Addiction is a Chronic Disease

Chapter 2

Addiction is a chronic illness that can be managed successfully.

Historically, addiction or dependence on alcohol, tobacco, or other drugs has been viewed as a sign of moral failure, not an illness that can be treated. In reality, addiction is a chronic illness that can be managed successfully. Before considering the current state of the North Carolina substance abuse system and how it might be improved, it is important to understand what scientists currently know about addiction and substance abuse, including its causes, risk factors, physiologic effects, and—most critically—how to treat it successfully.

Substance Abuse Disorders

Although some substances are patently illegal, others are illegal only for certain age groups (e.g. alcohol and tobacco), while others are legal *per se* but are misused (e.g. prescription drugs, prescription cough syrup, aerosol cans used for huffing).[a] Some are drugs while others are best considered substances. For the purposes of this report, "substances" will be the generic term used to describe drugs, alcohol, and other substances.

Modest use of some of these substances may not pose a public health problem. For example, some studies suggest that very moderate use of alcohol not only has few adverse health effects but may, in some circumstances, improve health (e.g. occasional consumption of a glass of red wine).[1-3] It is important to differentiate between *abuse* and *dependence*. *Abuse* refers to misuse of a substance (usually in terms of quantity/frequency) which puts the individual at risk of a variety of harms (e.g. injury, job loss, family disruption, sexual assault, and a host of medical conditions). One example would be binge drinking. *Dependence*, however, entails an emotional and physiological dependence on the substance in which the individual loses control over alcohol use or drug-taking behavior despite the adverse, and often very dramatic, consequences in his or her life.[4] This is commonly called addiction.

In the past, many people have blamed individuals for their addition disorders. A 1998 editorial in the *American Journal of Psychiatry* acknowledged this history and pointed out how much remains to be done:

> American psychiatry has made remarkable progress in recategorizing the addictive disorders from moral failures to brain diseases, but the need for community education continues. The concept of moral failure is by no means gone from the discussion of addictive disorders, as evidenced by our country's investment in criminal justice rather than treatment, including the denial of health insurance parity for addictive disorders and the court ruling that alcoholism among military personnel was "willful misconduct," not a disease.[5]

a Huffing is defined as the intentional inhalation of toxic chemicals or substances with the purpose of becoming intoxicated.

Despite this widespread perception that substance abuse and addiction represent a failure of an individual's morals, scientists now know that drug addiction is, in fact, a brain disorder.[4] Although this disorder is triggered by the use of substances, there are predisposing genetic and environmental factors that can make some people more susceptible to addiction. Genetics accounts for approximately one-half of the likelihood that an individual becomes an addict, a finding similar to other chronic illnesses (See Table 2.1).[b,6] Use of addictive substances brings satisfaction to the user while creating physical changes in a specific brain circuit. Over time, most substances yield ever lower levels of satisfaction as they alter the physiology of the brain. Physiologic effects from substance abuse may endure for long periods after the substance use is curtailed. For example, the brain activity of a monkey that is cocaine-abstinent for 227 days is more like one that is abstinent for 3 days than of one that has never been exposed to cocaine.[4] That is, changes induced by long-term drug use far outlast drug use. This highlights the importance of avoiding exposure to these substances in the first place as well as interventions that take the brain physiology of addiction into account by trying to curtail drug use as soon as possible after it starts.

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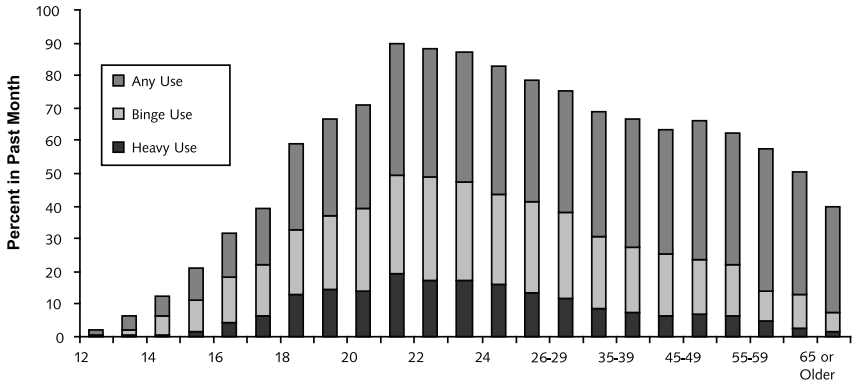
The late development of the prefrontal cortex region of the brain is an additional physiologic consideration that is important in the development of drug use in adolescents. This is the section of the brain that controls long-term decision making such as the trade-off between a small reward now (e.g. getting high) and a large reward in the future (e.g. going to college). This region of the brain typically does not fully develop until around age 25, so adolescents are particularly vulnerable to the allure of drug use. In addition, substance abuse can actually alter the normal maturation of the brain. Thus, the brains of young people respond differently to drugs than the brains of adults. The younger drug use starts, the greater the likelihood of addiction.

Recent findings about how the adolescent brain develops make it clear that adolescents and young adults are at highest risk for addiction if they begin abusing drugs. Young adults have the highest rates of alcohol use while adolescents and young adults have the highest rates of current drug use (i.e. drug use in the previous month). (See Charts 2.1 and 2.2.)

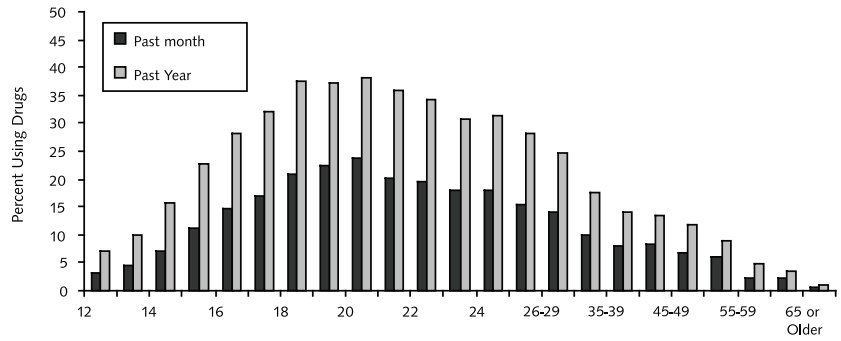
b Scientists ascertain the degree to which a disease is genetically determined by comparing outcomes among identical twins. These twins studies conclude that genetics plays a similar role for substance abuse addiction disorders, asthma, type 2 diabetes, and hypertension, leading to between roughly one-third and one-half of the total causes of the disease.

Chart 2.1
Use of Alcohol is Highest Among Young Adults



Source: Substance Abuse and Mental Health Services Administration. *Results From the 2006 National Survey on Drug Use and Health: National Findings.* Rockville, MD: Department of Health and Human Services; 2007. DHHS publication SMA 07-4293.

Chart 2.2
Use of Drugs is Highest Among Adolescents and Young Adults

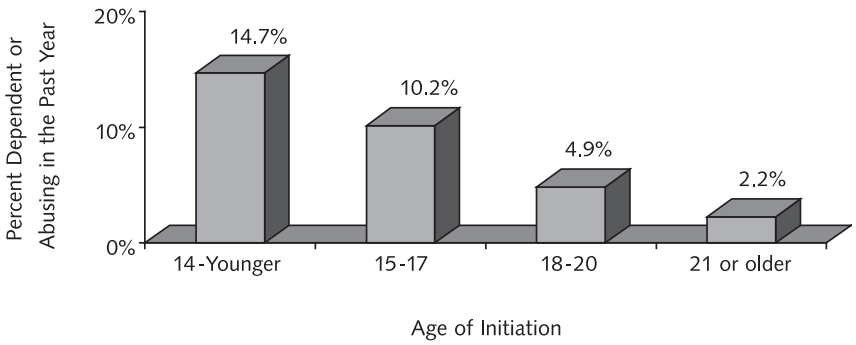


Source: Substance Abuse and Mental Health Services Administration. *Results From the 2006 National Survey on Drug Use and Health: National Findings.* Rockville, MD: Department of Health and Human Services; 2007. DHHS publication SMA 07-4293.

Young adults have the highest rates of alcohol use while adolescents and young adults have the highest rates of current drug use.

More disturbing is the effect early use has on long-term addiction. As an example, the age at first use of alcohol or drugs is closely associated with the likelihood of abuse or drug dependence later in life. (See Chart 2.3) Approximately one-sixth (14.7%) of adults age 21 or older who reported alcohol abuse or dependence in the past year (2007) first began using alcohol at age 14 whereas less than 3% first began using alcohol after age 21. Similarly, adults who first smoked marijuana at age 14 or younger were more likely to report being addicted to illicit drugs than were those

Chart 2.3
Early Initial Use of Alcohol is Associated with Higher Risk of Abuse or Dependence



Source: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration. Results from the 2007 National Survey on Drug Use and Health: National Findings. http://www.oas.samhsa.gov/nsduh/2k7nsduh/2k7Results.pdf.[7]

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who first smoked marijuana after age 18. The combination of high prevalence of use and abuse and the inherent vulnerability of the adolescent brain suggests that targeting prevention efforts specifically at adolescents may be the most effective use of scarce prevention dollars.

Treating Substance Abuse as a Chronic Illness

There is a common misconception that treatment for substance use disorders does not work. This is because individuals with substance use disorders are generally not permanently "recovered" even after undergoing an episode of treatment. Many individuals with addiction disorders experience periods of decreased use and/or sobriety during treatment, followed by relapse into use or abuse. It may take an average of 5-7 serious attempts for sobriety to persist. The percentage of those who are able to maintain abstinence drops from 100% to 70% within the first month and to 40% by the end of the third month post-treatment. People seeking treatment may experience a number of periods of relapse before they gain the motivation and build the skills needed to resist substance use and to replace substance-using activities with constructive behaviors. They may need to establish new relationships before being able to live for long periods of time in recovery. If viewed from the perspective of the acute care model—where health problems are treated and cured (e.g. penicillin for strep infection)—this pattern of addiction, treatment, recovery, relapse, and later treatment would rightly be categorized as a failure. However, this chronic relapsing pattern is not surprising or unexpected if we view addiction disorders as we do other chronic illnesses.

Scientists and healthcare professionals who study brain chemistry and addiction disorders have now recognized that addiction is a *chronic, relapsing disease with no complete cure*.[8] These chronic diseases can not be cured in the acute care sense. Instead, the goal of treatment is to *manage* them so that the burden on the individual—and to the healthcare system, the workplace, and society in general—is minimized.

Addiction is like other chronic diseases such as diabetes, high blood pressure, and asthma. While the ultimate goal is to help the people live without alcohol, tobacco, or other substances, the more immediate goal is to decrease use per episode or increase the length of time between episodes of use. This will, in turn, have positive impacts on a person's health status and help improve functioning (including avoiding legal problems, keeping a job, and improving family dynamics). This approach is similar to the approach used to treat people with other chronic diseases such as diabetes. There is no cure for diabetes. Instead, the immediate goal is to help people manage their diabetes so they minimize the negative impact of their disease on their body to avoid complications such as heart disease, blindness, kidney failure, or amputation of feet and legs. The goal of any chronic disease system of care is to help people manage their chronic condition, prevent the acute symptoms of their disease, and reduce longer term complications. However, unlike other chronic illnesses which primarily affect the individual and his or her family, addiction also causes significant harm to the public (i.e. motor vehicle fatalities, increased criminal activities, incidents of child abuse, and lost worker productivity). Thus, it is all the more important to help people effectively manage their addiction disorders.

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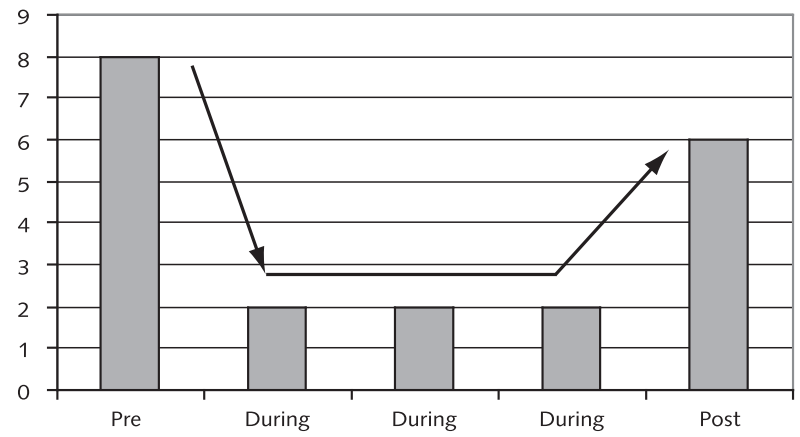
Understanding that addiction is a chronic illness is important when evaluating the effectiveness of individual treatment or the substance abuse treatment system as a whole. For example, assume that a person was being treated for any other chronic illness. Prior to the treatment, this individual had a high level of symptoms. During treatment, the symptoms were diminished as shown in Chart 2.4. This suggests that treatment is effective and is the kind of evidence the Federal Drug Administration (FDA) looks for when evaluating new drugs and other therapies. For most therapies, the increase in symptoms after the treatment is stopped (post) is further evidence that treatment is effective. Unfortunately, this is not how we have viewed substance abuse treatments. Even though drug use diminishes during treatment, if it reoccurs after treatment, we take that as evidence that treatment has failed. This curious dichotomy between how we view most treatments and how we view substance abuse treatment has led us to believe that substance abuse treatment is ineffective even though it is just as effective, or even more effective, than treatments for diabetes, hypertension, and asthma.

Chart 2.4
Chronic Care Treatment Outcomes



Source: McLellan T. Reconsidering addiction treatment: have we been thinking correctly? Presentation to the North Carolina Joint Legislative Oversight Committee on Mental Health, Developmental Disabilities, and Substance Abuse; October 31, 2007; Raleigh, NC.

People with substance abuse disorders have similar adherence and relapse rates as those with asthma, type 2 diabetes, or hypertension

Treatment for any chronic illness, including substance abuse disorders, is much more effective if the patient adheres to the treatment protocol, prescribed medications, and recommended follow-up care. Many think that people with substance abuse disorders are less likely to adhere to their treatment regimens and more likely to relapse than people with other chronic illnesses. However data do not support this conclusion. People with substance abuse disorders have similar adherence and relapse rates as those with asthma, type 2 diabetes, or hypertension (See Table 2.1). Adherence rates may vary widely across specific types of treatments (e.g. adherence to medication is generally higher than adherence to treatments like diet and/or exercise), but adherence is generally similar across all types of chronic illnesses. Furthermore, factors decreasing adherence to treatment—such as poverty, lack of family support, and co-occurring psychiatric conditions—are similar across all four diseases.

Table 2.1
Substance Abuse Similarity to Other Chronic Diseases in Adherence to Treatment, Relapse, and Genetic Heritability

Chronic Disease	Substance Abuse	Asthma	Diabetes	Hypertension
Adherence	~60%	60%	<40%	<40%
Relapse/Recurrence	40% - 60%	50% - 70%	30% - 50%	50% - 70%
Genetic Inheritability	0.34 - 0.61	0.36 - 0.70	0.30 - .55	0.25 - 0.50
Controllable Risk Factors?	Yes	Yes	Yes	Yes
Uncontrollable Risk Factors?	Yes	Yes	Yes	Yes
Cure?	No	No	No	No
Clear Diagnostic Criteria?	Yes	Yes	Yes	Yes
Research-based Treatment Guidelines and Protocols?	Yes	Yes	Yes	Yes
Effective Patient and Family Education?	Yes	Yes	Yes	Yes
Parity With Other Medical Conditions?	No	Yes	Yes	Yes

Sources: McLellan AT, Lewis DC, O'Brien CP, Kleber HD. Drug dependence, a chronic medical illness: implications for treatment, insurance, and outcomes evaluation. *JAMA*. 2000;284(13):1689-1695. Gilmore JD, Lash SJ, Foster MA, Blosser SL. Adherence to substance abuse treatment: clinical utility of two MMPI–2 scales. *J Pers Assess*. 2001;77(3):524–540. Comparisons among alcohol-related problems, including alcoholism, and other chronic diseases. Ensuring Solutions to Alcohol Problems, George Washington University Medical Center Web site. http://www.ensuringsolutions.org/usr_doc/Chronic_Disease_Comparison_Chart.pdf. Accessed September 28, 2007.

Creating successful treatment systems for people with addiction disorders will require a paradigm shift, one that recognizes and treats addicts the same as any other person with a chronic illness.

The fact that addicts are treated differently, despite the similar adherence and relapse rates, is evidence that addicts have not been dealt with fairly. A treatment failure for any other chronic condition would be a reason to change treatment options or increase the intensity of treatment. No one would tell someone with a second heart attack that he could not have any more treatment because he didn't change his eating or exercise habits. However, recovering addicts who lapse or relapse back into drug use are routinely excluded from treatment programs. Creating successful treatment systems for people with addiction disorders will require a paradigm shift, one that recognizes and treats addicts the same as any other person with a chronic illness.

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