

**Alcohol,
Drug Abuse,
and Mental
Health
Research**

Toward More
Effective
Prevention and
Treatment

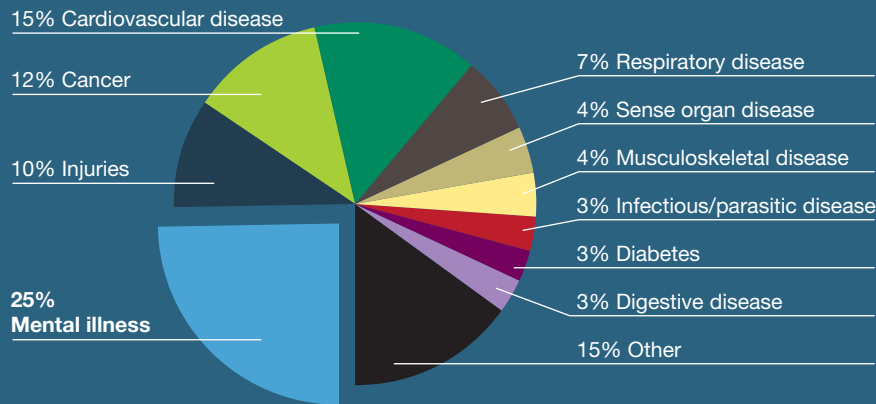


RESEARCH

MENTAL DISORDERS

Healthy Years Lost to Disability and Death

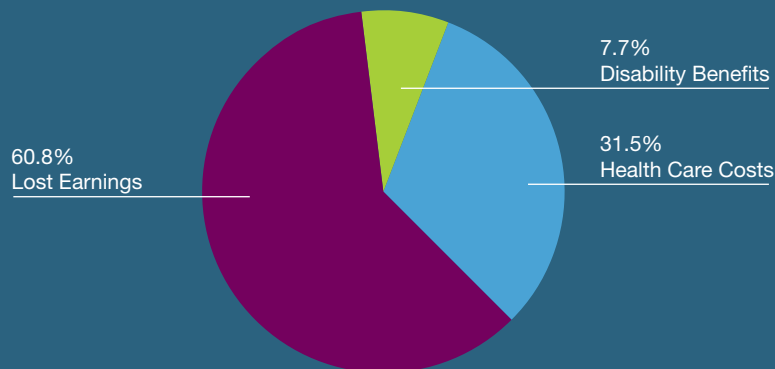
In one year, U.S. and Canada



REFERENCE: The World Health Organization. *The World Health Report 2004: Changing History, Annex Table 3: Burden of disease in DALYs by cause, sex, and mortality stratum in WHO regions estimates for 2002.* Geneva, Switzerland: The World Health Organization, 2004.

Cost of Serious Mental Illness

\$318 Billion a Year



REFERENCES:

Insel TR, Assessing the economic cost of serious mental illness. *Am J Psychiatry.* 2008 Jun;165(6), 663-665.

Kessler RC, Heeringa S, Lakoma MD, Petukhova M, Rupp AE, Schoenbaum M, Wang PS, Zaslavsky AM. Individual and societal effects of mental disorders and earnings in the United States: Results from the National Comorbidity Survey Replication. *Am J Psychiatry.* 2008 Jun;165(6), 703-711.

Mark TL, Levit KR, Coffey RM, McKusick DR, Harwood HJ, King EC, Bouchery E, Genuardi JS, Vandivort-Warren R, Buck JA, Ryan K. National expenditures for mental health services and substance abuse treatment. Rockville, MD: United States Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. 2007

ALCOHOL ABUSE

The Emerging Face of Alcohol Dependence

Recent NIAAA research has led to a much broader and accurate view of those Americans who suffer from alcohol dependence. Subgroups of alcoholics have emerged that were previously undetected, or underestimated, because few individuals in these groups sought treatment. This picture counters the perception that a ‘typical alcoholic’ is a dysfunctional individual affected by chronic relapses. Adolescents and young adults, for example, rarely seek help for their drinking but comprise the largest group of alcoholics in the U.S. Also, nearly 20 % of alcoholics were found to be highly functional and well-educated, with good incomes and stable families; more than 4/5ths of this group do not seek treatment. Individuals in other subgroups make up the more severe end of the spectrum of alcohol abuse. They are more likely to have other psychiatric disorders and substance abuse problems, and are more likely to seek treatment. As a result, they have been the most common group in treatment focused studies.

Improving Treatment Options

Increased understanding of alcohol dependence is driving new approaches to treatment. Given that the majority of alcohol dependent individuals do not seek treatment, research is evaluating efforts in settings other than alcohol treatment facilities. Of particular importance is integrating alcohol screening and treatment into




routine health care, especially for those individuals at the less severe end of the alcohol dependence spectrum. In addition, research is informing the development of new medications that act on different pathways in the brain. New information defining the subtypes of alcoholic dependence, in conjunction with accumulating knowledge on the influence of genetic makeup, epigenetic changes in gene expression, and life stage is enabling the development of personalized behavioral interventions and medical treatments.

Key Issues in Underage Drinking

Alcohol is the drug of choice among young people. During adolescence, a period of dramatic biological, social and environmental changes, drinking, binge drinking (drinking five or more drinks on one occasion) and heavy drinking (binge drinking five or more times in the past 30 days) all ramp up significantly. Importantly, underage drinking is associated with a range of negative consequences such as problems in school, risky sexual behavior, assaults and injuries, and even death. In addition, the developing adolescent brain may be particularly vulnerable to the adverse effects of alcohol. The fact that so many youth drink—many of them heavily—coupled with the serious consequences that can occur underscores the need to screen children and adolescents at risk, and for early intervention.

U.S. Adult Drinking Patterns

Nearly 3 in 10 U.S. adults engage in at-risk drinking patterns and would benefit from reducing their intake of alcohol. As noted below, the prevalence of alcohol use disorders rises with heavier drinking, and for those who exceed the recommended limits, cutting down is a wise first step. It is not risk free, however, as motor vehicle crashes and other problems can occur at lower drinking levels.

What’s your drinking pattern?	How common is this pattern?	How common are alcohol disorders in drinkers with this pattern?
<p>Based on the following limits—number of drinks: On any DAY—Never more than 4 (men) or 3 (women); and in a typical WEEK—No more than 14 (men) or 7 (women)</p>	Percentage of U.S. adults aged 18 or older*	Combined prevalence of alcohol abuse and dependence
<p>Never exceed the daily or weekly limits (2 out of 3 people in this group abstain or drink fewer than 12 drinks a year)</p>		fewer than 1 in 100
<p>Exceed only the daily limit (More than 8 out of 10 in this group exceed the daily limit <i>less than once a week</i>)</p>		1 in 5
<p>Exceed both daily and weekly limits (8 out of 10 in this group exceed the daily limit <i>once a week or more</i>)</p>		almost 1 in 2

*Not included in the chart, for simplicity, are the 2 percent of U.S. adults who exceed only the weekly limits. The combined prevalence of alcohol use disorders in this group is 8 percent.

DRUG ABUSE

The Neurobiology of Drug Craving: Helping Smokers Kick the Habit

Many smokers have difficulty quitting and those who do experience powerful cravings and often relapse. A recent study monitoring the quit histories of smokers with various brain injuries found that smokers with damage to a part of the brain called the insula were much more likely to quit easily and to remain abstinent than smokers with damage to other brain areas. This suggests that the insula may play an important role in regulating urges, and adds to our knowledge of brain regions involved in smoking cessation. Such findings create new targets for research into the neurobiology of drug craving and the development of effective smoking cessation medications.

Drug Use by Students: Recent Trends

Results from NIDA's 2008 Monitoring the Future Survey are encouraging. Overall drug abuse continues to decline among teens—down 25 percent over the past 7 years. Further, cigarette smoking continues to fall across all grade levels and is currently at the lowest rate in the survey's history. Concerns, however, remain. Previously noted declines in marijuana are leveling off and prescription drug abuse remains problematic. In 2008, 15.4% of 12th graders reported using a prescription drug for non-medical purposes within the past year. In fact, prescription or over-the-counter drugs (e.g., cough syrup) account for 7 out of 11 of the most frequently abused drugs by 12th graders. Vicodin, a prescription painkiller, continues to be abused by nearly 10% of 12th graders.

New Directions in Treatment: “Neurofeedback” From Brain Images.

Drug abuse and addiction can severely disrupt the “thinking” and decision-making circuits in the brain which contribute to the compulsive features of addiction. Research that focuses on identifying and developing interventions that strengthen the brain circuits involved in inhibitory control are of great interest. Non-invasive brain stimulation and imaging may prove to be novel therapeutic tools in this effort. Researchers are exploring the use of “neurofeedback,” where patients learn to regulate neural activity in specific brain regions by getting pictorial representations from the activity in those areas fed back to them in real-time. Though not yet demonstrated for addiction, this technique has shown promising results for altering the perception of pain in healthy adults and chronic pain patients. With further research, this approach could evolve into a powerful psychotherapeutic intervention to mitigate addiction related impairment.

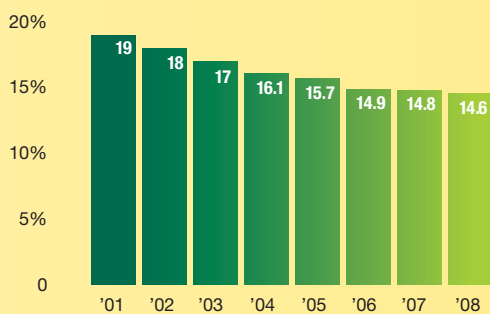
Advances in Neuroscience: Immunotherapy

Much research on medications development for drug abuse and addiction has focused on the brain reward system and the role of the neurotransmitter dopamine. Therapeutic approaches are now also focusing on other brain circuits and neurotransmitter systems. Immunotherapy, which focuses on developing drug specific vaccines, is emerging as an exciting alternative treatment strategy. Unlike conventional small molecule therapy, which targets the neural pathways/receptors involved in drug addiction, immunotherapy targets the

Good News

Percent of students reporting past month use of any illicit drug has decreased.

25% Decline 2001 to 2008*



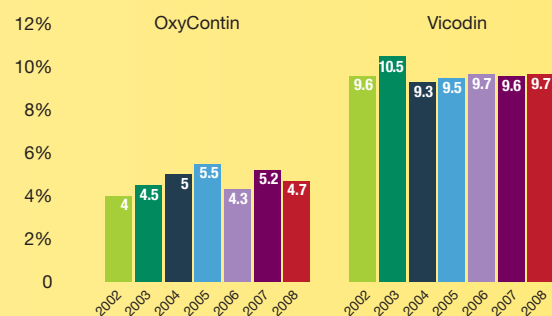
*P < .001

SOURCE: University of Michigan, 2008 Monitoring the Future Study

Troubling News

Percent of 12th graders reporting nonmedical use of oxycontin and vicodin in the past year remained high.

No year-to-year differences are statistically significant



MENTAL DISORDERS

PTSD: Exploring the Consequences of Stress and Trauma

From natural disasters to military conflict, researchers from the National Institute of Mental Health (NIMH) are examining the complex manifestations of severe stress and trauma on emotional and physical well-being. Substantial progress has been made in understanding the neurobiological foundations of Post-Traumatic Stress Disorder (PTSD), an anxiety disorder that can develop after personal exposure to a terrifying event that threatens death or injury. NIMH research has led to a clearer understanding of the brain's fear circuitry, making the prediction and prevention of PTSD a realistic goal. Research is also improving the ability to mitigate the severe consequences of PTSD, among them increased rates of suicide and alcohol and drug abuse.

The consequences of PTSD are a special concern for our military veterans—particularly those just returning from combat. Researchers from the National Institute on Drug Abuse (NIDA) are focusing on ways to apply innovative strategies and new technologies to the prevention and treatment of substance abuse in military populations. NIMH, in collaboration with the U.S. Army, is conducting a major study among soldiers with the aim of identifying risk and protective factors for suicidal thinking and behavior, an area of increasing concern. The National Institute on Alcohol Abuse and Alcoholism (NIAAA), along with other NIH Institutes and U.S. military agencies, is collaborating in developing a comprehensive research agenda for addressing substance abuse and comorbidities among military personnel, veterans and their families.

Autism Spectrum Disorders (ASD)

As many as 1 in 150 children are estimated to suffer from ASD, a continuum of brain disorders characterized by impairments in communication and social interactions, and restricted, repetitive, and stereotyped patterns of behavior. NIMH, through its leadership of the Federal Interagency Autism Coordinating Committee, its support for the Autism Centers of Excellence program, and its ongoing basic and clinical research, is firmly placed in the forefront of the national effort to address the causes, treatment, and prevention of ASD. Recently, NIMH supported research has focused on examining genetic mutations in ASD and the ways in which they influence the developing brain. Such research holds promise for a clearer understanding of the genetic and neuronal mechanisms which underlie ASD.

Bipolar Disorder

Recent research has substantially increased our understanding of the neurobiological underpinnings of bipolar disorder, a complex disease affecting nearly 6 million Americans, and characterized by extreme shifts in mood, energy, and ability to function. NIMH supported research of the largest study of its kind has discovered that variations in two genes that regulate the balance of sodium and calcium in brain cells may play an important role in the development of the disorder. The knowledge that bipolar disorder, at least in part, may stem from malfunction of ion channels in the brain not only expands our understanding of possible risk factors for the disorder, but also enhances opportunities for the development of new prevention and treatment strategies.

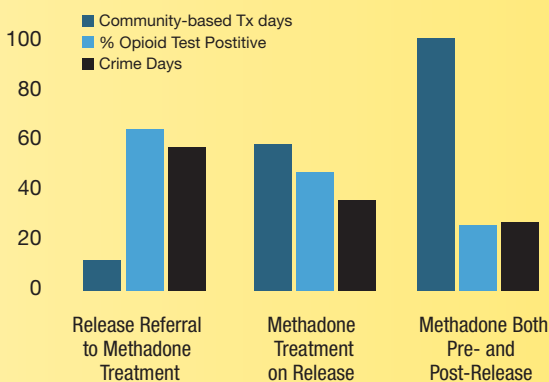
drug itself. By causing the body to generate antibodies that bind specific drugs while they're still in the bloodstream, addiction immunotherapies block the drug's entry into the brain. The resulting reduction of reinforcing effects is expected to prevent relapse. Cocaine and nicotine vaccines have already demonstrated effectiveness, and a methamphetamine vaccine is under development.

Treatment Reduces Drug Use and Recidivism

Nearly half of the 8 million adults involved in the criminal justice system meet criteria for drug abuse or dependence. Yet few of these offenders receive drug treatment during or after their incarceration, contributing to high rates of recidivism and re-arrest. Further, a recent study reported that untreated offenders had significantly higher death rates shortly after their release than other state residents, and that drug overdose accounted for 70 percent of those deaths. It has been shown, however, that drug abuse treatment in the criminal justice system works. Recent research demonstrates that methadone maintenance begun in prison improved outcomes for treatment retention in heroin addicted prisoners while reducing heroin use and criminal activity after release.

Medications are an Important Part of Treatment

Methadone experiment: 6 month post release (N=201)



SOURCE: Gordon, Kinlock, Schwartz, O'Grady (2008). *Addiction. A Randomized Clinical Trial of Methadone Maintenance for Prisoners: Findings at 6-Months Post-Release.*

The burden of alcohol, substance abuse, and mental disorders continues to exact an enormous economic and human toll in America.

Mental disorders alone are the leading cause of disability in the United States, accounting for nearly 30% of all years of life lost to disability and premature mortality. In a given year, an estimated 13 million adult Americans (about 1 in 17) have a seriously debilitating mental illness, and suicide, the 11th leading cause of death in the United States, accounts for the deaths of some 30,000 Americans each year. The economic burden of serious mental illness, excluding incarceration, homelessness, comorbid conditions, and early mortality is estimated to reach \$317.6 billion.

In 2006 more than 18 million people in the United States ages 12 and over were estimated to suffer from **alcohol abuse** or dependence with fewer than 7% receiving any form of treatment. Nearly 80,000 alcohol related deaths occur annually, making alcohol use the third leading cause of preventable death in the U.S.

Estimates of the total overall costs of **drug abuse** in the United States—including health- and crime-related costs as well as losses in productivity—exceed half a trillion dollars annually. Approximately \$181 billion of this is accounted for by illicit drug use, \$168 billion by tobacco use, and \$185 billion by alcohol use. Beyond economic costs, these disorders tear at the fabric of society, contributing to the spread of infectious diseases, family disintegration, loss of employment, school failure, domestic violence, child abuse and a host of other ills.

At the heart of the effort to develop more effective prevention and treatment interventions for alcohol, drug abuse, and mental disorders is our nation's investment in basic and clinical research. The advances resulting from this research—in **genetics, neuroscience and behavioral science**—continue to expand our understanding of how the brain, behavior, and the environment interact, and of the complexities of individual risk and vulnerability.

American psychiatric Association Division of Research and Division of Government Relations
1000 Wilson Blvd., Suite 1825 | Arlington, VA 22209 | www.psych.org | 703-907-7355



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