 27.2 percent due to premature death, and 7.5 percent to crime. People with alcoholism use twice as much sick leave as other employees. Individuals with alcoholism are also five times more likely to file workmen's

compensation claims and they are more likely to cause injuries to themselves or others while on the job.<sup>18-24</sup>

## **COSTS TO HEALTH PLANS**

About 80 percent of people with alcohol problems work, yet fewer than 25 percent of those who need treatment get it. Untreated alcohol problems cost employers in several ways--greater health care expenses for injuries and illnesses, higher absenteeism, lower productivity, and more workers' compensation and disability claims. Research has shown that alcoholism treatment that is tailored to an individual's needs could be cost-effective for employers. Treatment substantially reduces drinking among people with alcoholism, and 40 to 60 percent of those treated for addiction remain abstinent after a year. By providing comprehensive health benefits that cover treatment for alcohol use disorders, employers can reduce their health care and personnel costs as well as contribute to employees' well-being and productivity.<sup>25</sup>

## **CONCLUSION**

While the high rates of use and abuse of alcohol are devastating problems of national importance, the good news is that this nation is poised to capitalize on unprecedented opportunities in alcohol research and prevention. These opportunities must be seized. Scientists are exploring new and exciting ways to prevent alcohol-associated accidents and violence and more prevention trials are developing methods to address problem alcohol use. Medications development is proceeding faster than anytime in the past 50 years, with many new compounds being developed and tested. Furthermore, researchers have identified discrete regions of the human genome that contribute to the inheritance of alcoholism. Improved genetic research will accelerate the rational design of medications to treat alcoholism and also improve understanding of the interaction and importance of heredity and environment in the development of alcoholism.

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