

# Drug Use and Misuse:

A Community  
Health  
Perspective

Christy Bazan • Brandi Barnes • Ryan Santens • Emily Verone



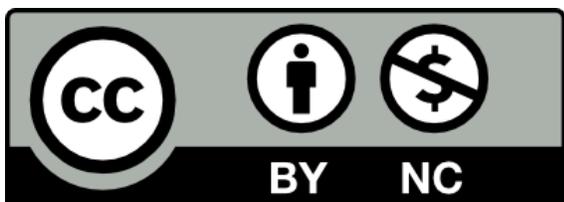
## Drug Use and Misuse

# Drug Use and Misuse

*A Community Health Perspective*

*CHRISTY BAZAN; BRANDI BARNES; RYAN SANTENS; AND EMILY  
VERONE*

WINDSOR & DOWNS PRESS  
CHAMPAIGN, IL



*Drug Use and Misuse: A Community Health Perspective* by Christy Bazan, Brandi Barnes, Ryan Santens, and Emily Verone is licensed under a [Creative Commons Attribution-NonCommercial 4.0 International License](https://creativecommons.org/licenses/by-nc/4.0/), except where otherwise noted.

Copyright © 2022 University of Illinois Board of Trustees.

Published by [Windsor & Downs Press](https://www.windsoranddownspress.com/), Urbana, Ill., part of the [Illinois Open Publishing Network \(IOPN\)](https://www.iopn.org/). IOPN is a project of the [University Library](https://www.library.uiowa.edu/), [University of Illinois at Urbana-Champaign](https://www.uiowa.edu/).

Published as part of the [OPN Textbook Series](https://www.opntextbookseries.org/).

ISBN (Online): 978-1-946011-15-2

ISBN (PDF): 978-1-946011-16-9

Please cite this book using the DOI: <https://doi.org/10.21900/wd.16>

This book was produced with Pressbooks (<https://pressbooks.com>) and rendered with Prince.

The PDF version of this title excludes interactive content available in the online version. Links to excluded videos are provided in the text locations where they would appear. Interactive assessments have been provided as plain text with answers provided at the end of each chapter, but for a fully interactive version, please consult the online versions of the relevant chapters.

## Credits

[Cover image](#) by [Hal Gatewood](https://www.unsplash.com/) used under the [Unsplash License](https://creativecommons.org/licenses/by-nc/4.0/).

Cover design by Jamie Coen.

# Contents

<a href="#"><u>Introduction</u></a>	1
<a href="#"><u>Part I. Main Body</u></a>	
1. <a href="#"><u>Drug Use and Misuse Overview</u></a>	2
2. <a href="#"><u>How Drugs Work in the Body and the Brain</u></a>	20
3. <a href="#"><u>Social Determinants of Drug Use, Misuse, and Involvement</u></a>	29
4. <a href="#"><u>Gateway Drugs (Caffeine, Alcohol, Tobacco, Marijuana)</u></a>	62
5. <a href="#"><u>Sedative Hypnotics, Psychotherapeutic Drugs, Psychedelics, and Hallucinogens</u></a>	92
6. <a href="#"><u>Opioids, Stimulants, Depressants, and Inhalants</u></a>	101
7. <a href="#"><u>Prescription Medication, Over-the-Counter Drugs, Dietary Supplements, and Appearance and Performance Enhancers</u></a>	118
8. <a href="#"><u>Evidence-Based Prevention and Treatment Models</u></a>	142
<a href="#"><u>Glossary</u></a>	161

# Introduction

This book was developed to provide students with an openly licensed free textbook for a popular undergraduate course at the University of Illinois at Urbana-Champaign. The course, titled “Drug Use and Abuse,” is described in the course manual as an “introduction to the biological, psychological, and legal aspects of drug use and abuse” as a survey course that considers community and university resources concerned with drug use and misuse with an emphasis on personal and social actions for responsible drug use.

As this course is taught through the Department of Community Health, drug use and misuse are discussed in this text through the lens of community health and the impact of drug use and misuse on community health. The book contains eight distinct chapters addressing the background of drug use and misuse, including key terms, as well as an introduction to different categories of drugs including gateway drugs, opioids, and prescription drugs, and concluding with evidence-based prevention and treatment models.

It is our sincere hope that this book will help students better understand their own relationship with drugs and drug use as well as the broader societal impact of drug use and misuse on community health. Additionally, it is our hope that instructors will find this as a resource to use with their own classes both at the University of Illinois and beyond.

# I. Drug Use and Misuse Overview

## Introduction

People of all ages are impacted by the use and misuse of drugs. With use and misuse we have seen an increase in medical costs, loss of school and work productivity and impacts on individuals, families and communities. Understanding the implications drugs can have on all of these concerns, will help you understanding the risks you take when it comes to drug and drug use. The impacts drugs can have make understanding them that much more important.

### Learning Objectives

- Identify types of drugs and differentiate between legal and illegal substances
- Understand how drugs are taken and administered
- Identify drug users and why they use drugs
- Explain the difference between use, misuse, and dependence
- Demonstrate familiarity with drug use policies and laws and the impacts they have on legal and illegal use

**Image 1.1 – Picture of Various Pills**



Photo by Myriam Zilles, [Unsplash](#), Unsplash License

# Learning Content

Have you thought about what the word “drug” means? When most of us think of drugs we think of illegal substances, prescription and over-the-counter medications, tobacco and alcohol.

## Definitions:

- **Drug** – A medicine or other substance which has physiological effects when ingested or introduced into the body
- **Physiological Effect** – A change in the way the body functions

The World Health Organization (1994) says that “drug” is a “a term of varied usage:”

- **medicine** it refers to any substance with the potential to prevent or cure disease or enhance physical or mental welfare.
- **pharmacology** it refers to any chemical agent that alters the biochemical physiology processes of tissue or organisms.
- **common usage** the term often refers specifically to psychoactive drugs and often illicit drugs which have non-medical use in addition to any medical use.”

Most drugs carry the risk of affecting you in ways that can impact your ability to get along with others, to work, to cope with things going on in your life and to think rationally. The effects that drugs produce are also influenced by society’s perception of them. Think about people who use illegal drugs—are they viewed in the same way as people who are using legal drugs?

Drugs can alter thinking and judgement in a person and can lead to health risks associated with misuse, dependency and addiction.

People use drugs for many reasons. Individuals want to fit in, they want to feel better, they want to perform better at work, in school and in sports. Drugs may make you want to use them more. What may have started as a way to feel better or even as a way to escape can quickly turn into misuse because your brain and body need the drug to feel normal.

Drug use in the U.S. is pervasive. Drug use is a valid societal concern because of its effects on individuals, families and communities. Exploring drugs and drug misuse further will encourage a better understanding of drugs and the implications they can have.

Let’s start by thinking about sugar. Sugar is not considered a drug and most foods containing sugar are not addictive. But sugar can have a similar impact on the brain as drugs do. Watch this video on How Sugar Affects the Brain to gain a perspective on how easily you can become addicted to sweets and treats, then ask yourself if I can become addicted to sugar can I become addicted to drugs? When considering how to define a drug, where do cultures draw the line? And why? Is food a drug?

## [Video 1.1 - How Sugar Affects the Brain](#)

# Types of Drugs

**Table 1.1 - Commonly Used Drugs Chart**

<a href="#">Alcohol</a>	<a href="#">Khat</a>	<a href="#">Prescription Stimulants</a>
<a href="#">Ayahuasca</a>	<a href="#">Kratom</a>	<a href="#">Prescription Opioids</a>
<a href="#">Central Nervous System Depressants</a>	<a href="#">LSD</a>	<a href="#">Psilocybin</a>
<a href="#">Cocaine</a>	<a href="#">Marijuana (Cannabis)</a>	<a href="#">Rohypnol® (Flunitrazepam)</a>
<a href="#">DMT</a>	<a href="#">MDMA (Ecstasy/Molly)</a>	<a href="#">Salvia</a>
<a href="#">GHB</a>	<a href="#">Mescaline (Peyote)</a>	<a href="#">Steroids (Anabolic)</a>
<a href="#">Hallucinogens</a>	<a href="#">Methamphetamine</a>	<a href="#">Synthetic Cannabinoids</a>
<a href="#">Heroin</a>	<a href="#">Over-the-Counter Medicines-Dextromethorphan (DXM)</a>	<a href="#">Synthetic Cathinones (Bath Salts)</a>
<a href="#">Inhalants</a>	<a href="#">Over-the-Counter Medicines-Loperamide</a>	<a href="#">Tobacco/Nicotine</a>
<a href="#">Ketamine</a>	<a href="#">PCP</a>	

## Critical Thinking

Starting with types of drugs, explore the chart above and review the information provided on these various drugs. Spend time reviewing the chart above, and identify 10 drugs you are interested in learning more about. Make notes on these drugs for your knowledge. Think about these drugs like you did about sugar. *What are the risks with using the drug? What will be the implications of use if I use a drug like I might consume sugar? Is it possible to become addicted?*

The important thing here is to understand there are risks with many things in life; however, use, misuse, and addiction are concerns that everyone should think about when it comes to drugs, drug misuse, and putting things into our body.

**Legal** drugs include over-the-counter medications, prescription drugs, alcohol, tobacco, caffeine and marijuana.

**Illegal drugs** are drugs that are not prescribed by a licensed medical professional and drugs that are identified under the [Controlled Substances Act](#).

There are many groupings of drugs and they typically fall into one of these categories:

**NSAIDs:** Non-Steroidal Anti-Inflammatory Drugs like acetaminophen and ibuprofen

**Analgesics:** drugs that relieve pain

**Antibiotics:** drugs used to treat disease caused by bacteria

**Antiseptics:** best known as mouthwash; typically used to treat the oral cavity

**Antiviral:** drugs used to treat disease caused by viruses

**Designer Drugs:** synthetic version of controlled substances

**Over-the-counter:** drugs that can be purchased without a prescription from a medical professional; sold legally in drug stores and pharmacies

**Prescription Drugs:** drugs that are prescribed to a specific person by their medical care provider

**Psychoactive Drugs:** drugs that change brain function resulting in alterations in perception, mood and consciousness

**Psychotherapeutic Drugs:** drugs that are prescribed to help relieve symptoms associated with anxiety, depression and mental disorders

**Psychotropic Drugs:** drugs that alter chemical levels in the brain which impact mood and behavior

**Recreational Drugs:** typically known as psychoactive drugs; used to enhance recreation and experimentation

## Check Your Knowledge

Refer to the end of the chapter for answers.

### Definitions 1.1

What types of drugs alter your mood, perception, and consciousness?

## Definitions 1.2

What type of drug would you take to relieve pain in your body?

## Definitions 1.3

Which two types of drugs are you most likely to get from your medical-care provider?

## How Drugs are Taken/Administered

### Image 1.2 – Pills in Hand



Photo by Towfiqu barbhuiya, [Unsplash](#), Unsplash License

### Image 1.3 – Syringes



Photo by Hennie Stander, [Unsplash](#), Unsplash License

There are three primary ways that drugs are taken into the body. Drugs are typically administered orally, by injection and through inhalation. Oral administration occurs through the mouth. Taking drugs orally can be difficult as the drug's absorption in the gastrointestinal tract can cause the drug to take longer to work. With injection, that happens via a hypodermic syringe or IV into a vein, muscle or under the skin, so the impact of the drug is much more rapid and the effects of the use can be seen more quickly. Inhalation occurs through smoking or huffing. This type of use is rapid and very efficient, the effects of use are seen quickly. Other ways that drugs can get into the body include topically (via mucous membranes) and rectally or vaginally (via suppositories).

## Uses of Drugs

Drugs can be thought of in many ways. Drugs are good, drugs are bad. Drugs are socially acceptable. Drugs are socially unacceptable. Drugs are conventional. Drugs are deviant. The effects that drugs produce are influenced by our perception of them as well as the perception society has about their use. When people consider drug use, they typically use drugs for one of these reasons:

- **Medical:** used to treat and cure illness, disease, or symptoms that individuals have
- **Spiritual:** used mostly in the hallucinogen, stimulant or sedative category of drugs; used in religious and spiritual settings
- **Self-Help:** typically used to improve something about the user, such as brain concentration and physical abilities
- **Recreational:** used to help enhance euphoric effects typically associated with use of psychoactive or other illegal drugs

## Patterns of Drug Taking

Many people use drugs for many reasons. Often, one set of problems is exchanged for another, possibly leading to the individual not even knowing how a cycle of use happened. Understanding the patterns of drug taking can help you understand why people use drugs and give you insight into the risks and concerns associated with drug taking.

There are five patterns of drug taking.

The patterns of drug taking are experimental use, social-recreational use, circumstantial use, intensified use, and compulsive use. Looking at these further will give you the insight you need to understand the different types of drug taking.



## Check Your Knowledge

### Multiple Choice 1.1

Your friend who uses marijuana to relieve stress after a hard work week is considered a:

1. Circumstantial User
2. Intensified User
3. Experimental User
4. Social-Recreational User

### Multiple Choice 1.2

You have had back pain for two weeks, you go to the doctor, and they prescribe medication to help your pain. What type of use is this?

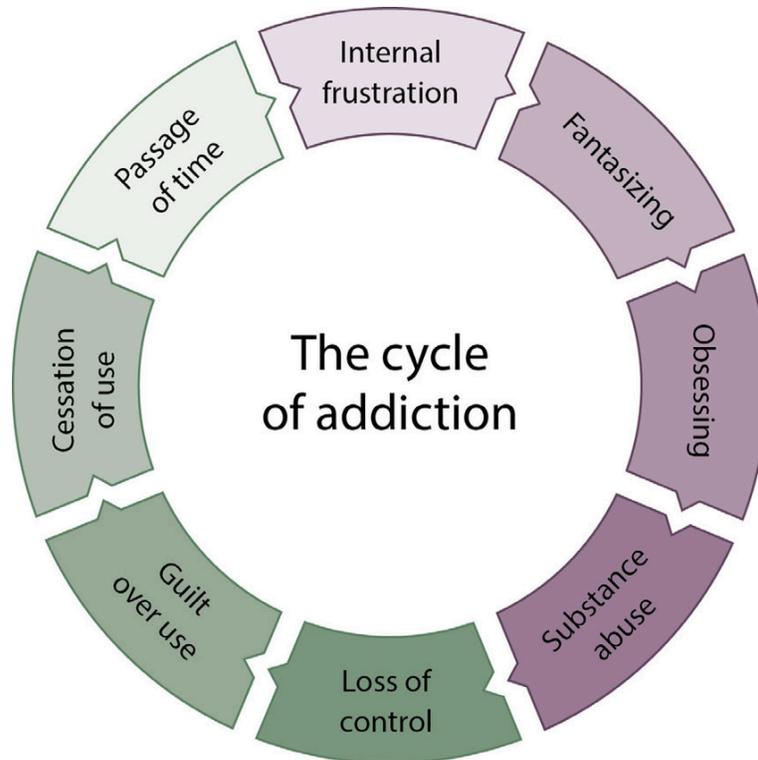
1. Intensified User
2. Circumstantial User
3. Social-Recreational User
4. Experimental User

## Drug Misuse Risks and Concerns

A substance-use disorder is defined as a medical illness in which the person is unable to stop using a drug even though it causes health and social problems in their life. Severe substance-use disorders are also known as addiction.

Infographic 1.1 helps explain how drug users can progress from drug use to addiction. This progression can happen over a short period of time or it can take many years. Misuse is defined as drug use that is illegal or not aligned with medical use guidelines. Most drug use happens in the experimental and social recreational drug-taking patterns. The hope is that drug use does not lead to misuse because the user recognizes the need to break their use patterns and or seek help. Misuse begins with recurrent drug use. Often individuals fail to follow through on obligations at work, home and school. They may use substances when they know the use can be physically hazardous. They often have legal problems associated with the drug use and continued social and interpersonal problems despite knowing their drug use is a concern. It is really hard to define what misuse is because it isn't always nicely wrapped into one package.

## Infographic 1.1 – The Cycle of Addiction



"The Cycle of Addiction" by Davina Moss-King, [Addiction Psychology \(2016\)](#), All Rights Reserved

Substance addiction behaviors often include one or more of the following:

- loss of control over drug use
- continuation of use despite harm to oneself and others
- compulsive use and cravings that are often the sole focus of the user

The 4 C's of addiction and the examples provided below will help you better understand addiction and addiction risks.

1. *Control*, often looked at as loss of control by the user. The user might say this about themselves: "I try to drink only one day a week, but I end up drinking everyday."
2. *Continued use* when the user keeps on using even though they know there are harmful consequences. The user might say this about themselves: "I know my alcohol use caused me to lose my job, but I cannot stop drinking alcohol."
3. *Compulsion* when the user can do nothing but think about using. The user might say this about themselves: "No matter what I do, I cannot get alcohol out of my mind. I think about it all the time."
4. *Cravings* which cause the physical drive to use and keep using. The user might say this about their cravings: "No matter how much alcohol I drink, I still crave it all the time." (Bettinardi-Angres, K. & Angres, D. H., 2010; SAMHSA, n. d.)

## Critical Thinking

Think critically about this situation and what you might say to your partner if you decided to confront them about their use. Your partner is buying small amounts of liquor at gas stations and liquor stores. You discover the various charges on your bank statement along with empty “airplane size” bottles in the trash almost everyday. What might your partner be going through? What might be contributing to their compulsion and cravings for alcohol?

Substance use also involves tolerance, physical dependence and psychological dependence that often lead to addiction and addiction risks.

*Tolerance* occurs when repeated exposure to the same dose of the drug results in a lesser effect and the need to take larger amounts of the drug to get the same effect that the user expects. *Physical dependence* happens when the body has become adapted to the drug’s presence causing withdrawal to occur when use stops. Typically the user experiences symptoms when the drug use stops, often leading the individual to go back to using because they cannot tolerate the symptoms. Psychological dependence is a behavioral dependence that involves cravings, a high rate of use and relapse when use stops. Often these three things happen in the cycle of addiction and that addiction continues until it is broken or continued use never ends.

In order for a person to be considered addicted to a drug, depending on the user’s risks, three or more of the following need to occur:

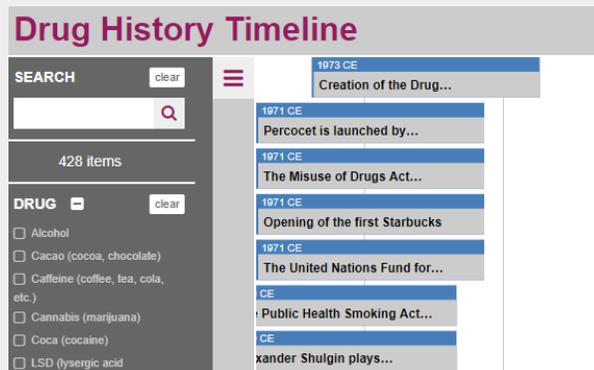
- tolerance
- withdrawal when use of the drug stops
- taking the drug in large amounts or over a long period of time (keep in mind it can take many years for addiction to occur)
- unsuccessful efforts to quit despite the desire to quit
- lots of time spent getting the drug
- cessation of activities that once involved work, family, school, and fun
- continued use of the drug despite user knowing they have a problem (NIDA, 2018; WebMD., n. d.)

Those individuals who are likely to become addicted to drugs lack self awareness and tend to be negative, depressed, tense, risk-taking, impulsive, and in need for immediate gratification. Of course, there are other correlates of drug use like race, gender, education, personality, genetics, and characteristics that predict later initiation of drug use.

The nature of addiction is complex and difficult to understand (especially for nonusers) but what is important to know is that the sooner issues with addiction risk can be identified, the better. Long-term misuse leads to changes in the brain that affect memory, judgement, learning and decision making, having devastating consequences for the user.

## History of Drugs

Image 1.5 – Drug History Timeline



“Drug History Timeline” by The University of Victoria, Canadian Institute for Substance Use Research, [Drug History Time](#), All Rights Reserved

## Drug Laws

Legal consequences for drug misuse can have lifelong implications for users. Understanding drug laws and policies about legal and illegal drugs can inform individuals about consequences associated with their behaviors related to drug use, misuse, and dependence.

Current approaches to drug regulation in the U.S. are linked to two major pieces of legislation, The Pure Food and Drug Act and The Harrison Act. The Pure Food and Drug Act of 1906 has been the foundation for laws surrounding pharmaceutical drugs.

Explore : [The 1906 Food and Drugs Act and Its Enforcement](#)

The Harrison Act of 1914 was the foundation of the controlled-substance regulations. This act imposed taxes on the sale, importation, manufacturing, and distribution of opium and coca leaves. It was the first act to provide criminal laws to nonmedical drug use. The “warning label” on addictive medications is a result of this Act. This Act was an important step in the United States’ war on illegal drugs.

Other Laws and Acts include:

- Narcotic Control Act of 1965
- Drug Abuse Control Amendments of 1965
- [Comprehensive Drug Abuse Prevention and Control Act of 1970](#)
- Anti Drug Abuse Acts of 1986 and 1988

Watch this short video on What the FDA Regulates to better understand the role these acts have played in current regulation.

[Video 1.2 – What Does the FDA Regulate?](#)

## Legal Issues and Drugs

The majority of federal drug convictions are obtained for drug trafficking. The majority of local and state arrests and convictions are for drug possession.

Depending on the state laws, the community and the criminal history of the person, state arrests for simple possession tend to be charged as misdemeanors and usually involve probation, a short term jail sentence or a fine.

These are some helpful terms to be familiar with when looking at legal issues and drugs:

- Controlled substances – A drug which has been declared by state and federal law to be illegal for use or sale, but may be prescribed by a physician
- Distribution – A person is accused of selling, delivery or providing a controlled substance illegally
- Trafficking – Refers to the illegal sale and or distribution of a controlled substance; typically the amount of drugs found is the primary concern
- Manufacturing – Cultivation or manufacture of a controlled substance via chemical processes or lab production or growing
- Possession – Most common drug charge at local levels; knowingly and intentionally possessing a controlled substance, having drugs without a prescription and the quantity of the possession are all factors in charging a person

## Check Your Knowledge

**What to Know about Drug Laws and Legal Issues.** Refer to the end of the chapter for answers.

### Multiple Choice 1.3

If you are charged with possession of a drug, what might have you been doing?

1. Selling Adderall at the library during finals.
2. Growing one marijuana plant in my basement.
3. Had an Adderall pill in my pocket but did not have a prescription for Adderall from my medical provider.

### Multiple Choice 1.4

What act first provided criminal laws for illegal drugs?

1. The Harrison Act
2. The Anti Drug Abuse Acts of 1986 and 1988
3. The Controlled Substance Act
4. The Pure Food and Drug Act

## Drug Schedules

Drugs are classified into 5 categories or schedules depending on the medical uses or the risk of dependency and misuse. The risk of misuse of a drug is a determining factor in a drug's classified schedule. Schedule I drugs have high potential for misuse and schedule V drugs have the least risk of being misused. [The Controlled Substances Act \(CSA\)](#) identifies and lists drugs and their schedule.

Each schedule is determined based on the risks of using the drug. Below is a short summary of each schedule.

**Schedule I** drugs are drugs that have a high potential for misuse and typically have no medical uses. One drug that has been highly discussed and legalized in some states that is still considered schedule I is marijuana.

**Schedule II** drugs have high potential for misuse and a high risk of physical and psychological dependence. Hydrocodone and Adderall are two drugs that fall into this schedule.

**Schedule III** drugs have moderate to low potential risk of physical and psychological dependence. Tylenol with codeine and anabolic steroids are in this schedule.

**Schedule IV** drugs have low potential for misuse and dependence. Xanax and Valium are two drugs that fall into this schedule.

**Schedule V** drugs have low potential for misuse. Quantities of these drugs are often monitored. Cough medicine with codeine and Lyrica are two drugs that fall into this schedule (DEA, 2021; U.S. DOJ, n. d.).

## Examples of Drugs in Each Drug Schedule

**Table 1.3 – Drug Schedule**

Schedule I	Schedule II	Schedule III	Schedule IV	Schedule V
Heroin	Cocaine	Ketamine	Diazepam (Valium)	Cough medicine with Codeine
LSD	Methamphetamine	Anabolic Steroids	Alprazolam (Xanax)	Narcotics (unless in another schedule)
Marijuana	Oxycodone	Codeine and Hydrocodone products mixed with aspirin and acetaminophen	Lorazepam (Ativan)	Stimulants (unless in another schedule)
Ecstasy	Morphine			Depressants (unless in another schedule)
Fentanyl	Methadone			
Methaqualone	Adderall			

## Drug Policies

Work, school, and volunteer opportunities can impact policies regarding drug use. It is important to understand what these policies are and the implications that can result if the policies are not adhered to. Below are two examples related to a higher education environment. One is the policy in place for students, the other for employees. No matter where you work or go to school or volunteer, be aware of the policies in place that you will need to adhere to or face consequences for actions you take.

### Critical Thinking

Take a look at these two sources below as it relates to policies you might be asked to follow at work, school or when volunteering. Have you thought about your own behaviors as it relates to drugs and drug use? Are you prepared to adhere to the policies expected of you in these situations or the consequences you might face if you choose not to adhere to the policies?

[University of Illinois Student Code, Policy on Drugs](#)

[University of Illinois Employee Drug Policy](#)

## Answers

### Definitions 1.1

Psychoactive Drugs

### Definitions 1.2

Analgesics

## Definitions 1.3

Prescription and Psychotherapeutic Drugs

### Multiple Choice 1.1

**Answer:** 4. Social-Recreational User

**Explanation:** Casual use by your friend would make them a social recreational user. If they began to use marijuana every day for stress relief their habit may intensify and impact them physically and psychologically.

### Multiple Choice 1.2

**Answer:** 2. Circumstantial User

**Explanation:** The concern with using drugs circumstantially is that your use can intensify if you always need the drug to manage your pain.

### Multiple Choice 1.3

**Answer:** 3. Had an Adderall pill in my pocket but did not have a prescription for Adderall from my medical provider.

**Explanation:** Selling drugs is a felony crime associated with the intent to sell, purchase or distribute. Growing drugs is a felony crime associated with the intent to sell or distribute drugs. Drug possession is a crime but typically not associated with the intent to sell, purchase or distribute drugs.

### Multiple Choice 1.4

**Answer:** 1. The Harrison Act

**Explanation:** The Harrison Act provided the first criminal laws for illegal drugs. The Pure Food and Drug Act in the foundation of laws surrounding pharmaceuticals. The Controlled Substance Act identifies and lists drugs and their schedules. The Anti-Drug Abuse Acts of 1986 and 1988 dealt with federal drug-control efforts.

## Supplemental Resources

Centers for Disease Control and Prevention. (n.d.). *Data and statistics*. <https://www.cdc.gov/datastatistics/index.html>

Drug Policy Alliance. (n.d.). *Drug Policy Alliance* [Homepage]. <https://drugpolicy.org/>

Drug Policy Alliance. (n.d.). *Uprooting the Drug War* [Homepage]. Retrieved July 7, 2021, from <https://uprootingthedrugwar.org/>

MedlinePlus. (n.d.). *MedlinePlus –Health information from the National Library of Medicine* [Homepage]. <https://medlineplus.gov/>

National Institute on Drug Abuse. (2020, August 20). *Commonly used drug charts*. U.S. Department of Health and Human Services, National Institute of Health. Retrieved July 23, 2021, from <https://nida.nih.gov/drug-topics/commonly-used-drugs-charts>

Office of National Drug Control Policy. (n.d.). *Principles of modern drug policy* [Archived webpage]. Executive Office of the President of the United States. <https://obamawhitehouse.archives.gov/ondcp/policy-and-research/principles-of-modern-drug-policy>

PubMed Central. (n.d.). *Home* [Homepage]. <https://www.ncbi.nlm.nih.gov/pmc/>

Substance Abuse and Mental Health Services Administration. (2009). *Substance abuse treatment: Addressing the specific needs of women. Treatment improvement protocol (TIP) series, no. 51*. <https://www.ncbi.nlm.nih.gov/books/NBK83252/>

U. S. Food and Drug Administration. (n.d.). *Drugs*. <https://www.fda.gov/drugs>

The White House. (n. d.). *Office of national drug control policy*. <https://www.whitehouse.gov/ondcp/>

## References

Bettinardi-Angres, K. & Angres, D. H. (2010). Understanding the disease of addiction. *Journal of Nursing Regulation*, 1(2), 31-37. [https://doi.org/10.1016/S2155-8256\(15\)30348-3](https://doi.org/10.1016/S2155-8256(15)30348-3)

Controlled Substance Act, 21 U.S.C. § 801 et seq. (1970). <https://www.deadiversion.usdoj.gov/21cfr/21usc/811.htm>

Moss-King, D. (2016, March). *Addiction psychology* [Chart]. ResearchGate. Retrieved July 7, 2021, from [https://www.researchgate.net/figure/The-cycle-of-addiction-The-cycle-of-addiction-shows-how-difficult-it-can-be-to-avoid\\_fig1\\_304627074](https://www.researchgate.net/figure/The-cycle-of-addiction-The-cycle-of-addiction-shows-how-difficult-it-can-be-to-avoid_fig1_304627074)

National Institute of Drug Abuse. (2018, June 6). *Understanding drug use and addiction drug facts*. U.S. Department of Health and Human Services, National Institutes of Health. <https://nida.nih.gov/publications/drugfacts/understanding-drug-use-addiction>

Substance Abuse and Mental Health Services Administration. (n.d). SAMHSA–*Substance Abuse and Mental Health Services Administration* [Homepage]. <https://www.samhsa.gov/>

Tanabe, J. (2019, June 11). Drug. In *New world encyclopedia*. Retrieved July 3, 2021, from <https://www.newworldencyclopedia.org/p/index.php?title=Drug&oldid=1020575>

U. S. Drug Enforcement Administration. (2021, July 23). *Drug scheduling*. Retrieved July 3, 2021, from <https://www.dea.gov/drug-information/drug-scheduling>

U.S. Food and Drug Administration. (2021, Jun 24). *What does FDA regulate?* [Video]. YouTube. <https://www.youtube.com/watch?v=bMEFp8cl19c>

WebMD. (n.d.). What is drug addiction? <https://www.webmd.com/mental-health/addiction/drug-abuse-addiction#1>

World Health Organization (1994). *Lexicon of alcohol and drug terms*. <https://www.apps.who.int/iris/handle/10665/39461>

## 2. How Drugs Work in the Body and the Brain

### Introduction

Drugs are chemical substances that when taken into the body can have great impacts on the brain and the body systems. Knowing how the brain works, and the impacts that drugs can have on brain function and behavior, will give you the knowledge and power to make decisions about your own drug use.

#### *Learning Objectives*

- Know what glia, neurons and neurotransmitters do in the brain
- Describe how psychoactive drugs affect the brain when they interact with neurons
- Understand how drugs work in the brain and body
- Understand drug impacts on various body systems
- Describe and understand the Biomedical and Biopsychosocial models

### Learning Content

What happens to your brain and body when you take drugs? Taking drugs impacts the brain. Taking drugs impacts homeostasis (steadiness between the different elements) between the glia cells and neurons in the brain.

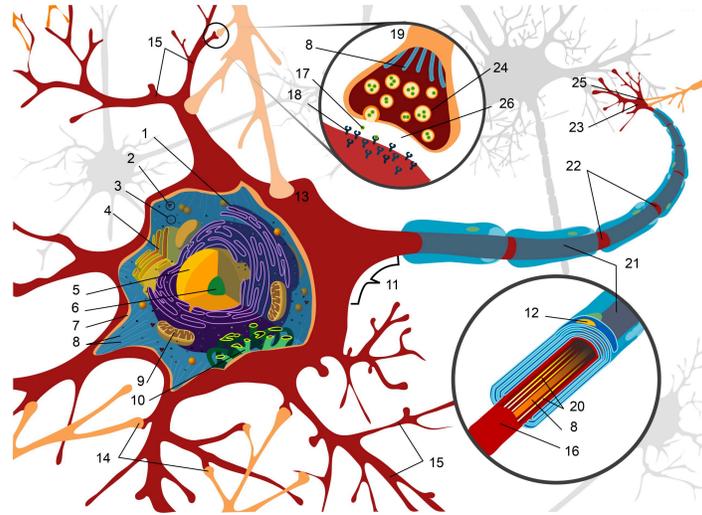
Glia cells maintain homeostasis and provide protection and support for neurons in the central nervous system and the peripheral nervous systems.

The main functions of glia are to hold neurons in place by surrounding them, supply oxygen and nutrients to neurons, insulate one neuron from another, remove dead neurons and destroy pathogens, and help with synaptic connections and physiological processes (Brodal, 2010).

Neurons are cells that communicate with other cells via synapse connections. There are three types of neurons:

1. **Sensory neurons** respond to stimuli by sensing signals sent to the brain and spinal cord
2. **Motor neurons** receive signals from the brain and spinal cord
3. **Interneurons** connect neurons that are in the same region in the brain and spinal cord

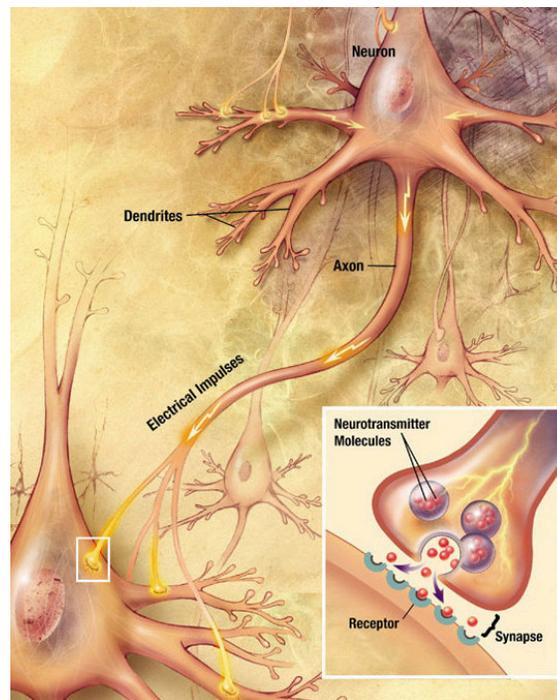
### Image 2.1 – Neuron Cell Diagram



“Complete neuron cell diagram numbered” by LadyofHats, [Wikimedia Commons](#), Public Domain

Synapses permit nerve cells to pass electrical or chemical signals to another neuron.

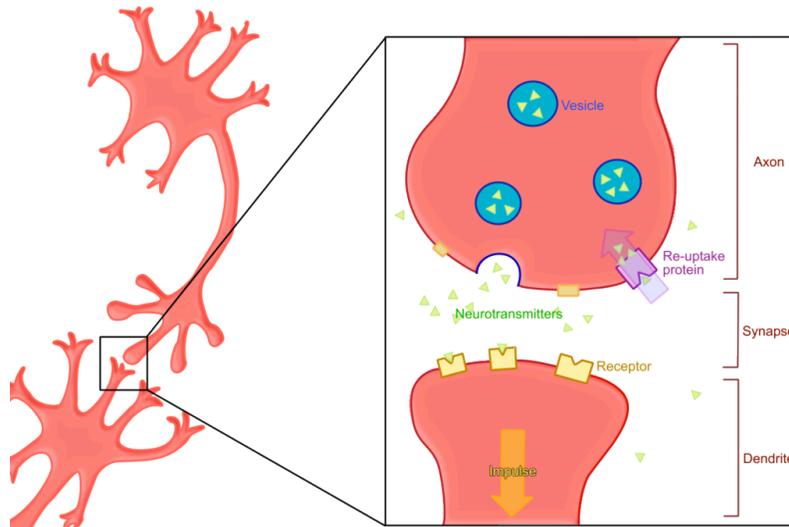
### Image 2.2 – Chemical Synapse Schema



“Chemical synapse schema cropped” by US National Institutes of Health, National Institute on Aging, [Wikimedia Commons](#), Public Domain

Neurotransmitters are chemical messengers that transmit messages across a synapse.

### Image 2.3 – Neuron Synapse During Neurotransmitter Re-Uptake



“Reuptake both” by Sabar, [Wikimedia Commons](#), Public Domain

Psychoactive drugs alter brain functions and act on the brain by altering the neurotransmitter availability at the synapse or by interacting with the neurotransmitter receptor itself. These types of drugs alter chemical levels in the brain which impact mood and behavior, which is what the neurotransmitters try to help manage.

## Check Your Knowledge

### Matching Terms 2.1

Match the following terms and definitions to form complete sentences. Refer to the end of the chapter for answers.

---

**Terms:**

1. Glia
2. Neurons
3. Synapses
4. Neurotransmitters

**Definitions:**

- A. communicate with other cells via the synapse.
  - B. maintain homeostasis.
  - C. are chemical messengers that transmit messages across the synapse.
  - D. pass chemical or electrical signals to neurons.
-

# Drug Effects on the Brain and Body

Watch this short video on how drugs affect the brain:

## [Video 2.1 – How Do Drugs affect the Brain](#)

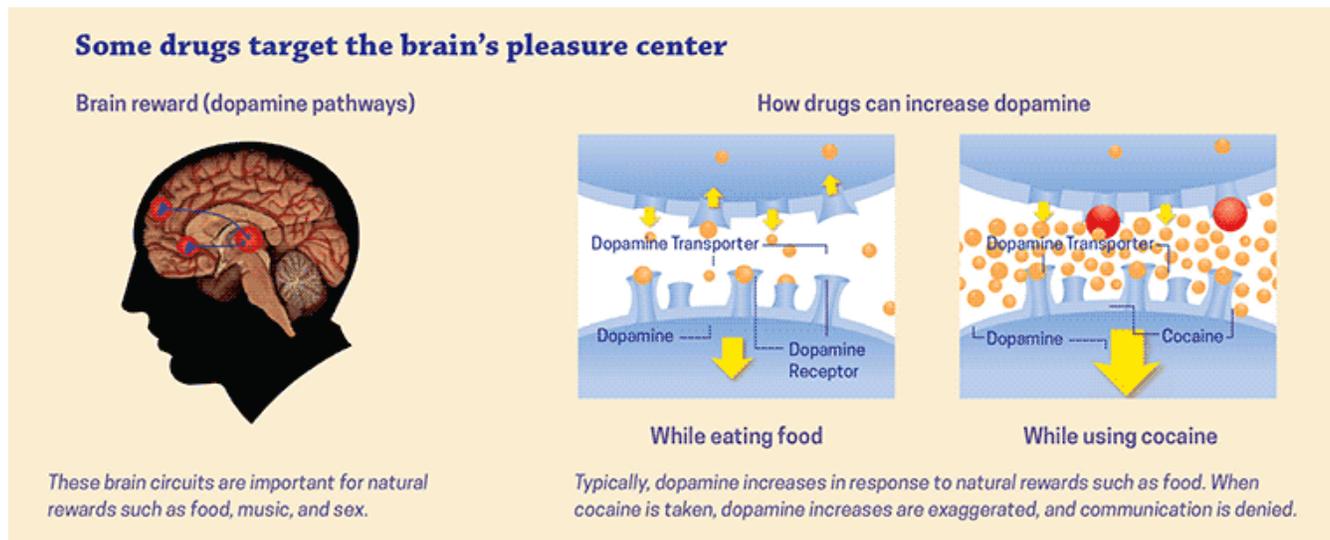
Many drugs are made of chemicals that are similar to chemicals that already exist in the brain. Drugs alter the way messages from nerve cells are sent, received and processed in the brain. Drugs alter the messaging in the brain in these four ways; the natural chemical messengers are imitated by the drug, the reward circuit of the brain is overstimulated by the drug, the drug floods the brain and it becomes overwhelmed by the chemical in the drug, or the drug binds to the brain receptors and alters the brain's function.

Heroin and marijuana tend to fool the brain's receptors and activate abnormal messages that are sent by nerve cells. These messages cause a "high" that you feel when you take the drug.

Methamphetamine and cocaine cause nerve cells to release large amounts of neurotransmitters that cause signals from neurons to not shut off, causing an amplified effect in the brain. Again, a high occurs; it is just a different type of high.

All drugs indirectly or directly affect the reward system in the brain. The overstimulation in the system produces a euphoric effect that occurs in response to the drug. The euphoric effect can mimic something that the brain thinks is normal and needed, like eating or feeling the love of someone that cares for you. The brain's response can compel some people to seek that drug again and more often because the reward system desires the effect (NIDA *Drugs, brains, and behavior: The science of addiction preface*, 2021).

### Image 2.4 – Brain's Pleasure Center



"Some drugs target brain's pleasure center" by US National Institute of Health, [Drugs, Brains, and Behavior: The Science of Addiction \(2020\)](#), Public Domain

This video on addiction can help you better understand how overuse of a drug can lead to the need to continue using the drug.

[Video 2.2 – The Chemistry of Addiction](#)

## Check Your Knowledge

Refer to the end of the chapter for answers.

### Multiple Choice 2.1

Which is the slowest way for drugs to enter the body?

1. Inhalation
2. Injection
3. Orally

### True or False 2.1

Drugs have the power to alter the brain's chemistry.

## Drug Impacts on the Brain

All psychoactive drugs increase dopamine in the brain. When you take drugs, the brain responds to the overwhelming “noise” from the drugs by adjusting the reward circuit so that the pleasure from the drugs is reduced. The surges in dopamine and other neurotransmitters produce less dopamine, causing fewer receptors to exist that can receive the signals. Most drug users see a decline in dopamine production that becomes very low, causing the reward from use to be decreased and less pleasure as a result of taking the same amount or more of the drug. Most users eventually feel depressed, lifeless or numb; eventually they do not enjoy things that once brought them pleasure. To compensate for the lack of pleasure, typically the user will take more and more trying to bring the dopamine levels in the brain back to normal so the reward circuit provides the pleasure they desire. Unfortunately, the user becomes tolerant to the drug and to create a dopamine high, larger amounts of the drug must be taken.

When a user continues to take drugs, the misuse of the drugs leads to changes in the function and structure of the brain. Most people start taking drugs voluntarily, but as use continues and addiction occurs, drug users' self awareness and ability to make good decisions is impacted by the messages the brain receives causing intense impulses to take more drugs (NIDA *Drugs, brains, and behavior: The science of addiction preface*, 2020).

## Drug Impacts on Various Body Systems

Drugs primarily impact the central nervous system but other body systems are impacted as well. No matter what the drug or how much of the drug there is, it cannot have an effect on the brain or in the body unless it is taken. Living organisms must take a drug for an effect to appear. Life sustaining functions in the central nervous system related to thinking, breathing, sleeping and heart rate can all be impacted when drugs are taken into the body. Other body systems are also impacted by drug use. The body may experience a change in hormonal function within the endocrine system. The cardiovascular system is at higher risk of attacks and increased heart rate and blood pressure when drugs are taken. The respiratory system slows down or can increase when certain drugs are taken. The GI system is often irritated by drug use causing diarrhea and stomach upset.

### *Critical Thinking*

What are the direct and indirect impacts of using drugs on the brain and body?

Describe how drugs impact the brain. What concerns you most about the use of drugs and the possible long term implications of use on your brain?

Why is it so easy to become addicted to a drug?

## Biomedical Model

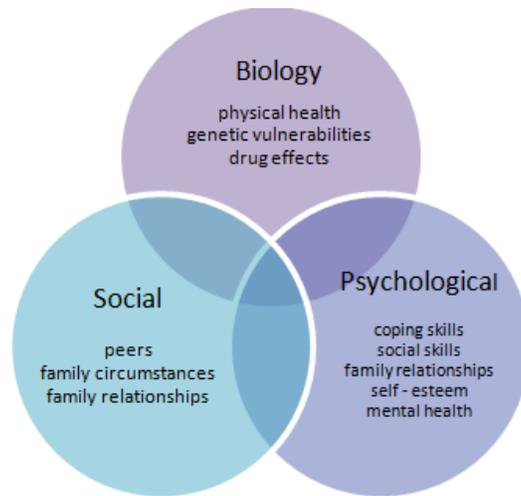
Please view these [slides on the biomedical model and biopsychosocial model](#).

Ill health is caused by biological factors that are linked to lifestyle choices and the best course of treatment and recovery of the patient is the main concern.

[Video 2.3 – Biomedical Versus Biopsychosocial Models of Healthcare](#)

# Biopsychosocial Model

Image 2.5 – Biopsychosocial Model of Health



“Biopsychosocial Model of Health 1” by MrAnnoying,  
[Wikimedia Commons](#), CC BY-SA 4.0

To understand a person’s medical condition you need to understand the connections between biology, psychology, and the environment in which the person lives. All three of these factors impact the human body in different ways.

## [Video 2.4 – The Biopsychosocial Model](#)

It is important to consider all aspects of health and mind when looking at the impact drugs can have on the brain and body. Think about the risk of addiction for you, the people you care about and your community. What will you do to minimize these risks for yourself and others?

## Answers

### Matching Terms 2.1

1. Glia maintain homeostasis (B)
2. Neurons communicate with other cells via the synapse (A)
3. Synapses pass chemical or electrical signals to neurons (D)
4. Neurotransmitters are chemical messengers that transmit messages across the synapse (C)

## Multiple Choice 2.1

1. Orally

**Explanation:** Drugs can take seconds to hours to have an impact on the body; taking drugs **orally** is the slowest way of getting drugs into the body and blood stream. **Inhaled** drugs can exert their effects in about one minute; they are typically inhaled directly into the respiratory system. **Injection** is the fastest way to get drugs into the body; often within seconds you can feel the effects of the drug.

## True or False 2.1

**True.** Drugs do have the power to alter the brain's chemistry.

## Supplemental Resources

National Alliance of Mental Health. (n.d.). Home [Homepage]. <https://www.nami.org/Home>

National Conference of State Legislatures. (2018, February 23). *Pharmaceuticals*. <https://www.ncsl.org/research/health/pharmaceuticals-facts-policies-and-ncsl-resources.aspx>

National Institute of Drug Abuse. (2017, March 9). *Impacts of drugs on neurotransmission* [Archived webpage]. U.S. Department of Health and Human Services, National Institutes of Health, Retrieved September 6, 2021 from <https://archives.drugabuse.gov/news-events/nida-notes/2017/03/impacts-drugs-neurotransmission>

National Institute on Drug Abuse. (2018, June 6). *Understanding drug use and addiction drug facts*. U.S. Department of Health and Human Services, National Institutes of Health. Retrieved July 6, 2021, from <https://nida.nih.gov/publications/drugfacts/understanding-drug-use-addiction>

National Institute of Drug Abuse. (2020, July). *Drugs, brains, and behavior: The science of addiction preface*. U.S. Department of Health and Human Services, National Institutes of Health. Retrieved July 16, 2021, from <https://nida.nih.gov/publications/drugs-brains-behavior-science-addiction/preface>

National Institute of Drug Abuse. (2021, March 11). *Opioid overdose crisis*. U.S. Department of Health and Human Services, National Institutes of Health. <https://nida.nih.gov/drug-topics/opioids/opioid-overdose-crisis>

The University of Queensland. (n. d.). *Websites and apps - Neuroscience* [LibGuide]. <https://guides.library.uq.edu.au/neuroscience>

Watkins, M. (2021). *How drugs affect the brain and central nervous system*. American Addiction Centers. Retrieved July 6, 2021, from <https://americanaddictioncenters.org/health-complications-addiction/central-nervous-system>

## References

Brodal, P. (2010). *The central nervous system: Structure and function* (4th ed.). Oxford University Press.

Green, H. [SciShow]. (2012, November 18). *The chemistry of addiction* [Video]. YouTube. <https://youtu.be/ukFjH9odsXw>

National Institute of Drug Abuse. (2020, July 20). *Drugs, brains, and behavior: The science of addiction preface*. Retrieved July 16, 2021, from <https://nida.nih.gov/publications/drugs-brains-behavior-science-addiction/preface>

National Institute of Drug Abuse. (2020, July 10). *Some drugs target brain's pleasure center* [Chart]. U.S. Department of Health and Human Services, National Institutes of Health. Retrieved July 26, 2021, from <https://nida.nih.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain>

Percuoco, K. [drkevin\_percuoco]. (2020, March 6). *Biomedical vs biopsychosocial models of healthcare* [Video]. YouTube. <https://youtu.be/MyXEzV6CPkc>

Sabar. (2020, September 21). *Reuptake both.png* [Diagram]. Wikimedia Commons. Retrieved September 5, 2021, from [https://commons.wikimedia.org/w/index.php?title=File:Reuptake\\_both.png&oldid=467242294](https://commons.wikimedia.org/w/index.php?title=File:Reuptake_both.png&oldid=467242294)

Samra, J. MyWorkplaceHealth. (2020, January 21). *What is the bio-psycho-social model?* [Video]. YouTube. <https://youtu.be/R8ljOrYPrcw>

TED-Ed. (2017, June 29). *How do drugs affect the brain?*-Sara Garofalo [Video]. YouTube. <https://youtu.be/8qK0hXuXOC8>

MrAnnoying. (2020, March 22). *Biopsychosocial model of health 1.png* [Diagram]. Wikimedia Commons. Retrieved September 5, 2021, from [https://commons.wikimedia.org/w/index.php?title=File:Biopsychosocial\\_Model\\_of\\_Health\\_1.png&oldid=406122747](https://commons.wikimedia.org/w/index.php?title=File:Biopsychosocial_Model_of_Health_1.png&oldid=406122747)

U.S. National Institutes of Health, National Institute on Aging. (2020, December 8). *Chemical synapse schema cropped.jpg* [Image]. Wikimedia Commons. Retrieved September 5, 2021, from [https://commons.wikimedia.org/w/index.php?title=File:Chemical\\_synapse\\_schema\\_cropped.jpg&oldid=517469196](https://commons.wikimedia.org/w/index.php?title=File:Chemical_synapse_schema_cropped.jpg&oldid=517469196)

# 3. Social Determinants of Drug Use, Misuse, and Involvement

## Introduction

Why do some people use drugs, while others do not? Why do patterns of drug use for some people escalate to drug misuse? And, further, why do some individuals become involved in the cultivation, manufacture, distribution and sale of illicit drugs, despite knowing these behaviors carry with them increased risk of involvement in the criminal justice system?

While your own behaviors may contribute to drug use and misuse, the decision to use and misuse drugs is now understood to encompass complex behaviors situated within a matrix of ecological interaction occurring at multiple levels. Individuated treatment approaches centered on individual behavior via health beliefs, self-efficacy, or reasoned action (Rhodes, 2002) are ill equipped to address the generative interactivity across the biological, familial, sociocultural, economic, and physical environments (Thomas, 2007). These social-ecological factors are comprised of determinants that, as we will see throughout this module, disproportionately influence drug-related harms to particular groups of people and communities (World Health Organization, 2010).

### *Learning Objectives*

- Develop familiarity with demographic trends of licit and illicit drug use and misuse.
- Understand the difference between risk factors and protective factors.
- Identify social determinants of health.
- Explain the social and economic impacts of the War on Drugs.
- Demonstrate comprehension of how social and community factors influence disproportionate levels of drug-related harms for specific groups of people.

### Image 3.1 – Two Women Smoking Cigarettes



Photo by Mikail Duran, [Unsplash](#), Unsplash License

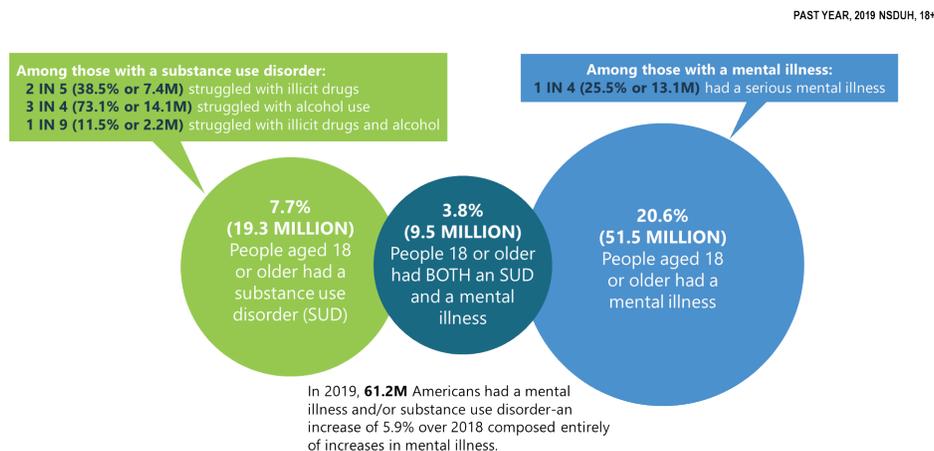
## Learning Content

### Use and Misuse of Illicit Drugs, Alcohol, and Tobacco: Demographic Trends

As we begin to discuss in detail the social determinants of drug use, misuse, and involvement (e.g., cultivation, manufacture, distribution and sale of illicit drugs), it is important to have a clear sense of the broad demographic patterns of use and misuse of licit and illicit drugs in America.

### Mental Illness and Substance Use Disorders in the U.S.

Chart 3.1 – Chart from *The National Survey on Drug Use and Health: 2019*



“Mental Illness and Substance Use Disorders in America” by Elinore F. McCance-Katz, [Webcast Slides for the 2019 National Survey on Drug Use and Health](#), Public Domain

## Education

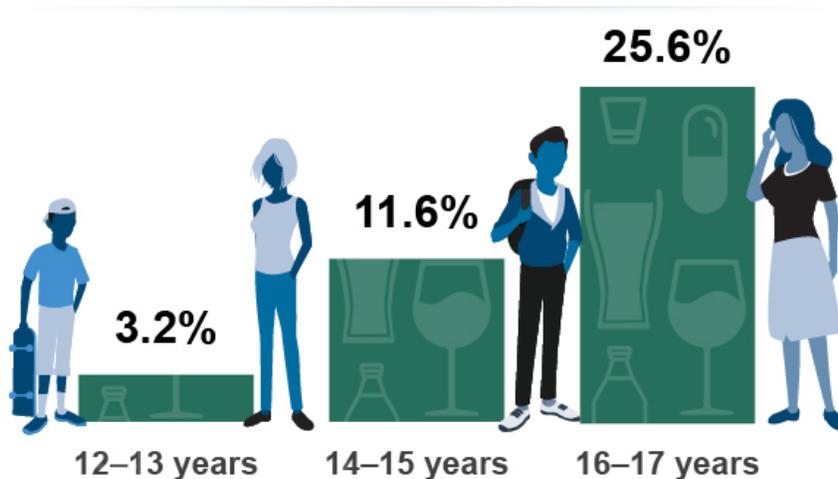
Educational attainment is not generally a reliable predictor of illicit drug use among adults aged 26 or older within the past year. This is demonstrated by the fact that adults who have graduated from college generally have lower rates of illicit drug use (17.4%) than those who have some college experience or an associate's degree (21.2%), whereas, oddly, both of these "college experience/graduation" groups have higher rates of illicit drug use than adults whose highest level of educational attainment is high school graduate (17.2%) or less than high school (16.3%).

Notably though, with-in group rates, i.e. rates within the same group, of illicit drug use for 3 out of 4 of these educational attainment groups showed statistically significant increases from 2018 to 2019. In that timeframe, illicit drug use increased for adults who did not graduate from high school (13.8% to 16.3%), high school graduates (15.5% to 17.2%), and adults with some college or an associate's degree (19.6% to 21.2%); whereas the change among college graduates was not statistically significant (Center for Behavioral Health Statistics and Quality, 2020). What this tells us is that although graduating from college does not appear to impact whether or not you will use illicit drugs versus a person with less education, the rates of illicit drug use among college graduates is relatively stable, whereas it seems to be increasing for those with less educational experience.

## Adolescents

**Chart 3.2 – Alcohol or Illicit Drug Use Among Adolescents in the Past 30 Days in 2017**

Rates of alcohol or illicit drug use in the past 30 days among adolescents aged 12–17 years increased with age. The rate for adolescents aged 16–17 years was **more than 7.5 times** the rate for adolescents aged 12–13 years.



“Alcohol or Illicit Drug Use among Adolescents, 2017” by Office of Disease Prevention and Health Promotion, [2020 LHI Topics](#), Public Domain

Why do you think there are such sharp increases in the rates of alcohol and illicit drug use in later adolescence?

## College-Aged Adults

Findings from a 2019 national survey on drug use among college-age adults administered by the Institute on Social Research revealed:

- **Cigarette smoking** continued a downward trend, with 7.9% of college students reporting having smoked in the past month. Among their peers who are not in college, 16% reported having smoked in the past month, an all-time low.
- **Binge drinking** (five or more drinks in a row in the past two weeks), which has been declining gradually over the past few decades, showed no significant changes for young adults attending or not attending college. In 2019, 33% of college students and 22% of same-age adults not in college reported binge drinking. High-intensity drinking (10 or more drinks in a row in the past two weeks) has stayed level at about 11% since 2015 for people between the ages of 19 and 22, regardless of college attendance.
- **Prescription opioid misuse** continued to decline, with 1.5% of college students and 3.3% of those not attending college reporting non-medical use of opioids (narcotic drugs other than heroin) in the past year. This represents a significant five-year decline from rates of 4.8% and 7.7%, respectively, in 2014.
- **Amphetamine use** continued to decline, with 8.1% of college students and 5.9% of non-college respondents reporting non-medical use of amphetamines in the past year.
- While **cigarette use** is down, **vaping both nicotine and marijuana** is increasing among college aged students regardless of whether they are enrolled in college.

Overall, for college-aged adults many drug and alcohol use and misuse categories continue to show downward trends (e.g. cigarette smoking, prescription opioid misuse, amphetamine use), while others remain unchanged (e.g. binge drinking) or are increasing (e.g. vaping both nicotine and marijuana).

Further, there are no clear relationship patterns regarding whether or not college attendance for college-aged adults impacted drug and alcohol use and misuse. In some cases, such as cigarette smoking and prescription opioid misuse, college-aged adults not enrolled in college reported rates of use 2 times higher (16% smoking; 3.3% opioid misuse) than their college-enrolled counterparts (7.9% smoking; 1.5% opioid misuse). In the opposite direction, rates of binge drinking and amphetamine use were higher for college-aged adults enrolled in college (33% binge drinking; 8.1% amphetamine use) when compared with those not enrolled in college (22% binge drinking; 5.9% amphetamine use). (Schulenberg, J. E. et al., 2020).

## Employment

Employment status affects current illicit drug use, with unemployed adults reporting the highest rates of use.

Among adults aged 26 and older, the rates of illicit drug use within the past year for those who were unemployed (30.3%) were 47.1% higher than those working full time (20.6%), 62% higher than those with part-time (18.7%) employment, and more than twice the rates of those whose employment status was “other” (13.9%), which includes students, persons keeping house or caring for children full time, retired or disabled persons, or other persons not in the labor force.

These data show important findings that those who are unemployed use illicit drugs at much higher rates than all other levels of employment. The severity of the negative impacts of unemployment on illicit drug use, however, becomes much clearer when examining the role of unemployment as a factor for an illicit substance use disorder (substance use disorder involving an illicit drug). When compared with all other levels of employment status, adults 26 or older who are currently unemployed report rates of illicit substance use disorder (9.1%) at more than four times the rate of all other employment levels: full-time (2.1%), part-time (2.1%), or “other” (1.9%) (Center for Behavioral Health Statistics and Quality, 2020).

Generally, unemployment tends to increase the likelihood of illicit drug use and misuse.

## Poverty

As we examine the rates of illicit drug use stratified by poverty, it is important to first understand the poverty thresholds for a specific household size within a particular year, as the poverty threshold increases or decreases depending upon household size and can change year to year with inflation.

The poverty threshold for a household of 4 in 2019 was equal to a total annual household income of \$25,750.00. Poverty threshold levels for statistical indices in 2019 were:

- less than 100% if the total annual household income for a household of 4 is below \$25,750,
- 100-199% if the total annual household income for a household of 4 is between \$25,750.00 and \$51,242.50, and
- 200% or more if the total annual household income for a household of 4 is more than \$51,500.

Rates of illicit drug use and illicit drug use disorder tracked against poverty thresholds for adults aged 18 or over show a gradient pattern of use and dependence with the highest rates associated with the poorest adults, whereafter the rates decline as poverty decreases (or total annual household income increases). Adults 18 or over living in households at less than 100% of the poverty threshold report rates of illicit drug use in the past year (27.2%) at levels nearly 20% higher than those at 100-199% of the poverty threshold (22.9%), and 40.2% higher than their most affluent peers (2.4% in the 200% or more category).

As observed when fielding patterns of illicit drug use and dependence related to unemployment, increased drug use can lead to increased dependence. This is also the case regarding poverty where the poverty level (less than 100%) reporting the highest use also reported the highest rates of illicit drug-use disorder. In other words, just as drug use and misuse was the highest for those who were unemployed, similarly, it is the highest for those who suffer from poverty. Among adults aged 18 or over, persons living in households at less than 100% of the poverty threshold reported illicit substance use disorder (5.3%) at rates 60.6% more than those at 100-199% of the poverty threshold (3.3%), and more than twice their more affluent peers at 200% or more of the poverty threshold (2.4%). (U.S. Department of Health and Human Services, 2019; Center for Behavioral Health Statistics and Quality; 2020).

## Criminal Justice System Involvement

Criminal justice system involvement is also strongly correlated with use and misuse of illicit drugs and alcohol. Adults aged 18 or older who were placed on parole or other supervised release from prison in the past year report using illicit drugs in the past month at more than 2.5 times the rate of individuals who are not on parole or supervised release from prison (30.8% versus 13.3%, respectively). When considering the use of more severe illicit drugs (excluding marijuana from the illicit drug category), this difference (16.7% parole/supervised release) increases to nearly fivefold that of individuals not on parole or supervised release from prison (3.4%). Following these trends, rates of heavy alcohol use for those who are on parole or other supervised release from prison in the past year (12.6%) are twice that of adults who are not on parole or supervised release from prison (6.3%). (Center for Behavioral Health Statistics and Quality, 2020)

### *Critical Thinking*

Take a moment to consider the important takeaways from these demographic trends; then, respond thoughtfully to the following questions:

What demographic categories are associated with the highest rates of use and misuse? Are there any discernible patterns in these data? What findings surprised you?

# Risk and Protective Factors For Drug Use and Misuse

Image 3.2 – Graffiti Art: Risk?



“RISK AWR WC T7L LosAngeles Graffiti Art” by anarchosyn, [Flickr](#), CC BY-SA 2.0

The below information, until Table 3.1, is verbatim derived from Substance Abuse and Mental Health Services Administration, *Risk and protective factors*. [Fact Sheet] (2019).

Assessing the risk and protective factors that contribute to substance use disorders helps practitioners select appropriate interventions.

Many factors influence a person’s chance of developing a mental and/or substance use disorder. Effective prevention focuses on reducing those risk factors, and strengthening protective factors that are most closely related to the problem being addressed.

**Risk factors** are characteristics at the biological, psychological, family, community, or cultural level that precede and are associated with a higher likelihood of negative outcomes.

**Protective factors** are characteristics associated with a lower likelihood of negative outcomes or that reduce a risk factor’s impact. Protective factors may be seen as positive countering events.

Some risk and protective factors are fixed: they don’t change over time. Other risk and protective factors are considered variable and can change over time. **Variable risk factors** include income level, peer group, adverse childhood experiences (ACEs), and employment status.

**Individual-level risk factors** may include a person’s genetic predisposition to addiction or exposure to alcohol prenatally.

**Individual-level protective factors** might include positive self-image, self-control, or social competence.

**Image 3.3 – Bulletin Board with Terms Related to Drug Misuse**



Photo by Susan Wilkinson, [Unsplash](https://unsplash.com/photos/8v3v3v3v3v), Unsplash License

## Key Features of Risk and Protective Factors

Prevention professionals should consider these key features of risk and protective factors when designing and evaluating prevention interventions. Then, prioritize the risk and protective factors that most impact the community. Additionally, prevention professionals should recognize that risk and protective factors exist in multiple contexts.

All people have biological and psychological characteristics that make them vulnerable to, or resilient in the face of, potential behavioral health issues. Because people have relationships within their communities and larger society, each person's biological and psychological characteristics exist in multiple contexts. A variety of risk and protective factors operate within each of these contexts. These factors also influence one another.

Targeting only one context when addressing a person's risk or protective factors is unlikely to be successful, because people don't exist in isolation. For example:

- **In relationships**, risk factors include parents who use drugs and alcohol or who suffer from mental illness; child abuse and maltreatment; and inadequate supervision. In this context, parental involvement is an example of a protective factor.
- **In communities**, risk factors include neighborhood poverty and violence. Here, protective factors could include the availability of faith-based resources and after-school activities.

- **In society**, risk factors can include norms and laws favorable to substance use, as well as racism and a lack of economic opportunity. Protective factors in this context would include hate crime laws or policies limiting the availability of alcohol.

**Chart 3.3 – Risk and Protective Factors**

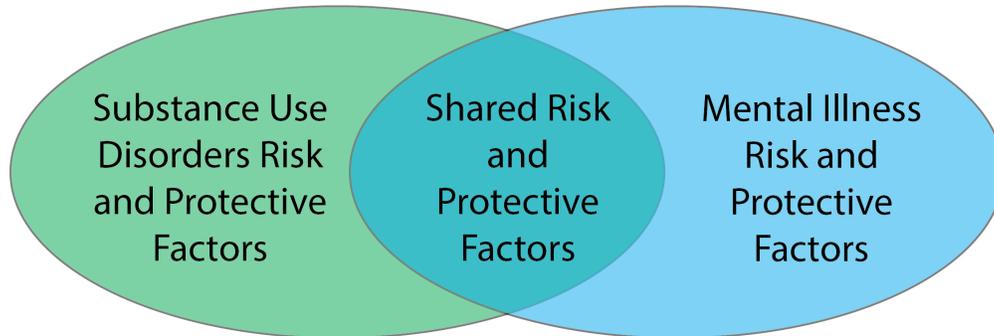


Chart by Substance Abuse and Mental Health Services Administration, [Risk and Protective Factors](#), Public Domain

Prevention professionals should recognize that risk and protective factors are correlated and cumulative. Risk factors tend to be positively correlated with one another and negatively correlated to protective factors. In other words, people with some risk factors have a greater chance of experiencing even more risk factors, and they are less likely to have protective factors.

Risk and protective factors also tend to have a cumulative effect on the development—or reduced development—of behavioral health issues. Young people with multiple risk factors have a greater likelihood of developing a condition that impacts their physical or mental health; young people with multiple protective factors are at a reduced risk.

These correlations underscore the importance of:

- early intervention
- interventions that target multiple, not single, factors

Prevention professionals should recognize that individual factors can be associated with multiple outcomes. Though preventive interventions are often designed to produce a single outcome, both risk and protective factors can be associated with multiple outcomes. For example, negative life events are associated with substance use as well as anxiety, depression, and other behavioral health issues. Prevention efforts targeting a set of risk or protective factors have the potential to produce positive effects in multiple areas.

Risk and protective factors can have influence throughout a person's entire lifespan. For example, risk factors such as poverty and family dysfunction can contribute to the development of mental and/or substance use disorders later in life. Risk and protective factors within one particular context—such as the family—may also influence or be influenced by factors in another context. Effective parenting has been

shown to mediate the effects of multiple risk factors, including poverty, divorce, parental bereavement, and parental mental illness. The more we understand how risk and protective factors interact, the better prepared we will be to develop appropriate interventions. (Substance Abuse and Mental Health Services Administration *Risk, and Protective Factors*. [factsheet], 2019).

The table below describes how risk and protective factors affect people in five domains, or settings, where interventions can take place (National Institute on Drug Abuse, *What are risk factors and protective factors?*, 2020; U. S. Dept. of Health and Human Services, *Preventing Drug Use Among Children and Adolescents*, 2003).

**Table 3.1 – Risk, Domain, and Protective Factors**

<b>Risk Factors</b>	<b>Domain</b>	<b>Protective Factors</b>
Early Aggressive Behavior	Individual	Self-Control
Lack of Parental Supervision	Family	Parental Monitoring
Substance Abuse	Peer	Academic Competence
Drug Availability	School	Anti-drug Use Policies
Poverty	Community	Strong Neighborhood Attachment

## Impact of Socioeconomic Status on Health & Health Behavior

**Image 3.4 – Old Apartment Complex**



Photo by Alexander Trukhin, [Unsplash](#), Unsplash License

Building upon the demographic data discussed earlier in this module, this section defines socioeconomic status (SES) and describes how the components of SES (e.g., education, income, employment) act as social determinants influencing individual and community-level health and behavior, and, more specifically, how SES intersects with racial-ethnic minority status.

**Review this [factsheet](#) from the American Psychological Association** to learn more about Socioeconomic Status & Ethnic and Racial Minorities (American Psychological Association, *Ethnic and Racial Minorities & Socioeconomic Status*. [factsheet], 2017).

What are the social determinants of health? Health is influenced by many factors, which may generally be organized into five broad categories known as determinants of health: genetics, behavior, environmental and physical influences, medical care and social factors. These five categories are interconnected.

The fifth category (social factors as a determinant of health) encompasses economic and social conditions that influence the health of people and communities (Commission on Social Determinants of Health, 2008). These conditions are shaped by socioeconomic position, which is the amount of money, power, and resources that people have, all of which are influenced by socioeconomic and political factors (e.g., policies, culture, and societal values) (Commission on Social Determinants of Health, 2007). An individual's socioeconomic position can be shaped by various factors such as their education, occupation, or income. All of these factors (social determinants) impact the health and well-being of people and the communities they interact with.

Several factors related to health outcomes are listed below:

- early childhood development
- quality of education
- ability to get and hold a job
- type of work a person is engaged in
- food security
- access to health services
- living conditions such as housing status, public safety, clean water and pollution
- individual and household income
- social norms and attitudes (discrimination, racism and distrust of government)
- residential segregation (physical separation of races/ethnicities into different neighborhoods)
- social support
- language and literacy
- incarceration
- culture (general customs and beliefs of a particular group of people)
- access to mass media and emerging technologies (cell phones, internet, and social media)

All of these factors are influenced by social circumstances. Of course, many of the factors in this list are also influenced by the other four determinants of health.

Addressing social determinants of health is a primary approach to achieving health equity. Health equity can be defined in several ways. One commonly used definition of health equity is an environment in which all people have “the opportunity to ‘attain their full health potential’ and no one is ‘disadvantaged from achieving this potential because of their social position or other socially determined circumstance” (Braveman, 2003). Health equity has also been defined as “the absence of systematic disparities in health between and within social groups that have different levels of underlying social advantages or disadvantages—that is, different positions in a social hierarchy” (Braveman & Gruskin, 2003). Achieving health equity requires valuing everyone equally with focused and ongoing societal efforts to address avoidable inequalities, historical and contemporary injustices, and the elimination of health and healthcare disparities.

Social determinants of health such as poverty, unequal access to health care, lack of education, neighborhood disadvantage, stigma, and racism contribute to broad structural health inequities that shape risky behavior patterns including increased prevalence of drug use and dependence as well as participation in the cultivation, manufacture, distribution and sale of illicit drugs.

In addition to clinical approaches and interventions aimed at modifying behavior, where appropriate, a growing body of research highlights the importance of upstream factors that influence health and the need for policy interventions to address those factors (Gnadinger, 2014). Health organizations, research institutes, governmental agencies, and education programs are encouraged to look beyond behavioral factors and address underlying systemic factors related to social determinants of health (Centers for Disease Control, *Adapted from: What is health equity?*, 2019).

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *Multiple Choice 3.1*

Which of the following is NOT a factor related to health outcomes?

1. Having food or being able to get food (food security)
2. How much education a person obtains and the quality of that education
3. How a person develops during the first few years of life (early childhood development)
4. What kind of car you drive

# The War on Drugs

Image 3.5 – Man in Jail Cell



Photo by Karsten Winegeart, [Unsplash](#), Unsplash License

*True Stories: Read an excerpt from Michelle Alexander's New York Times best-selling book, *The New Jim Crow: Mass Incarceration in the Age of Colorblindness*, as she shares the story of Erma Faye Stewart, a mother of two children, who was caught up in a drug sweep in Hearne, Texas.*

Imagine you are Erma Faye Stewart, a thirty-year-old, single African American mother of two who was arrested as part of a drug sweep in Hearne, Texas (Frontline, 2004; Davis, 2007). All but one of the people arrested were African American. You are innocent. After a week in jail, you have no one to care for your two small children and are eager to get home. Your court-appointed attorney urges you to plead guilty to a drug distribution charge, saying the prosecutor has offered probation. You refuse, steadfastly proclaiming your innocence. Finally, after almost a month in jail, you decide to plead guilty so you can return home to your children. Unwilling to risk a trial and years of imprisonment, you are sentenced to 10 years' probation and ordered to pay \$1,000 in fines, as

well as court and probation costs. You are also now branded a drug felon. You are no longer eligible for food stamps; you may be discriminated against in employment; you cannot vote for at least 12 years, and you are about to be evicted from public housing. Once homeless, your children will be taken from you and put in foster care.

A judge eventually dismisses all cases against the defendants who did not plead guilty. At trial, the judge finds that the entire sweep was based on the testimony of a single informant who lied to the prosecution. You, however, are still branded a drug felon, homeless, and desperate to regain custody of your children. Now place yourself in the shoes of Clifford Runoalds, another African American victim of the Hearne drug bust (American Civil Liberties Union, 2002). You returned home to Bryan, Texas, to attend the funeral of your 18-month-old daughter. Before the funeral services begin, the police show up and handcuff you. You beg the officers to let you take one last look at your daughter before she is buried. The police refuse. You are told by prosecutors that you are needed to testify against one of the defendants in a recent drug bust. You deny witnessing any drug transaction; you don't know what they are talking about. Because of your refusal to cooperate, you are indicted on felony charges. After a month of being held in jail, the charges against you are dropped. You are technically free, but as a result of your arrest and period of incarceration, you lose your job, your apartment, your furniture, and your car. Not to mention the chance to say good-bye to your baby girl.

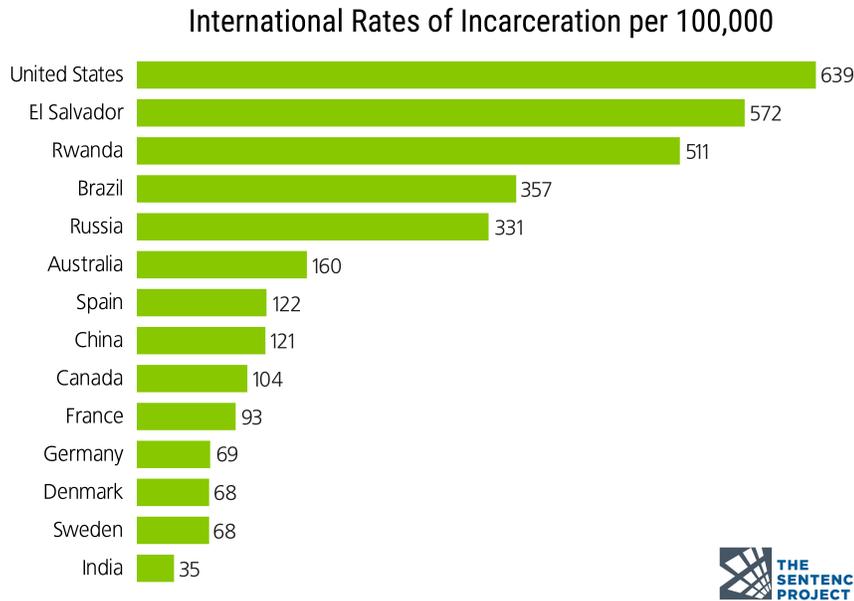
This is the War on Drugs. The brutal stories described above are not isolated incidents, nor are the racial identities of Erma Faye Stewart and Clifford Runoalds random or accidental. In every state across our nation, African Americans—particularly in the poorest neighborhoods—are subjected to tactics and practices that would result in public outrage and scandal if committed in middle-class white neighborhoods. In the drug war, the enemy is racially defined. The law enforcement methods described [earlier] have been employed almost exclusively in poor communities of color, resulting in jaw-dropping numbers of African Americans and Latinos filling our nation's prisons and jails every year. We are told by drug warriors that the enemy in this war is a thing—drugs—not a group of people, but the facts prove otherwise (Alexander, M., 2010).

**View the press conference on June 18, 1971**, from the East Room of the White House, where President Richard Nixon launched the “War on Drugs.”

### [Video 3.1 – President Nixon Declares Drug Abuse “Public Enemy Number One”](#)

With the identification of drug misuse as “Public Enemy No. 1,” President Richard Nixon launched the War on Drugs. Though the initial policies included significant resource allocation for substance misuse prevention and treatment programs aimed at “prevention of new addicts, and the rehabilitation of those who are addicted” (The American Presidency Project: Special Message to the Congress in 1971), what followed over the next 40 years was an unprecedented wave of punitive drug policies with increasing incarceration of U.S. citizens for drug related crimes. As of 2017, the U.S. was incarcerating its citizens at 5 to 10 times the rate of other industrialized nations (The Sentencing Project, 2019).

**Chart 3.4 – International Rates of Incarceration per 100,000 in 2019**



*International Rates of Incarceration per 100,000 by The Sentencing Project, [Criminal Justice Facts](#), All Rights Reserved*

## Anti-Drug Abuse Act of 1986

The above graph shows current incarceration rates across the world per 100,000 people. The U.S. incarceration rate is 639 per 100,000 people followed by El Salvador at 572 per 100,000 people. Incarceration rates in the U.S. were not always this high. Prison and jail populations across the country began to escalate sharply in the 1980s with the passage of the Anti-Drug Abuse Act of 1986 under President Ronald Reagan. Passing with strong bipartisan support, the Anti-Drug Abuse Act ushered in harsher penalties, mandatory minimum sentencing for some drug crimes (e.g. those involving crack cocaine), and increased enforcement activities, in particular for low-level drug offenses, by raising overall spending thresholds on drug enforcement by \$1.7 billion (Pearl, 2018; Teasley, 2001). Along with the mandatory minimum sentences was a 100:1 sentencing disparity for crack versus powder cocaine. Note that crack was used mainly by the Black community and powder cocaine by Whites. Under this provision of the law, possession of 5 grams of crack cocaine received the same sentence as possession of 500 grams of powder cocaine. The impacts of the Anti-Drug Abuse Act of 1986 were disproportionately levied against low-income, ethnic minority communities nationwide. (Note: In 2010, 24 years after the passage of the Anti-Drug Abuse Act of 1986, Congress passed the Fair Sentencing Act during the Obama Administration reducing the crack versus powder cocaine sentencing disparity from 100:1 to 18:1.)

## Violent Crime Control Act and Law Enforcement Act of 1994

The second piece of major legislation introduced during the War on Drugs was the Violent Crime Control Act and Law Enforcement Act of 1994. The 1994 Crime Bill, as it is better known, was passed during the Clinton Administration. Similar to the Anti-Drug Abuse Act of 1986, it received strong bipartisan support. From 1980 to 1992, when urban areas across the nation faced a 27% increase in violent crime rates and overall crime fell just 5% (Block & Twist, 1994), being “tough-on-crime” was viewed by many politicians as an effective strategy to both secure the economic vitality of American cities and protract their own political longevity. As the most comprehensive piece of crime legislation in U.S. history, the 1994 Crime Bill included positive provisions, such as \$6.1 billion in additional funding for prevention programs (U.S. Department of Justice, 1994). This provided, other things, funding to expand police accountability powers for states attorneys general and introducing new measures designed to protect survivors of sexual assault and domestic violence (Shannon, 2019). This work helped decrease aggregate violent crime rates by over 50% over a span of 28 years from a high in 1991 at 758.2 (per 100,000 population) down to 366.7 (per 100,000 population) in 2019 (Statista Research Department, 2021). However, the 1994 Crime Bill included other provisions that left low-income minority communities reeling, such as:

- increased enforcement activities training 100,000 new police officers to patrol American streets as part of an enhanced community policing program that disproportionately centered on marginalized racial-ethnic minority communities;
- large grant mechanisms totaling \$9.7 billion to fund new prison construction;
- authorizing the death penalty for 60 new federal offenses;
- making juveniles aged 13 and older eligible to be prosecuted as adults for certain serious violent crimes; and
- expanded mandatory minimum sentencing provisions (“3 Strikes and You Are Out!”) including mandatory life imprisonment without possibility of parole for federal offenders with three or more convictions for serious violent felonies or drug trafficking crimes (U. S. Department of Justice, 1994).

The ramifications of these two major policies enacted during the height of the War on Drugs (Anti-Drug Abuse Act of 1986; 1994 Crime Bill) has shaped the carceral system and low-income minority communities in the U.S. as we know them today. Largely as a result of these policies, marginalized racial-ethnic minority communities in the U.S. are more fragmented than ever before with a new prison opened every 10 days from 1990 to 2005 (Kirchhoff, 2010) and in 2015 approximate 77% of people serving time in federal prisons and about 57% of people in state prison for drug convictions are Black or Latino (Drug Policy Alliance, 2015). Further, when considering the fraying of the nuclear family, 1 in 9 Black children has an incarcerated parent, compared to 1 in 28 Latino children and 1 in 57 white children; totaling 2.7 million children growing up in U.S. households in which one or two parents are incarcerated, where two-thirds of these parents have been convicted of nonviolent offenses (Western & Pettit, 2010).

# Collateral Consequence Laws & the Social Costs of a Felony Drug Conviction

In addition to serving time in prison, individuals in the U.S. convicted of felony drug offenses are subject to collateral consequence laws that limit their participation across multiple sectors of mainstream society.

Collateral consequences are defined as “legal and regulatory restrictions that limit or prohibit people convicted of crimes from accessing employment, business and occupational licensing, housing, voting, education, and other rights, benefits, and opportunities” (National Inventory of Collateral Consequences of Conviction, 2021).

Examples of collateral consequences are listed below:

- stigma of being a drug felon
- ineligibility for government sponsored supplemental nutrition assistance programs (SNAP)
- ineligibility for government sponsored student loan programs
- ineligibility for government sponsored housing assistance programs
  - ? cannot live with individuals who receive housing assistance from government programs (even if they are family members)
- ineligibility to vote (varies by state)
- potential employers can legally discriminate in hiring processes due to felony conviction

## True or False

Refer to the end of the chapter for answers.

### *True or False 3.2*

Since 1971, the War on Drugs has cost the United States an estimated \$1 trillion. In 2015, the federal government spent an estimated \$9.2 million every day to incarcerate people charged with drug-related offenses—that’s more than \$3.3 billion annually.

### *True or False 3.3*

Incarcerating people for drug-related offenses has been shown to have little impact on substance misuse rates.

### *True or False 3.4*

Approximately every 25 seconds, someone in America is arrested for drug possession.

### *True or False 3.5*

Black Americans make up nearly 30 percent of all drug-related arrests, despite accounting for only 12.5 percent of all substance users.

### *True or False 3.6*

On average, defendants subject to mandatory minimums spend five times longer in prison than those convicted of other offenses.

### [Video 3.2 – What is the Drug War? With Jay-Z & Molly Crabapple](#)

*Watch this video from the Drug Policy Alliance titled, “What is the Drug War? With Jay-Z & Molly Crabapple.” In the video, they discuss the War on Drugs and the push to participate in the underground economy when marginalized racial-ethnic minority communities are largely excluded from the mainstream economy.*

## Race-Ethnicity and Illicit Drug, Alcohol, and Tobacco Use

The disproportionate rates of incarceration for Blacks and Latinos convicted of drug-related crimes in the U.S. could lead people to believe these racial-ethnic groups use drugs at significantly higher rates than other racial-ethnic groups. This, however, is not the case.

In 2017, adolescent alcohol and illicit drug use disparities were observed for a number of racial-ethnic groups.

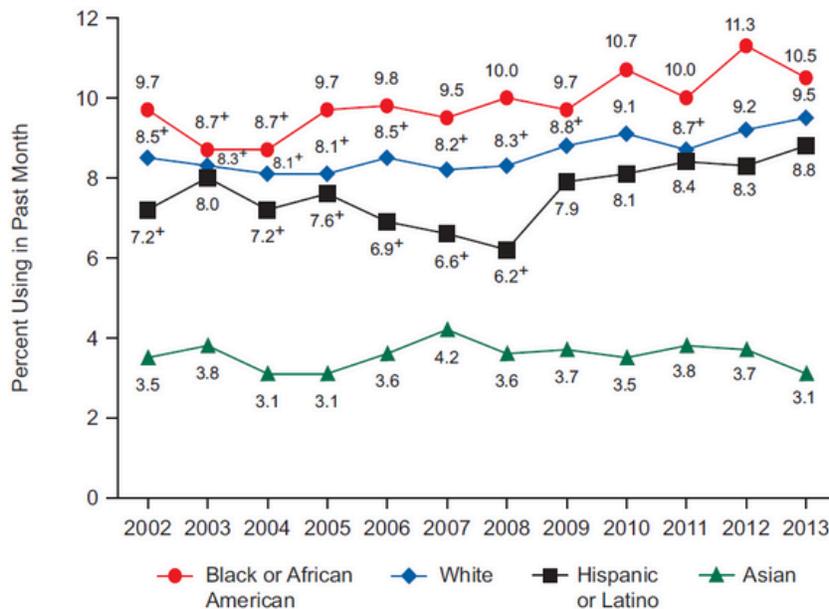
Asian American adolescents aged 12-17 years reported the lowest rate (7.4%) of using alcohol or illicit drugs within the past 30 days among racial-ethnic groups by a significant margin. Rates for adolescents in other racial-ethnic groups from highest to lowest were:

- 16.3% among adolescents who identify with two or more races (more than twice the lowest group rate);
- 15.5% among non-Hispanic White adolescents (more than twice the lowest group rate);
- 14.4% among American Indian or Alaska Native adolescents (94.6% higher than the lowest group rate);
- 12.2% among Hispanic or Latino adolescents (64.9% higher than the lowest group rate);

- 11.9% among non-Hispanic Black adolescents (60.8% higher than the lowest group rate); and
- 11.9% among Native Hawaiian or Other Pacific Islander adolescents (60.8% higher than the lowest group rate) (Office of Disease Prevention and Health Promotion, *Alcohol or Illicit Drug Use Among Adolescents*, 2017; Center for Behavioral Health Statistics and Quality, *2017 National Survey on Drug Use and Health*, 2018).

Review the below Chart 3.5 to see a timeline of disparities in illicit drug use each month by race-ethnic minorities aged 12 or older between 2002 and 2013. The chart demonstrates that the trend in illicit drug use is higher for Black or African Americans than White counterparts, in contrast to the data from adolescents above, and that Asian Americans still tend to be the lowest users of illicit drugs in America when considering race-ethnicity. However, note that the chart below does not account for persons of two or more races (due to a small sample size), which were the highest users of illicit drugs and alcohol in adolescents above. Also note that the chart below does not consider alcohol use, but only illicit drug use.

**Chart 3.5 – Past Month Illicit Drug Use among Persons Aged 12 or Older by Race-Ethnicity in between 2002 and 2013**



\* Difference between this estimate and the 2013 estimate is statistically significant at the .05 level.

Note: Sample sizes for American Indians or Alaska Natives, Native Hawaiians or Other Pacific Islanders, and persons of two or more races were too small for reliable trend presentation for these groups.

“Past Month Use of Selected Illicit Drugs among Youths Aged 12 to 17: 2002-2013” by the Substance Abuse and Mental Health Services Administration, [Results from the 2013 National Survey on Drug Use and Health: Summary of National Findings](#), Public Domain

## Moderate Drinking, Binge Drinking, and Excessive Alcohol Use

**Image 3.6 – Liquor Store**



Photo by Andrew Coop, [Unsplash](#), Unsplash License

As discussed in this section, moderate drinking is defined as 2 drinks or less in a day for men and 1 drink or less in a day for women, when alcohol is consumed. Drinking less is better for healthier than drinking more (Dietary Guidelines for American, 2021). Binge drinking is defined as a pattern of alcohol consumption that brings the blood alcohol concentration (BAC) level to 0.08% or more. This pattern of drinking usually corresponds to 5 or more drinks on a single occasion for men or 4 or more drinks on a single occasion for women, generally within about 2 hours (CDC, *Alcohol and public health*, n. d.). And excessive alcohol use is defined to include binge drinking, heavy drinking, any alcohol use by people under the age of 21 minimum legal drinking age, and any alcohol use by pregnant women (CDC, *Alcohol and public health*, n. d.).

Rates of alcohol use, binge drinking and excessive alcohol use within the past month among adults aged 21 and older show disparities across multiple racial-ethnic groups.

Whites (60.5%) and those who identify as two or more races (60.5%) use alcohol at rates that outpace other racial-ethnic groups. Rates of alcohol use by Hispanics or Latinos (49.1%), Blacks or African Americans (48.6%), and Native Hawaiians or Other Pacific Islanders (48.7%) are followed by Asian Americans (41.4%) and American Indians or Alaska Natives (35.3%).

Rates of binge drinking alcohol in the past month were lowest among Asian adults (14.4%) by a significant margin. Rates of binge drinking in the past month reported by other racial-ethnic groups were:

- 31.2% among adults who identify with two or more races (more than twice the lowest group rate);
- 27.9% among Hispanic or Latino adults (93.8% higher than the lowest group rate);
- 26.5% among White adults (84.0% higher than the lowest group rate);

- 25.8% among Black or African American adults (79.2% higher than the lowest group rate);
- 22.7% among American Indian or Alaska Native adults (57.6% higher than the lowest group rate); and
- 22.7% among Native Hawaiian or Other Pacific Islander adults (57.6% higher than the lowest group rate).

Rates of excessive alcohol use within the past month were also lowest among Asian American adults (2.6%) at rates significantly lower than that of other racial-ethnic groups, which ranged from 61.5% higher to over 4 times higher. Rates of excessive alcohol use within the past month for other racial-ethnic groups were:

- 11.3% among adults who identify with two or more races (more than 4 times the lowest group rate);
- 7.4% among White adults (nearly 3 times the lowest group rate);
- 5.5% among American Indian or Alaska Native adults (more than twice the lowest group rate);
- 5.1% among Hispanic or Latino adults (nearly twice the lowest group rate);
- 4.7% among Native Hawaiian or Other Pacific Islander adults (80.8% higher than the lowest group rate); and
- 4.2% among Black or African American adults (61.5% higher than the lowest group rate) (Center for Behavioral Health Statistics and Quality, 2020).

## Tobacco Use

Rates of tobacco product use within the past month for persons aged 12 or older were lowest among Asian Americans (9.4%), whose rates of use were more than 3 times lower than racial-ethnic groups with the highest rates of use (31.3% American Indians or Alaska Natives; 29.0% two or more races ethnicities), and more than 2 times lower than Blacks or African Americans (23.5%), Whites (23.3%), and Native Hawaiians or Other Pacific Islanders (19.2%). At 1.5 times the lowest rates, Hispanics or Latinos reported the second lowest rates of current tobacco product use at 14.4% (Center for Behavioral Health Statistics and Quality, 2020).

### *Critical Thinking*

Do the incarceration disparities for drug crimes among racial-ethnic minority groups match the patterns of illicit drug use across racial ethnicities? Discuss similarities and differences.

# The Underground Economy: A Survival Strategy for the Urban Poor

**Image 3.7 – Street Vendor Selling Found Objects**

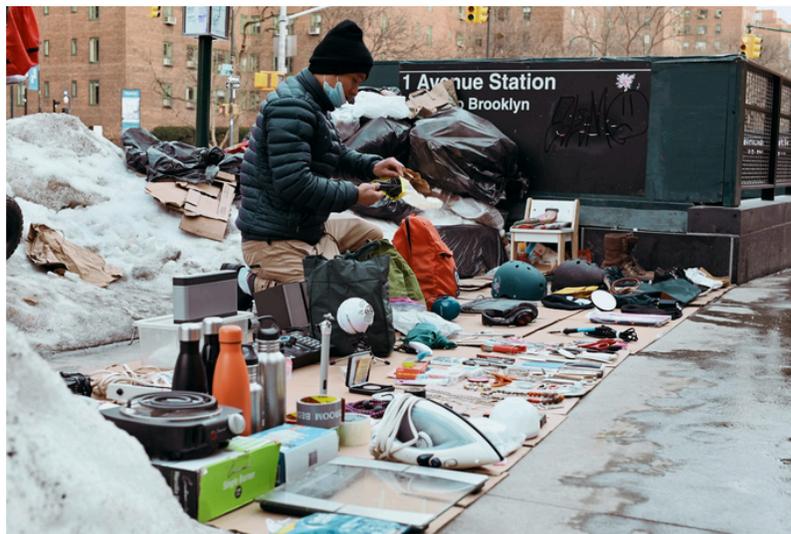


Photo by Robinson Greig, [Unsplash](#), Unsplash License

What is an underground economy? And why would individuals and communities participate in one?

Venkatesh (2006) defines underground economies as “a widespread set of activities, usually scattered and not well integrated, through which people earn money that is not reported to the government and that, in some cases, may entail criminal behavior. In other words, the unreported income can derive from licit exchange, such as selling homemade food or mowing a neighbor’s lawn, and illicit practices, such as advertising sexual favors or selling secondhand guns without a permit [or selling illicit drugs].” These underground exchanges are governed by rules, or codes, to be followed and enforced, with likely consequences of actions.

For the majority of Americans, the existence of an underground economy in the U.S. may seem far-fetched. Further, it may seem unnecessary, even treasonous. But for many people living in concentrated poverty, the underground economy is a lifeline to grab when individuals, families and entire communities are in a social and economic freefall beyond the grasp of the mainstream social structures serving middle-class America.

Watch this video and listen to Ta Nehisi-Coates read a moving passage from his book, "Between the World And Me."

Neshisi-Coates grew up in the inner city of Baltimore, Maryland. He wrote, "Between the World And Me," a National Book Award Winner (2015) and New York Times bestseller, as a letter to his 15 year old son about growing up Black in America.

### **Video 3.3 – Ta-Nehisi Coates Reads from “Between the World and Me”**

When education systems in poor communities are lacking (largely due to policies designed to fund neighborhood schools through local property tax revenue); where much of the buildings and housing stock are either in disrepair or located in areas with high crime and/or unhealthy levels of environmental pollution driving down their value (and subsequently their tax-generating capacity and their ability to produce adequate funding streams to support strong schools); when education infrastructure and poor neighborhoods are impaired in these ways, full-time and living-wage employment becomes difficult to obtain for individuals living in communities with decades of economic disinvestment. With health insurance tied to full-time employment in the U.S., many people born into and living in poverty do not have access to mainstream healthcare, relying instead upon government programs such as Medicaid and CHIP (Children Health Insurance Program), or no healthcare at all. Recent data from 2020–2021 show, over 81 million people were enrolled in either Medicaid or CHIP (Centers for Medicare and Medicaid Services, 2021) along with 30 million people who were uninsured (U. S. Department of Health and Human Services, 2021), totaling 111 million people, or over ? of the U.S. population (33.5%) either on government-sponsored healthcare, or uninsured. Further, consider the impacts of home lending practices, termed “redlining,” initiated by the Federal Housing Administration in the 1930s that actively segregated housing in cities and towns across the country by refusing to insure mortgages for properties located within and around African-American neighborhoods while denying mortgages altogether for people of color in predominantly white, middle-class communities (Rothstein, 2017).

Intersect these systemic socioeconomic factors with the stark incarceration disparities for drug crimes across racial-ethnic groups and one can begin to understand why an underground economy exists.

Listen as Sudhir Venkatesh, William B. Ransford Professor of Sociology & African-American Studies at Columbia University in New York, speaks with Harvard University Press about his book, “Off The Books: The Underground Economy of the Urban Poor.”

Having lived and worked for 10 years in Chicago’s South Side, the community highlighted in this book, while completing graduate studies in sociology at University of Chicago, Off the Books is a true account of the intersectional complexities and inner workings of a modern day underground economy in an impoverished inner city neighborhood.

**[Audio File 3.1 – Sudhir Venkatesh, William B. Ransford Professor of Sociology & African-American Studies at Columbia University in New York, speaks with Harvard University Press about his book, “Off The Books: The Underground Economy of the Urban Poor”](#)**

*True Stories: In this passage from, “Off The Books: The Underground Economy of the Urban Poor” by Sudhir Venkatesh, we are shown the hard-truths of an underground economy.*

Marlene Matteson was the person least likely to mourn the death of Johnnie “Big Cat” Williams, leader of the Maquis Park Kings, the local neighborhood gang. Marlene knew firsthand the destruction that gang activity could bring upon families. A mother of three, she was also a widower as a result of the gangland slaying of her own husband. “My husband died like [Big Cat] did,” she said, noting the similarities of Billy Matteson’s murder in 1992 and Big Cat’s fall on a cold, blustery morning in 2003. “Big Cat never knew what hit him. Just like my Billy. Came up on his back, shot him when he wasn’t looking. Probably didn’t feel nothing.” Both Billy Matteson and Big Cat were slain late at night, in the presence of their bodyguards, who were also injured. The killers were never found. Marlene Matteson accepted the news of Big Cat’s murder with a mixture of relief and apprehension. As the president of the 1700 South Maryland Avenue Block Club, she knew that gang activity created persistent safety problems in her area. She saw in Big Cat’s death a sign of difficult times ahead. Life was going to change, sharply and perhaps for the worse, in Maquis Park. She could no longer call on Big Cat to keep rank-and-file members out of parks in the afternoon, when kids came back from school. She could no longer wake him and demand that he put an end to the late-night carousing of younger gang members on her block. With little help from law enforcement, she wondered who would help her police the gang members who overtook public spaces with abandon and whose rhythms and inner clocks did not match those of the residents, like Marlene, who woke each morning to go to work or take children to school.

On that December 2003 morning, a week after Big Cat’s death, Marlene Matteson sat with her thoughts and with a dozen other residents of the community in the back room of the Maquis Park Prayer and Revival Center, a small storefront church on Indiana Avenue in Chicago’s historic Southside black community. She was not the only person in the room struggling to make sense of Big Cat’s death. The others in attendance were unlikely to express great sadness for a gang leader who peddled drugs and brought violence and instability to the neighborhood; but they, too, were touched by sadness, anger, and an uncertainty about what lay ahead.

“You know they’re going to be after each other now,” said Jeremiah Wilkins, a local pastor, referring to the inevitable internecine battles among local gang members to fill Big Cat’s void. “No one knows yet who’s taking [Big Cat’s] place.”

“Yeah, well, it ain’t gonna be pretty, but we been there before,” said Ola Sanders, the proprietor of Ola’s Hair Salon on 16th Street. “Someone’s going to be the leader, but it don’t matter who. We got to stay together. That’s what’s really important, okay?” “Look, whatever these brothers do, we can’t stop them,” chimed in James Arleander, a local handyman who for twenty years had been repairing cars off the books for local residents in the parking lot behind the church. “Let’s not pretend we’re sad or nothing. I mean the man was a killer! You all are acting like he’s your friend. Don’t make any sense to sit here crying. Man was a killer.” James’s voice trailed off. “I agree,” said Dr. J. T. Watkins, director of Paths Ahead, a small social service center that ran programs for Maquis Park’s youth. “Look, we got to go ahead. We all know why we’re here. I mean no offense, Pastor. We’re mourning, but we got to make our money. Do you all agree? Well, am I right or not?”

There was silence. The room was still except for Pastor Wilkins’s finger tapping the wooden table in time with the clock on the wall. For nearly five minutes, no one responded to Dr. Watkins’s question, in part because no one could justifiably dispute his contention—money was the chief reason for the group’s convening that morning. The livelihood of these community leaders was at stake. Yes, they were all concerned about the escalation in violence that was certain to result with Big Cat’s passing; other local gangs would be battling to control the Kings’ drug-trafficking territories in the neighborhood. They were all aware of the chaos that could come as a new hierarchy was chosen. But Big Cat’s death placed in sharp relief their own reliance on dangerous and illegal ways of making ends meet. They were forced to confront their own deep involvement in an outlaw economy.

Although some found it difficult to admit, everyone in the room that morning had benefited materially from Big Cat’s presence. Their motive could have been personal financial gain, political power, or a desire to do their own work more effectively, whether that be preaching or changing a tire. Big Cat not only helped Marlene to police younger gang members; he also gave money to her block club for kids’ parties, and members of his gang patrolled the neighborhood late at night because police presence was a rarity. Dr. Watkins and Pastor Wilkins would need to find a new source of philanthropy, now that Big Cat’s monthly donations to their respective organizations had ended. Big Cat’s gang ensured James Arleander a near monopoly on local off-the-books books car repair by intimidating other mechanics who tried to cut into James’s business. Ola probably would not receive \$500 each weekend for letting the gang turn her salon into a thriving nightclub—the weekly “Maquis Park Dee-Jay” contest had been one of Big Cat’s favorite social activities. And others in the room that morning were no different: some received money from Big Cat, others benefited from the customers he sent their way—for everything from homemade meals to fake social security cards—and still others were hoping to use Big Cat’s influence over two thousand young men and women to win electoral office or organize downtown protests. All of them allowed Big Cat’s gang to operate fluidly, whether that meant tolerating drug selling, presiding over funerals of deceased gang members, participating in citywide gang basketball tournaments, or “cleaning” the gang’s profits through their own businesses...

... Big Cat’s prominent position was the visible tip of the iceberg that is Maquis Park’s shadow economy. He represented a very small part of the innumerable financial exchanges that are not reported to the government. From off-the-books day care and domestic work to pimping and prostitution, unreported earnings wove together the social fabric in Maquis Park and surrounding poor neighborhoods. Big Cat was just one of many traders, brokers, hustlers, hawkers, and, of course, customers, who moved about in the streets, homes, and alleyways selling inexpensive labor and goods—or searching for them. He was certainly one of its most famous—and infamous—but he was just one of many who performed functions most Americans associate

with the mainstream economy and the government agencies that regulate legitimate exchange. He was only one of many local stakeholders who resolved economic disputes because the state had no formal authority. Many other local people enforced contracts, or resolved disputes, or, for a fee, could find you a gun, a social security card, or even a job as a day laborer or a nanny for a wealthy family. Others may have claimed control over parks, alleyways, and street corners; these people would have to be paid if one wanted to fix a car, sell drugs, or panhandle at that spot. And there were many local loan sharks, besides Big Cat, who could loan you cash, or who could find you customers—for stolen stereos or drugs, for prostitutes or home-cooked lunches—in a matter of a few hours (Venkatesh, 2006).

### *Critical Thinking: In Two Parts*

I invite you to take a deep breath before you begin this activity. If you can, be still for a moment and recall this true story you have just read. As best you can, bring to mind as vividly as you can the people in the story: what they may have been wearing, what their voices sound like, what was said, what each person may have been feeling. . . . Now, imagine you live in that-inner city neighborhood. Imagine that meeting is happening right now and you are one of the community members sitting in that room.

**Part I:** Select one of the people in this story, and describe what the experience might be like for that person (identify the individual in your response). You might consider any of the following: What is that person thinking right now? What emotions is that person feeling? Is that person feeling tight and tense in her/his body? Or loose and relaxed? If that person needs assistance of some kind, where might that person go for help? How will that person make up for the future financial losses resulting from the gang leader's death? What are the risks? What will happen next? What will happen to their loved ones?

**Part II:** Continue to focus on what the experience might be like for the person you selected for Part I of this activity. Identify and discuss some of the social-ecological community level factors and determinants that may have influenced that person to participate in an “off the books” financial relationship with a known drug dealer and murderer. Also, describe how that person may feel about Johnnie “Big Cat” Williams, the deceased leader of the Maquis Park Kings street gang.

## Other Strategies for Responding to Drug Use and Misuse

### **Ending the “War on Drugs”**

There are three videos below. The first two criticize current or past approaches to drug use and misuse strategies. As you watch the videos, consider whether you agree with the main point the speaker is making. Has the “War on Drugs” been a helpful strategy to stop drug use and misuse? Do you think punishing those addicted to drugs is the correct systemic response to drug misuse? Is there another approach that would be more beneficial to those suffering from drug addiction?

Watch a brief TED Talk from drug policy reformist Ethan Nadelmann titled, “Why we need to end the War on Drugs:”

[Video 3.4 – Why We Need to End the War on Drugs](#)

Watch this brief TED Talk titled, “Everything You Think You Know About Addiction is Wrong”, to hear Johann Hari introduce a different perspective in understanding drug addiction:

[Video 3.5 – Everything You Think You Know about Addiction is Wrong](#)

**Decriminalization: The Unique Story of Portugal**

In 2001, Portugal was suffering from record-breaking overdose deaths tied to illicit drug use and addiction.

Portugal is the only country that has decriminalized all drugs. Instead, in Portugal, the country put healthcare and treatment first, rather than criminalization and punishment.

Watch this informational video from Drug Policy Alliance titled, “Decriminalization of Drug Use Explained–Descriminalizacao: A Portuguese Experiment With American Lessons:”

[Video 3.6 – Decriminalization of Drug Use Explained–Descriminalizacao: A Portuguese Experiment with American Lessons](#)

*Critical Thinking*

Has this policy in Portugal (treating the drug issue as a healthcare concern rather than a criminal one) been beneficial in that country? Should other countries, such as the United States, consider implementing this policy? How would this impact the racial-ethnic impact of the “War on Drugs?” Do you think a policy like this would be welcomed in the United States? Why or why not?

## Answers

### Multiple Choice 3.1

**Answer:** 4. What kind of car you drive

**Explanation:** What kind of car you drive is NOT a factor related to health outcomes. Education plays a role in factors that contribute to health outcomes. Early childhood development and how a person develops in their early years of life is a factor in health outcomes. Food security is important at some many levels and contributes to growth and development along with nutritional need throughout a life span; nutrition plays a role in health outcomes.

### True or False 3.2

**Answer:** True

### True or False 3.3

**Answer:** True

### True or False 3.4

**Answer:** True

### True or False 3.5

**Answer:** True

### True or False 3.6

**Answer:** True

## Supplemental Materials

### Videos

1. Democracy Now. (2015, July 22). "Between the World And Me:" Ta-Nehisi Coates Extended Interview on

- Being Black in America [Video]. [https://www.democracynow.org/2015/7/22/between\\_the\\_world\\_and\\_me\\_ta](https://www.democracynow.org/2015/7/22/between_the_world_and_me_ta)
2. Families Against Mandatory Minimums [FAMM Video]. *Repeal, don't celebrate, the Anti-Drug Abuse Act of 1986* [Video]. YouTube. <https://youtu.be/BhAVJFuPJRc>
  3. Mauer, M., & King, R. S. (2007). *A 25-year quagmire: The war on drugs and its impact on American society*. The Sentencing Project. <https://www.sentencingproject.org/publications/a-25-year-quagmire-the-war-on-drugs-and-its-impact-on-american-society/>
  4. Moyers, B. [Moyers & Company]. (2013, December 20). *Michelle Alexander: Locked Out of the American Dream*. [Video]. YouTube. <https://youtu.be/om2hx6Xm2JE>
  5. TEDx Talks. (2013, October 16). *The future of race in America. Michelle Alexander at TEDxColumbus*. [Video.] YouTube. <https://youtu.be/SQ6H-Mz6hgw>
  6. Tylek, B. (2021, May 24). *The multibillion-dollar US prison industry—and how to dismantle it* [Video]. TED. [https://www.ted.com/talks/bianca\\_tylek\\_the\\_multibillion\\_dollar\\_us\\_prison\\_industry\\_and\\_how\\_to\\_dismantle\\_it?language=en](https://www.ted.com/talks/bianca_tylek_the_multibillion_dollar_us_prison_industry_and_how_to_dismantle_it?language=en)

### Interactive Online Applications

1. University of Richmond's Digital Scholarship Lab. (n.d.). *Mapping Inequality* [Interactive map]. <https://dsl.richmond.edu/panorama/redlining/>

### Books

1. Alexander, M. (2010). *The new Jim Crow: Mass incarceration in the age of colorblindness*. The New Press.
2. Venkatesh, S. A. (2008). *Gang leader for a day: A rogue sociologist takes to the streets*. Penguin.
3. Venkatesh, S. A. (2006). *Off the books: The underground economy of the urban poor*. Harvard University Press.

## References

- Alexander, M. (2010). *The new Jim Crow: Mass incarceration in the age of colorblindness*. The New Press.
- anarchosyn. (2007, May 27). *RISK AWR WC T7L LosAngeles Graffiti Art* [Digital image]. Flickr. <https://www.flickr.com/photos/24293932@N00/530211480>
- American Civil Liberties Union. (n.d.). *Stories of ACLU clients swept up in the Hearne drug bust of November 2000*. [www.aclu.org/DrugPolicy/DrugPolicy.cfm?ID=11160&c=80](http://www.aclu.org/DrugPolicy/DrugPolicy.cfm?ID=11160&c=80)
- American Psychological Association. (2017, July). *Ethnic and racial minorities & socioeconomic status* [Factsheet]. <https://www.apa.org/pi/ses/resources/publications/factsheet-erm.pdf>
- Block, M. & Twist, S. (1994). *The Report Card on Crime and Punishment*. ALEC Foundation. <https://www.ojp.gov/ncjrs/virtual-library-abstracts-report-card-crime-and-punishment>

Braveman, P.A. (2003). Monitoring equity in health and healthcare: A conceptual framework. *Journal of Health, Population, and Nutrition*, 21(3): 181-92. <https://pubmed.ncbi.nlm.nih.gov/14717564/>

Braveman, P. & Gruskin, S. (2003). Defining equity in health. *Journal of Epidemiology and Community Health*, 57(4): 254-258. <https://dx.doi.org/10.1136/jech.57.4.254>

Carson, E. A. (2018). *Prisoners in 2016*. U.S. Department of Justice, Bureau of Justice Statistics. <https://www.bjs.gov/content/pub/pdf/p16.pdf>

Center for Behavioral Health Statistics and Quality. (2020). *Results from the 2019. National Survey on Drug Use and Health: Detailed tables*. Substance Abuse and Mental Health Services Administration. <https://www.samhsa.gov/data/report/2019-nsduh-detailed-tables>

Centers for Medicare and Medicaid Services. (2021 March). *Medicaid & CHIP Enrollment Data Highlights*. <https://www.medicare.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html>

Commission on Social Determinants of Health. (2008). *Closing the gap in a generation: Health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health*. World Health Organization: Geneva. <https://www.who.int/publications/i/item/WHO-IER-CSDH-08.1>

David, S. L., Rao, S. A., & Robertson, E. B. (2003). *Preventing drug use among children and adolescents: A research-based guide for parents, educators, and community leaders, in brief* (2d ed.) (NIH Publication No. 04-4212(A)). U.S. Department of Health and Human Services, National Institutes of Health, National Institute on Drug Abuse. [https://nida.nih.gov/sites/default/files/preventingdruguse\\_2.pdf](https://nida.nih.gov/sites/default/files/preventingdruguse_2.pdf)

Davis, A. (2007). *Arbitrary justice: The power of the American prosecutor*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195384734.001.0001>

Drug Policy Alliance. (2015, June). *The Drug War, Mass Incarceration, and Race*. [https://www.unodc.org/documents/ungass2016/Contributions/Civil/DrugPolicyAlliance/DPA\\_Fact\\_Sheet\\_Drug\\_War\\_Mass\\_Incarceration\\_and\\_Race\\_June2015.pdf](https://www.unodc.org/documents/ungass2016/Contributions/Civil/DrugPolicyAlliance/DPA_Fact_Sheet_Drug_War_Mass_Incarceration_and_Race_June2015.pdf)

Drug Policy Alliance. (2016, September 15). *What is the drug war? With Jay-Z & Molly Crabapple* [Video]. YouTube. <https://youtu.be/HSozqaVcOU8>

Drug Policy Alliance. (2019, February 20). *How Portugal solved their drug crisis* [Video]. YouTube. [https://youtu.be/iKe9R\\_eiIYA](https://youtu.be/iKe9R_eiIYA)

Finegold K., Conmy A., Chu R. C., Bosworth A., & Sommers, B. D. (2021). *Issue brief: trends in the U.S. uninsured population, 2010-2020* (Issue Brief No. HP-2021-02). Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services. <https://aspe.hhs.gov/sites/default/files/private/pdf/265041/trends-in-the-us-uninsured.pdf>

Frontline. (2004, June 17). *Four Stories—Erma Faye Stewart and Regina Kelly. The Plea*. [www.pbs.org/wgbh/pages/frontline/shows/plea/four/stewart.html](http://www.pbs.org/wgbh/pages/frontline/shows/plea/four/stewart.html)

- Gnadinger, T. (2014, August 22). Health Policy Brief: *The Relative contribution of multiple determinants to health outcomes*. Health Affairs Blog. <https://doi.org/10.1377/forefront.20140822.040952>
- Hari, J. (2015, June). *Everything you think you know about addiction is wrong* [Video]. TED. [https://www.ted.com/talks/johann\\_hari\\_everything\\_you\\_think\\_you\\_know\\_about\\_addiction\\_is\\_wrong](https://www.ted.com/talks/johann_hari_everything_you_think_you_know_about_addiction_is_wrong)
- Irwin, A. & Solar, O. (2010). *A Conceptual Framework for Action on the Social Determinants of Health*. World Health Organization. [https://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH\\_eng.pdf](https://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH_eng.pdf)
- Kirchhoff, S. M. (2010). *Economic impacts of prison growth*. Library of Congress Congressional Research Service. <https://digital.library.unt.edu/ark:/67531/metadc501951/>
- Nadelmann, E. (2014, October). *Why we need to end the war on drugs* [Video]. TED. [https://www.ted.com/talks/ethan\\_nadelmann\\_why\\_we\\_need\\_to\\_end\\_the\\_war\\_on\\_drugs](https://www.ted.com/talks/ethan_nadelmann_why_we_need_to_end_the_war_on_drugs)
- National Center for HIV, Viral Hepatitis, STD, and TB Prevention. (2019). *NCHHSTP Social Determinants of Health: Frequently Asked Questions*. Centers for Disease Control and Prevention. <https://www.cdc.gov/nchhstp/socialdeterminants/faq.html>
- National Institute on Drug Abuse. (2011, June). *Preventing drug use among children and adolescents (in brief)*. U.S. Department of Health and Human Services, National Institutes of Health. <https://nida.nih.gov/publications/preventing-drug-use-among-children-adolescents/chapter-1-risk-factors-protective-factors/what-are-risk-factors>
- National Inventory of Collateral Consequences of Conviction. (n.d.). *What are collateral consequences?* <https://niccc.nationalreentryresourcecenter.org/>
- Nixon, R. (1971, June 17). *Special Message to the Congress on Drug Abuse Prevention and Control* [Transcript]. *The American Presidency Project*. University of California, Santa Barbara. Retrieved August 7, 2021, from <https://www.presidency.ucsb.edu/node/240245>
- Office of Disease Prevention and Health Promotion. (n.d.). *Alcohol or illicit drug use among adolescents, 2017*. <https://www.healthypeople.gov/2020/leading-health-indicators/2020-lhi-topics/Substance-Abuse/data#SA-13>
- Pearl, B. (2018, June 27). *Ending the war on drugs: By the numbers*. Center for American Progress. <https://www.americanprogress.org/issues/criminal-justice/reports/2018/06/27/452819/ending-war-drugs-numbers/>
- Rhodes, T. (2002). The ‘risk environment’: A framework for understanding and reducing drug-related harm. *International Journal of Drug Policy*, 13(2), 85-94. [https://doi.org/10.1016/S0955-3959\(02\)00007-5](https://doi.org/10.1016/S0955-3959(02)00007-5)
- Richard Nixon Foundation. (2016, April 29). *President Nixon declares drug abuse “public enemy number one”* [Video]. YouTube. <https://youtu.be/y8TGLLQID9M>

Rothstein, R. (2017). *The color of law: A forgotten history of how our government segregated America*. Liveright Publishing

Shannon, R. (2019, May 10). *3 ways the 1994 crime bill continues to hurt communities of color*. Center for American Progress. <https://www.americanprogress.org/issues/race/news/2019/05/10/469642/3-ways-1994-crime-bill-continues-hurt-communities-color/>

Schulenberg, J. E., Johnston, L. D., O'Malley, P. M., Bachman, J. G., Miech, R. A. & Patrick, M. (2020). *Monitoring the Future national survey results on drug use, 1975–2019: Volume II, College students and adults ages 19–60*. Institute for Social Research, The University of Michigan. <http://monitoringthefuture.org/pubs.html#monographs>

Statista Research Department. (2021, September 29). *Reported violent crime rate in the U.S. 1990-2019*. <https://www.statista.com/statistics/191219/reported-violent-crime-rate-in-the-usa-since-1990/>

Substance Abuse and Mental Health Services Administration. (2014). *Results from the 2013 National Survey on Drug Use and Health: Summary of national findings*. <https://www.samhsa.gov/data/sites/default/files/NSDUHresultsPDFWHTML2013/Web/NSDUHresults2013.pdf>

Substance Abuse and Mental Health Services Administration. (2019). *Risk and protective factors* [Fact Sheet]. <https://www.samhsa.gov/sites/default/files/20190718-samhsa-risk-protective-factors.pdf>

Substance Abuse and Mental Health Services Administration. (2020). *The national survey on drug use and health: 2019* [Data Release; PowerPoint Slides]. [https://www.samhsa.gov/data/sites/default/files/reports/rpt29392/Assistant-Secretary-nsduh2019\\_presentation/Assistant-Secretary-nsduh2019\\_presentation.pdf](https://www.samhsa.gov/data/sites/default/files/reports/rpt29392/Assistant-Secretary-nsduh2019_presentation/Assistant-Secretary-nsduh2019_presentation.pdf)

Teasley, D. (2001, January 24). *Crime Control: The Federal Response*. Congressional Research Service. <https://digital.library.unt.edu/ark:/67531/metacrs1529/>

The Atlantic. (2017, August 8). *Ta-Nehisi Coates reads from Between the World and Me* [Video]. YouTube. <https://youtu.be/2Ki2fhQIoSI>

The Sentencing Project. (2019). *Criminal Justice Facts*. <https://www.sentencingproject.org/news/new-prison-jail-population-figures-released-u-s-department-justice/>

Thomas, Y. F. (2007). *The social epidemiology of drug abuse*. *American Journal of Preventive Medicine*, 32(6), S141-S146. <https://doi.org/10.1016/j.amepre.2007.03.007>

Office of the Assistant Secretary for Planning and Evaluation. (2019). *2019 poverty guidelines*. U.S. Department of Health and Human Services. <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines/prior-hhs-poverty-guidelines-federal-register-references/2019-poverty-guidelines>

U.S. Department of Justice. (1994). *Violent crime control and law enforcement act of 1994* [Fact Sheet]. National Criminal Justice Reference Service. <https://www.ncjrs.gov/txtfiles/bills.txt>

Venkatesh, S. A. (2009). *Off the books: The underground economy of the urban poor*. Harvard University Press.

Western, B. & Pettit, B. (2010). *Collateral costs: Incarceration's effect on economic mobility*. Pew Charitable Trusts. [https://www.pewtrusts.org/~media/legacy/uploadedfiles/pcs\\_assets/2010/collateralcosts1pdf.pdf](https://www.pewtrusts.org/~media/legacy/uploadedfiles/pcs_assets/2010/collateralcosts1pdf.pdf)

# 4. Gateway Drugs (Caffeine, Alcohol, Tobacco, Marijuana)

## Introduction

In this module, you will learn about the substances that are commonly referred to as “gateway drugs.” This term refers to drugs whose initial use can lead to a person experimenting with drugs that may be more addictive.

Four different substances, with varying degrees of legality, will be discussed as common gateway drugs: caffeine, alcohol, tobacco, and marijuana.

### Learning Objectives

- Identify types of gateway drugs
- Understand how caffeine, tobacco, alcohol, marijuana work in the human body
- Explain the difference between use, misuse, abuse and dependence of gateway drugs
- Demonstrate familiarity with drug use policies and laws and the impacts they have on legal and illegal use related to the classes of gateway drugs

**Image 4.1 – Image of Several Used Cigarette Butts**



Photo by Pawel Czerwinski, [Unsplash](#), Unsplash License

# Learning Content

A drug is a chemical agent capable of producing biologic responses within the body. These responses may be desirable (therapeutic) or undesirable (adverse). The term “gateway drug” has been used to describe habit-forming drugs that may not be addictive, but could lead to the use of other addictive drugs (NIDA, *Marijuana drugFacts*, 2019). It is important to note that other factors are critical in a person’s risk for drug use. Biological mechanisms and social environment also affect the amount of drugs a person uses. .

For the purpose of this discussion, we will focus on substances that are commonly referred to as gateway drugs:

- caffeine
- alcohol
- tobacco
- marijuana

## Caffeine

**Image 4.2 – Hot Coffee in a White Mug Surrounded by Coffee Beans on a Wood Table**



Photo by Alin Luna, [Unsplash](#), Unsplash License

## History and Background

Caffeine is a bitter substance that occurs naturally in more than 60 plants, including coffee beans, tea leaves, kola nuts (used to flavor soft-drink colas), and cacao pods (used to make chocolate products). In addition, synthetic (man-made) caffeine is added to some medicines, foods, and drinks. For example, some pain relievers, cold medicines, and over-the-counter medicines for alertness contain synthetic caffeine, as do energy drinks, energy-boosting gums, and snacks (Medline Plus, 2021).

## Caffeine's Effects on the Body

Caffeine has many effects on your body's metabolism. It stimulates your central nervous system, which can make you feel more awake and give you a boost of energy. Caffeine is a diuretic, meaning that it helps your body get rid of extra salt and water by urinating more. The substance also increases the release of acid in your stomach, sometimes leading to an upset stomach or heartburn; may interfere with the absorption of calcium in the body; and increases your blood pressure.

Moderate caffeine intake is associated with positive benefits, too, if consumed through coffee. Drinking moderate amounts of coffee has been linked to lower risk of cardiovascular disease, Type 2 diabetes, and Parkinson's disease. Although researchers have yet to determine the exact mechanisms behind some of the antioxidants present and disease-preventing effects, it is important to keep in mind that these compounds may be exerting other beneficial effects, such as acting as an anti-inflammatory. Coffee also contains small amounts of some nutrients, including potassium, niacin, and magnesium (Eat Right, n.d.).

Within one hour of eating or drinking caffeine, it reaches its peak level in your blood. You may continue to feel the effects of caffeine for four to six hours.

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *True or False 4.1*

Caffeine causes the body to produce antidiuretic hormones which causes a person to urinate less frequently.

## Forms of Caffeine and How it is Consumed

Most people ingest caffeine from the drinks they consume. The amounts of caffeine in different drinks can vary a great deal.

### Caffeine Amounts

- Coffee – 8-ounce cup of coffee: 95-200 mg
- Soda – 12-ounce can of cola: 35-45 mg
- Energy Drink – 8-ounce energy drink: 70-100 mg
- Tea – 8-ounce cup of tea: 14-60 mg

Do you know how much caffeine you consume on a daily basis?

Explore this [chart](#) from Mayo Clinic to calculate your personal caffeine consumption.

Coffee is the most popular form of caffeine.

Energy drinks are beverages that have added caffeine. The amount of caffeine in energy drinks can vary widely, and sometimes the labels on the drinks do not give you the actual amount of caffeine in them. Energy drinks may also contain sugars, vitamins, herbs, and supplements.

Companies that make energy drinks claim that the drinks can increase alertness and improve physical and mental performance. This strategy has helped make the drinks popular with American teens and young adults. There is limited data showing that energy drinks might temporarily improve alertness and physical endurance. There is not enough evidence to show that they enhance strength or power. But what we do know is that energy drinks can be dangerous because they have large amounts of caffeine. And since they have contain a high amount of sugar, they can contribute to weight gain and worsen diabetes.

Sometimes young people mix their energy drinks with alcohol. It is dangerous to combine alcohol and caffeine. Caffeine can interfere with your ability to recognize how intoxicated you are, which can lead you to drink more. This also makes you more likely to make bad decisions.

### Critical Thinking

Do you rely on caffeine to start your day? Do you rely on caffeine later in the day to “get through” your day? There are no right or wrong answers here.

## Use, Misuse, and Overuse

For most people, it is not harmful to consume up to 400mg of caffeine a day. Some people are more sensitive to the effects of caffeine than others.

### *Side effects of misuse and overuse*

If a person eats or drinks too much caffeine, these health problems can result:

- restlessness and shakiness
- insomnia
- headaches
- dizziness
- rapid or abnormal heart rhythm
- dehydration
- anxiety
- dependency, so you need to take more of it to get the same results

### *Avoiding Caffeine Intake*

Individuals should consult their health-care provider about whether they should limit or avoid caffeine.

Conditions that can be worsened by caffeine include:

- sleep disorders, including insomnia
- migraines or other chronic headaches
- anxiety
- Gastroesophageal Reflux Disease (GERD) or ulcers
- fast or irregular heart rhythms
- high blood pressure
- use of certain medicines or supplements, including stimulants, certain antibiotics, asthma medicines, and heart medicines.

### *Caffeine Withdrawal*

If a person has been consuming caffeine on a regular basis and then suddenly stop, they may experience caffeine withdrawal.

## Symptoms of Caffeine Withdrawal

Headaches	Irritability	Difficulty concentrating
Drowsiness	Nausea	

These symptoms usually go away after a couple of days.

## Life-Span Considerations

<b>Children/Teens</b>	Children can be especially sensitive to the effects of caffeine
<b>Pregnancy</b>	Caffeine passes through the placenta to baby
<b>Breastfeeding</b>	Small amounts of caffeine can be passed through breast milk to baby

## Alcohol

**Image 4.3 – Collection of Several Bottles of Alcohol on a Wooden Shelf**



Photo by CHUTTERSAP, [Unsplash](#), Unsplash License

## History and Background

Alcohol comes in many forms. Beer, wine, and liquor are the standard types of alcohol consumed. The category “liquor” has hundreds of types and within those types, even more brands are available for consumers to purchase.

Ethyl alcohol, or ethanol, is an intoxicating ingredient found in beer, wine, and liquor. Alcohol is produced by the fermentation of yeast, sugars, and starches (CDC, “Alcohol and public health,” n.d.).

Some Americans have enjoyed a drink of alcohol since the first settlers arrived. But other Americans, fearing the harm alcohol would do to society and to individuals, have tried to stop others from drinking or limit who, when, and where people could consume alcohol (Bustard, 2014). Prohibition, age restrictions, and sales restrictions are all examples of regulation designed to limit others from drinking alcohol. These different views of alcoholic beverages run throughout American history and are still present today. In early America, drinking alcohol was an accepted part of everyday life at a time when water was often contaminated and life was hard. Alcohol was not just a liquid to drink, it was also seen as medicinal by physicians (Bustard, 2014).

The table below shows how much alcohol the average drinking-age American consumed throughout history:

Year	1790	1830	2014
Average amount of absolute alcohol consumed for each drinking-age individual in America	5.8 gallons	7.1 gallons	2.3 gallons

In the mid-1800s, various groups, many religious, started to call for a ban on alcohol. The movement gained power through the early 1900s. At 12:01 A.M. on January 17, 1920, the 18th Amendment of the U.S. Constitution went into effect to ban the manufacture, transport, and sale of alcohol and Prohibitionists rejoiced that at long last, America had become officially dry (PBS, 2021).

### Image 4.4 – The U.S. is Voted Dry



U.S. is Voted Dry, [The American Issue](#), Public Domain

However, that ban on alcohol did not last forever. Organized crime and other law breakers were still distributing alcohol. By the early 1930s, Prohibition's modification or even repeal became politically possible. In the midst of the Great Depression, the country reversed and moved toward an acceptance of alcohol, eventually ratifying a 21st Amendment to repeal the 18th. In 1933, Americans enthusiastically celebrated the end of Prohibition. In many cities, crowds filled the streets and bars opened their doors to a rush of customers (Bustard, 2014).

Review this [timeline](#) to see alcohol consumption and trends through the years.

## Alcohol's Effects on the Body

Alcohol affects every organ in the body. Alcohol is a central nervous system (CNS) depressant that is quickly absorbed from the stomach and small intestine into the bloodstream. Alcohol is metabolized in the liver by enzymes. The liver can only metabolize a small amount of alcohol at a time, leaving the excess alcohol to circulate throughout the body. The intensity of the effect of alcohol on the body is directly related to the amount consumed (CDC *Alcohol and public health*, n. d.). The more a person drinks, the more they will feel the effects.

Body size, presence of food in the body can delay the onset of effects of alcohol. Acute overdoses of alcohol cause vomiting, low blood pressure, trouble breathing, and coma. Death can occur from alcohol poisoning. Other CNS depressant drugs can increase these effects and should not be consumed together.

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *Multiple Choice 4.2*

Where is alcohol metabolized in the human body?

1. Kidneys
2. Brain
3. Heart Vessels
4. Liver

## Effects of Drinking Alcohol

Most people drink alcohol to “take the edge off” or “get a buzz”. These terms come from the feelings of relaxation that some people experience when drinking alcohol.

## Physical Effects of Alcohol

Loss of Motor Coordination	Memory Impairment	Reduced Judgement
Relaxation	Sedation	Decreased inhibition

Important Note about Drinking Small Amounts of Alcohol

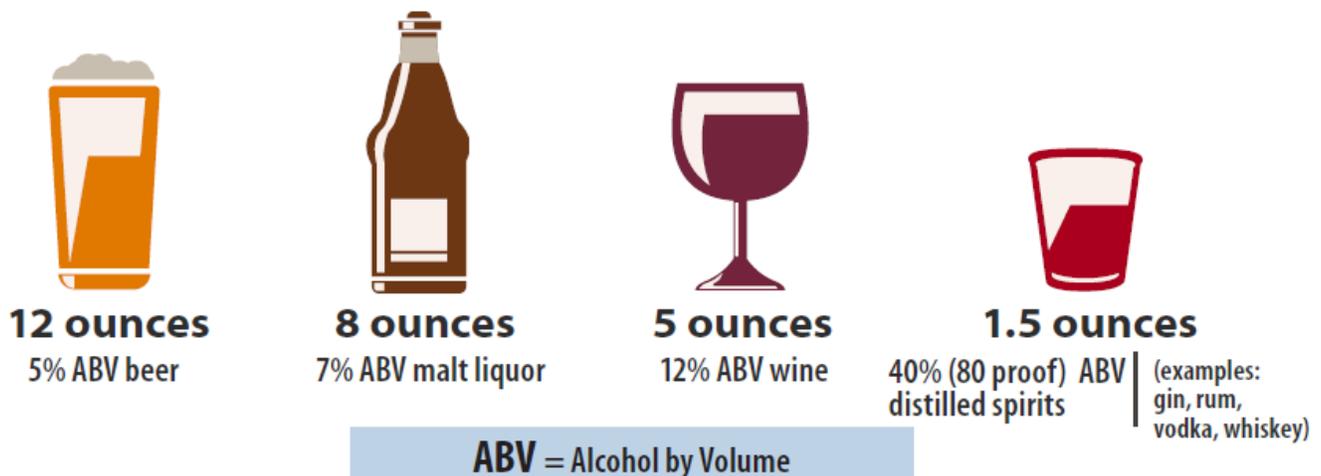
Small quantities of alcohol consumed daily have been found to reduce the risk of stroke and heart attack.

## Forms of Alcohol and How it is Consumed

A standard drink is equal to 14.0 grams (0.6 ounces) of pure alcohol. Generally, this amount of pure alcohol is found in

- 12 ounces of beer (5% alcohol content).
- 8 ounces of malt liquor (7% alcohol content).
- 5 ounces of wine (12% alcohol content).
- 1.5 ounces or a “shot” of 80-proof (40% alcohol content) distilled spirits or liquor (e.g., gin, rum, vodka, whiskey)

**Image 4.5 – Alcohol by Volume (ABV) Chart**



Standard Drink by [Centers for Disease Control and Prevention](#), Public Domain

## Use, Misuse, and Overuse

In America, the consumption of alcohol is regulated by many laws and regulations. One of the most important laws is the “drinking age”. The legal age to drink has changed throughout the years.

### Image 4.6 – Notice: No Drinking Under 21 Sign



“No Drinking Under Age 21” by [Centers for Disease Control and Prevention](#), Public Domain

Minimum Legal Drinking Age (MLDA) laws specify the legal age at which an individual can purchase alcoholic beverages. The MLDA in the United States is 21 years. However, prior to the enactment of the National Minimum Drinking Age Act of 1984, the legal age at which alcohol could be purchased varied from state to state (CDC, *Minimum drinking age*, n. d.).

### Critical Thinking

Why is underage drinking a community health problem? How does age 21 as the minimum legal drinking age help protect individuals and communities?

Reasons why underage drinking is a problem:

- Excessive drinking contributes to more than 3,500 deaths among people below the age of 21 in the U.S. each year.
- Underage drinking cost the U.S. economy \$24 billion in 2010.
- In 2010, about 189,000 people under the age of 21 visited the emergency department for injuries linked to alcohol.
- More than 90% of the alcohol consumed by those under age 21 is consumed by binge drinkers (defined as 5 or more drinks per occasion for boys; 4 or more drinks per occasion for girls).

Drinking by those below the age of 21 is also strongly linked with:

- death from alcohol poisoning
- unintentional injuries, such as car crashes, falls, burns, and drowning
- suicide and violence, such as fighting and sexual assault
- changes in brain development
- school performance problems, such as higher absenteeism and poor or failing grades
- alcohol dependence later in life

There is also evidence that the age 21 MLDA protects drinkers from alcohol and other drug dependence, adverse birth outcomes, suicide, and homicide.

Many individuals can drink alcohol in moderation and have no problem stopping. Other individuals may find themselves engaging in misuse and overuse related to social events.

See the below definitions to understand the difference between moderate drinking, excessive alcohol use, binge drinking and getting “drunk.”

**Moderate drinking:** 2 drinks or less in a day for men and 1 drink or less in a day for women, when alcohol is consumed. Drinking less is better for health than drinking more (Dietary Guidelines for Americans, 2021).

**Excessive alcohol use:** includes binge drinking, heavy drinking, any alcohol use by people under the age of 21 minimum legal drinking age, and any alcohol use by pregnant women (CDC, *Alcohol and public health*, n. d.).

**Binge drinking:** a pattern of alcohol consumption that brings the blood alcohol concentration (BAC) level to 0.08% or more. This pattern of drinking usually corresponds to 5 or more drinks on a single occasion for men or 4 or more drinks on a single occasion for women, generally within about 2 hours (CDC, *Alcohol and public health*, n. d.).

**Drunk:** “Getting drunk” or becoming intoxicated is the result of consuming excessive amounts of alcohol. Binge drinking typically results in acute intoxication (CDC, *Alcohol and public health*, n. d.).

Chronic excessive use produces physiological and psychological dependence and results in many adverse health effects. Individuals with chronic excessive use or alcoholism are at risk of alcohol withdrawal syndrome which can be a severe and life threatening condition that requires hospitalization.

## Side Effects of Misuse and Overuse

Excessive drinking both in the form of heavy drinking or binge drinking, is associated with numerous health problems:

- chronic diseases such as liver cirrhosis (damage to liver cells); pancreatitis (inflammation of the pancreas); varying cancers, including liver, mouth, throat, larynx (the voice box), and esophagus; high

blood pressure; and psychological disorders.

- unintentional injuries, such as falls, car crashes, drowning, burns, and firearm injuries.
- violence, such as child maltreatment, homicide, and suicide.
- harm to a developing fetus if a woman drinks while pregnant
- sudden infant death syndrome (SIDS)
- alcohol use disorders

Excessive drinking both in the form of heavy drinking or binge drinking, is associated with numerous personal problems:

- financial concerns due to the amount of money spent on alcohol
- legal concerns such as drunk driving and making bad decisions while drinking
- emotional strain on relationships
- feelings of depression

## Life-Span Considerations:

### *Children and Teens*

Studies have shown that alcohol use by adolescents and young adults increases the risk of both fatal and nonfatal injuries. Research has also shown that people who use alcohol before age 15 are six times more likely to become alcohol dependent than adults who begin drinking at age 21. Other issues include increased risky sexual behaviors, poor school performance, and increased risk of suicide and homicide (CDC, *Alcohol and public health*, n. d.)

### *Pregnancy and Lactation*

Drinking alcohol at any time during pregnancy can cause serious health problems for ones baby.

When someone drinks alcohol during pregnancy, the alcohol in the blood quickly passes through the placenta and the umbilical cord to the baby. The placenta grows in the uterus (womb) and supplies the baby with food and oxygen through the umbilical cord. Drinking any amount of alcohol at any time during pregnancy can harm a baby's developing brain and other organs. No amount of alcohol has been proven safe at any time during pregnancy (March of Dimes, n. d.).

Drinking alcohol during pregnancy increases a baby's chances of these problems:

- premature birth
- brain damage and problems with growth and development
- birth defects, like heart defects, hearing or vision problems

- fetal alcohol spectrum disorders (also called FASDs)
- low birthweight (also called LBW)
- miscarriage
- stillbirth

Breastfeeding women must also be aware that alcohol and other substances can be passed to their breastfed infant.

Lactating women should also follow the guidance of their healthcare provider.

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *Multiple Choice 4.3*

Which of the following types of drinking patterns is NOT considered excessive alcohol use?

1. Heavy drinking
2. Binge drinking
3. Alcohol use by people over the age of 65
4. Alcohol use by people under the minimum legal drinking age of 21

### *True or False 4.4*

It is not safe to consume alcohol while pregnant.

### *Multiple Choice 4.5*

A standard serving of beer is how many ounces?

1. 32 ounces
2. 8 ounces
3. 12 ounces
4. 16 ounces

# Tobacco

**Image 4.7 – Picture of Cigarettes**



Photo by Shaun Meintjes, [Unsplash](#), Unsplash License

## History and Background

Tobacco use is the leading cause of preventable disease, disability, and death in the United States. Based on 2019 data, about 34 million U.S. adults smoke cigarettes. Every day, about 1,600 young people under age 18 smoke their first cigarette, and 235 begin smoking cigarettes daily. Over 16 million people live with at least one disease caused by smoking, and 58 million nonsmoking Americans are exposed to secondhand smoke (CDC, *Smoking and tobacco use*, n. d.). Tobacco is unique because it is a legal substance that contains nicotine which is highly addictive and highly carcinogenic (cancer causing). Tobacco is most often inhaled by cigarette, pipe, or cigar.

The tobacco industry has been a driver in American and global economies for centuries. Slave trade and slave ownership has roots in the tobacco industry. As the tobacco industry evolved into the 20th century, marketing has become a huge part of the industry.

Cigarette and smokeless tobacco companies spend billions of dollars each year to market their products. In 2019, the largest cigarette and smokeless tobacco companies spent \$8.2 billion on advertising and promotional expenses in the United States alone.

For instance, the four major U.S. cigarette companies spent \$7.62 billion on cigarette advertising and promotion in 2019. Additionally, the five major U.S. smokeless tobacco manufacturers spent \$576.1 million on smokeless tobacco advertising and promotion in 2019. Smokeless tobacco products include dry snuff, moist snuff, plug/twist, loose-leaf chewing tobacco, snus, and dissolvable products.

The money cigarette and smokeless tobacco companies spent in 2019 on U.S. marketing amounted to

- about \$22.5 million each day,
- about \$25 for every person (adults and children) in the United States per year (according to 2019 population estimate of 328,239,523), and
- about \$240 per year for each U.S. adult smoker (based on 34.2 million adult smokers in 2018).

Review the Center for Disease Control and Prevention’s [Tobacco Marketing FactSheet](#)

## Tobacco’s Effects on the Body

Tobacco contains nicotine which is a central nervous stimulant (CNS). The effects of inhaled nicotine may last from 30 minutes to several hours. After a person uses nicotine, they may experience increased alertness, ability to focus, feelings of relaxation, and light-headedness. The individual may experience short-term enjoyment from the nicotine in tobacco.

Watch this video from TED Talks on how tobacco affects the body.

[Video 4.1 – How do Cigarettes Affect the Body?](#)

## Body System and Effects

<b>Cardiovascular</b>	<b>Respiratory</b>	<b>Metabolic</b>
Increased heart rate	Decreased lung health	Increases metabolic rate (which may lead to weight loss)
Increased blood pressure	Decreased conditioning	Reduced appetite

## Forms of Tobacco and How it is Consumed

Tobacco comes in many forms and enters the body in different ways, including:

- Cigarette – Inhaled
- Pipe – Inhaled
- Cigar – Inhaled
- Chewing tobacco (dip or pouches) – Chewed in mouth
- E-cigarette or Vape – Aerosol that is inhaled (“vaped”)
- Hookah (also known as a narghile, sisha) – Inhaled through water pipe

Have you heard of vape pens or e-cigarettes? Most likely you have by now. These products are very popular, especially with youth. Read more [about electronic cigarettes](#).

## Use, Misuse, and Overuse

No health organizations recognize that any amount of tobacco use is safe. Thus, classifications on what is considered, safe or moderate use, do not exist.

## Side Effects of Misuse and Overuse

Smoking leads to disease and disability and harms nearly every organ of the body. Smoking causes cancer, heart disease, stroke, lung diseases, diabetes, and chronic obstructive pulmonary disease (COPD), which includes emphysema and chronic bronchitis. Smoking also increases risk for tuberculosis, certain eye diseases, and problems of the immune system, including rheumatoid arthritis. As demonstrated in Image 4.8, tobacco is physically harmful, but it also carries a high financial cost.

**Image 4.8 – Smoking Can Cause Cancer Almost Anywhere in your Body**



“Smoking Can Cause Cancer Almost Anywhere in your Body” by Centers for Disease Control and Prevention, [Cancer](#), Public Domain

The Centers for Disease Control and Prevention have several health messaging campaigns aimed at increasing the awareness of the dangers of tobacco smoking. *Tips from Former Smokers* is a series of videos that highlight stories of smokers of varying ages, demographics, and ethnic groups. Watch Julia C's story:

[Video 4.2 – CDC: Tips from Former Smoker’s–Julia C’s Wake-Up Call](#)

### *Cigarette Sales*

During 2017, about 249 billion cigarettes were sold in the United States—a 3.5% decrease from the 258 billion sold in 2016. Four companies—Philip Morris USA, Reynolds American Inc., ITG Brands, and Liggett—accounted for about 92% of U.S. cigarette sales. Imports, primarily from Canada and South Korea, accounted for approximately 8.3% of U.S. cigarette inventories in 2016 and 7.9% in 2017. By state, the average retail price of a pack of 20 cigarettes (full-priced brands), including federal and state excise taxes, ranged from \$4.62 in Missouri to a high of \$10.67 in New York, as of November 2017. On average, federal and state excise taxes account for 44.3% of the retail price of cigarettes (CDC, *Economic trends in tobacco*, n.d.)

### *Cost of Smoking-Related Illness*

Smoking-related illness in the United States costs more than \$300 billion each year, including:

- more than \$225 billion for direct medical care for adults, and
- more than \$156 billion in lost productivity, including \$5.6 billion in lost productivity due to secondhand smoke exposure.

It can be very difficult for someone to quit smoking.

Although the benefits of quitting are greater the earlier in life that an individual quits, the United States Surgeon General report (2020) confirms that it is never too late to quit smoking. Even persons who have smoked for many years can experience substantial health and financial benefits if they stop smoking.

If you or someone you know needs or wants help quitting smoking and other tobacco products, many non-profit health and government agencies exist to help.

Review [resources on quitting smoking](#).

Image 4.9 – Cigarette Smoking Facts



“Smoking Rates Declining” by [Centers for Disease Control and Prevention](#), Public Domain

## Special Consideration: Secondhand Smoke

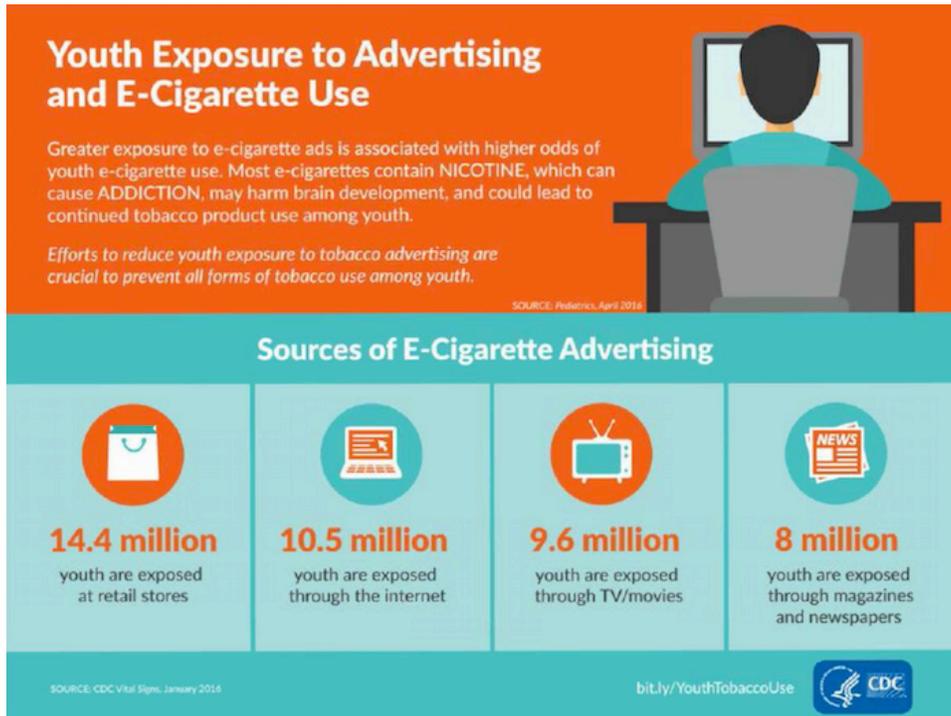
Have you heard the term “secondhand smoke” before? Did you understand what the term was referring to at the time?

Secondhand smoke exposure contributes to approximately 41,000 deaths among nonsmoking adults and 400 deaths in infants each year. Secondhand smoke can cause stroke, lung cancer, and coronary heart disease in adults. Children who are exposed to secondhand smoke are at increased risk for sudden infant death syndrome, acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth.

## Life-Span Considerations

Youth are exposed to advertising aimed specifically at their age group. Increased advertising is associated with increased e-cigarette use. Use is growing in this age group and can lead to lifetime addiction of tobacco products.

**Image 4.10 – Youth Exposure to Advertising and E-Cigarette Use**



“Youth Ads ECigs” by [Centers for Disease Control and Prevention](#), Public Domain

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *Multiple Choice 4.6*

Which of the following is NOT an effect of smoking or using tobacco products?

1. Decreased lung health
2. Smoother-looking skin
3. Increased heart rate
4. Increased metabolic rate

# Marijuana

**Image 4.11 – Picture of Marijuana**



Photo by Wesley Gibbs, [Unsplash](#), Unsplash License

## History and Background

Marijuana refers to the dried leaves, flowers, stems, and seeds from the cannabis sativa or cannabis indica plant. The plant contains the mind-altering chemical THC and other similar compounds. Extracts can also be made from the cannabis plant (NIDA, *Marijuana drugFacts*, 2019). Marijuana is often referred to through various street names, with weed and pot being the most common. There are multiple other slang terms that it goes by, such as “Mary Jane,” “bud,” “ganga,” “herb,” “chronic,” “grass,” “dope,” “hash,” “trees,” and “hemp”.

Marijuana is the most commonly used illegal drug in the United States, with 48.2 million users in 2019. Marijuana use may have a wide range of health effects on the body and brain.

**Image 4.12 – Test Your Marijuana IQ**



“Test Your Marijuana IQ” by Substance Abuse and Mental Health Services Administration, [Marijuana IQ Quiz](#), Public Domain

Go to this link to test your marijuana IQ (SAMHSA, 2021): [Marijuana IQ Quiz samhsa.gov](https://www.samhsa.gov/marijuana/quiz)

## Special Consideration: Laws Related to Marijuana Use and Distribution

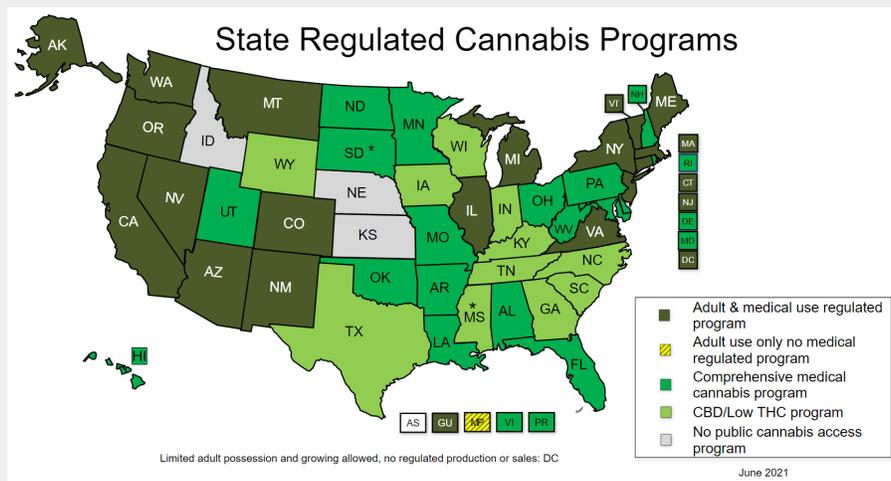
### *State vs. Federal Perspective*

At the federal level, marijuana remains classified as a Schedule I substance under the Controlled Substances Act. Schedule I substances are considered to have a high potential for dependency and no accepted medical use, making distribution of marijuana a federal offense. In October of 2009, the Obama Administration sent a memo to federal prosecutors encouraging them not to prosecute people who distribute marijuana for medical purposes legally permissible under state law.

States with medical marijuana laws generally have some form of patient registry, which may provide those using marijuana for approved medical uses with some protection against arrest for possession up to a certain amount of marijuana for personal medicinal use.

Some of the most common policy questions regarding medical marijuana include how to regulate its recommendation, dispensing, and registration of approved patients. Some states and localities without dispensary regulation are experiencing a boom in new businesses. Medical marijuana growers for dispensaries are often called “caregivers” and may be limited to growing a certain number of plants or products per patient. This issue may also be regulated on a local level, in addition to any state regulation (National Conference of State Legislatures, 2021).

**Image 4.13 – State Regulated Cannabis Programs (June 2021)**



“State Regulated Cannabis Programs” by National Conference of State Legislatures, [State Medical Cannabis Laws](#), All Rights Reserved

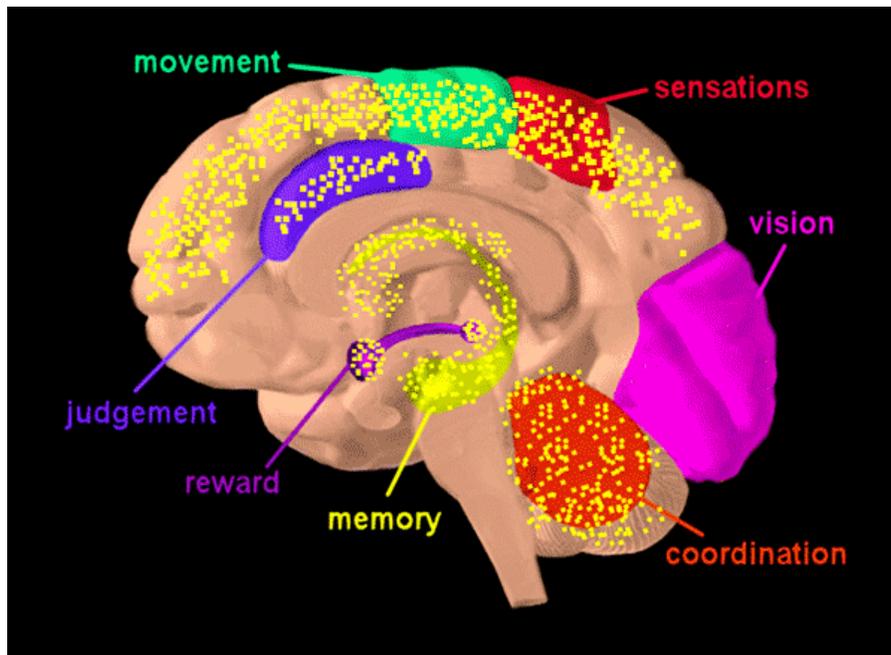
## Marijuana's Effects on the Body

When a person smokes marijuana, THC quickly passes from the lungs into the bloodstream. The blood carries the chemical to the brain and other organs throughout the body. The body absorbs THC more slowly when the person eats or drinks it. In that case, a person using THC generally feels the effects after 30 minutes to 1 hour. THC acts on specific brain-cell receptors that ordinarily react to natural THC-like chemicals.

These natural chemicals play a role in normal brain development and function. Marijuana over activates parts of the brain that contain the highest number of these receptors. The activation of brain receptors causes the “high” that people feel (NIDA, *Marijuana drugFacts*, 2019).

THC acts on numerous areas in the brain (shown in yellow in the image below).

**Image 4.14 – Areas of the Brain Affected by THC**



“THC Brain” by the [National Institute on Drug Abuse](#), Public Domain

### Effects of Using Marijuana

- altered senses
- altered sense of time
- changes in mood
- impaired body movement
- difficulty with thinking and problem-solving
- impaired memory

- hallucinations (when taken in high doses)
- delusions (when taken in high doses)
- psychosis (risk is highest with regular use of high-potency marijuana)

## Forms of Marijuana and How it is Consumed

People smoke marijuana in hand-rolled cigarettes (joints) or in pipes or water pipes (bongs). People also smoke it in blunts—emptied cigars that have been partly or completely refilled with marijuana.

To avoid inhaling smoke, some people use vaporizers. These devices pull the active ingredients (including THC) from the marijuana and collect their vapor in a storage unit. A person then inhales the vapor, not the smoke. Some vaporizers use a liquid marijuana extract.

People can mix marijuana in food (edibles), such as brownies, cookies, or candy, or brew it as a tea. A newly popular method of use is smoking or eating different forms of THC-rich resins which is called “dabbing” (NIDA, *Marijuana drugFacts*, 2019).

### Image 4.15 – Marijuana Edibles



Photo by Mike Von on [Unsplash](#), Unsplash License

## Use, Misuse, and Overuse

Marijuana use is difficult to classify. The drug may be used for medical reasons, recreation, or a combination of both. Infrequent marijuana use is unlikely to cause long-term effects.

Researchers are studying whether medical marijuana can help treat a number of conditions including:

- [alzheimer's disease](#)
- appetite loss
- [cancer](#)
- [crohn's disease](#)
- diseases, such as HIV/AIDS or [multiple sclerosis](#) (MS), that affect the immune system
- [eating disorders](#) such as [anorexia](#)
- [epilepsy](#)
- [glaucoma](#)
- [mental-health](#) conditions like [schizophrenia](#) and [post-traumatic stress disorder](#) (PTSD)
- [muscle spasms](#)
- [nausea](#)
- [pain](#)
- seizures
- wasting syndrome (cachexia)

A fatal overdose is unlikely, but that does not mean marijuana is harmless. The signs of using too much marijuana are similar to the typical effects of using marijuana but more severe. These signs may include extreme confusion, anxiety, paranoia, panic, fast heart rate, delusions or hallucinations, increased blood pressure, and severe nausea or vomiting.

Marijuana use can lead to the development of a substance-use disorder, a medical illness in which the person is unable to stop using even though it causes health and social problems in their life. Severe substance-use disorders are also known as addiction. Research suggests that between 9 and 30% of people who use marijuana may develop some degree of marijuana use disorder. People who begin using marijuana before age 18 are four to seven times more likely than adults to develop a marijuana-use disorder (NIDA, *Marijuana drugFacts*, 2019).

About 1 in 10 marijuana users will become addicted. For people who begin using before the age of 18, that number rises to 1 in 6.

Some of the signs that someone might be addicted include:

- unsuccessful efforts to quit using marijuana
- giving up important activities with friends and family in favor of using marijuana
- using marijuana even when it is known that it causes problems fulfilling everyday jobs at home, school or work

## Side Effects of Misuse and Overuse

Review information from the [Centers for Disease Control and Prevention](#) on how marijuana use can impact or cause:

- addiction

- brain health
- cancer
- chronic pain
- heart health
- lung health
- mental health
- poisoning
- risk of using other drugs

Many people who use marijuana long term and are trying to quit report mild withdrawal symptoms that make quitting difficult.

Withdrawal symptoms of marijuana and THC products include:

- grouchiness
- sleeplessness
- decreased appetite
- anxiety
- cravings

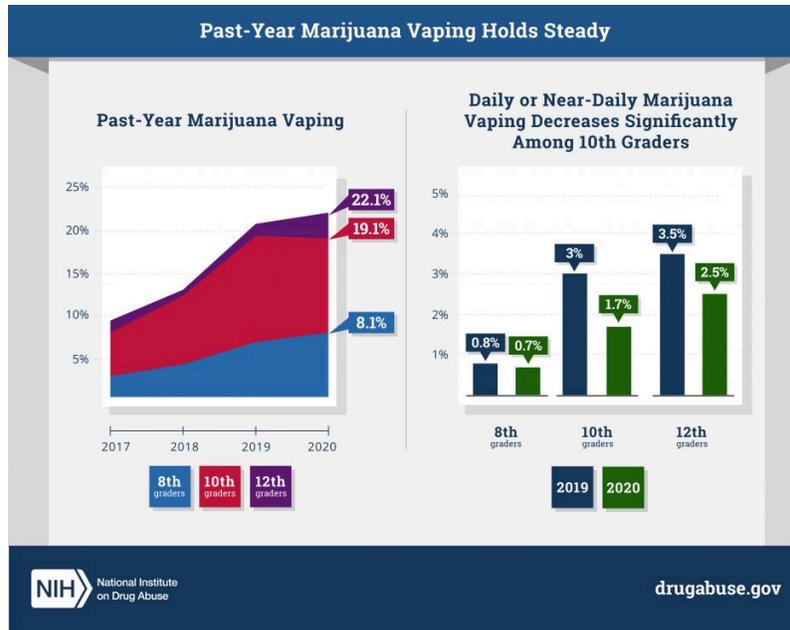
## Life-Span Considerations

### *Children and Teens*

Marijuana use directly affects the parts of the brain responsible for memory, learning, attention, decision making, coordination, emotions, and reaction time. Developing brains, like those in babies, children, and teens, are especially susceptible to the adverse effects of marijuana.

Teens are also more likely to use marijuana products in other forms, such as THC vape pens. The chart in Image 4.16 depicts use of these products.

**Image 4.16 – Facts about Teenage Marijuana Vaping**



Past-Year Marijuana Vaping Holds Steady by the [National Institute on Drug Abuse](#), Public Domain

### *Pregnancy and Lactation*

Using marijuana during pregnancy may increase the baby’s risk for developmental problems. Chemicals from marijuana can be passed to the baby through breast milk. THC is stored in fat and is slowly released over time, meaning the baby could still be exposed even after you stop using marijuana.

However, data on the effects of marijuana exposure to your baby through breastfeeding are limited and conflicting. To limit potential risk to the infant, breastfeeding mothers should avoid marijuana use.

### Check Your Knowledge

Refer to the end of the chapter for answers.

### *True or False 4.7*

Marijuana is legal on a federal level in the United States.

### *Multiple Choice 4.8*

Which of the following is NOT a sign of using too much marijuana?

1. Low heart rate
2. High heart rate
3. Severe nausea or vomiting
4. Anxiety or paranoia

### *Fill in the Blank 4.9*

[Blank] is a common street name for marijuana.

## **Answers**

### **True or False 4.1**

**Answer:** False

**Explanation:** Caffeine is a diuretic, meaning that it causes the body to excrete more salt and water by urinating more.

### **Multiple Choice 4.2**

**Answer:** Liver

**Explanation:** Alcohol is metabolized in the liver by enzymes.

### **Multiple Choice 4.3**

**Answer:** 3. Alcohol use by people over the age of 65

**Explanation:** Alcohol use by people over the age of 65 is not considered excessive alcohol use. Excessive alcohol use includes binge drinking, heavy drinking, any alcohol use by people under the age of 21 minimum legal drinking age, and any alcohol use by pregnant women (“Alcohol and Public Health,” 2021).

## True or False 4.4

**Answer:** True.

**Explanation:** No amount of alcohol during pregnancy is considered safe by major medical organizations.

## Multiple Choice 4.5

**Answer:** 3. 12 ounces

**Explanation:** Twelve ounces is a standard serving of beer. When considering amount of alcohol consumed, remember that the alcohol-by-volume content varies among different types of drink.

## Multiple Choice 4.6

**Answer:** 2. Smoother-looking skin

**Explanation:** Smoother-looking skin is NOT an effect of smoking or using tobacco products. Smoking is actually associated with increased wrinkles and dryness.

## True or False 4.7

**Answer:** False

**Explanation:** At the federal level, marijuana remains classified as a Schedule I substance under the Controlled Substances Act, where Schedule I substances are considered to have a high potential for dependency and no accepted medical use, making distribution of marijuana a federal offense.

## Multiple Choice 4.8

**Answer:** 1. Low heart rate

**Explanation:** The signs of using too much marijuana are similar to the typical effects of using marijuana but more severe. These signs may include extreme confusion, anxiety, paranoia, panic, fast heart rate, delusions or hallucinations, increased blood pressure, and severe nausea or vomiting.

## Fill in the Blank 4.9

**Answer:** Some common terms include: weed, pot, 'Mary Jane,' 'bud,' 'ganga,' 'herb,' 'chronic,' 'grass,' 'dope,' 'hash,' 'trees,' and 'hemp.'

## Supplemental Resources

Substance Abuse and Medical Health Services Administration (SAMHSA). (2021, May 25). *National Helplines*. <https://www.samhsa.gov/find-help/national-helpline>

## References

Burns, K. (n.d.). *Roots of prohibition*. Public Broadcasting Service. Retrieved July 28, 2021, from <https://www.pbs.org/kenburns/prohibition/roots-of-prohibition/>

Bustard, B. (2014). *Spirited republic*. National Archives. Retrieved July 28, 2021, from <https://www.archives.gov/files/publications/prologue/2014/winter/spirited.pdf>

Centers for Disease Control and Prevention. (2021, February 16). *Alcohol and public health*. Retrieved July 28, 2021, from <https://www.cdc.gov/alcohol/faqs.htm>

Centers for Disease Control and Prevention. (2015, March 26). *CDC: Tips from former smokers – Julia C.'s wake-up call* [Video]. YouTube. <https://youtu.be/QLdEL-q-WFo>

Centers for Disease Control and Prevention. (2020, September 3). *Minimum legal drinking age of 21 saves lives* [Fact sheet]. <https://www.cdc.gov/alcohol/fact-sheets/minimum-legal-drinking-age.htm>

Centers for Disease Control and Prevention. (2020, November 16). *Office on Smoking and Health*. Retrieved July 18, 2021, from <https://www.cdc.gov/tobacco/about/osh/index.htm>

Centers for Disease Control and Prevention. (2021, May 25). *Tobacco sales* [Fact sheet]. Retrieved July 18, 2021, from [https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/economics/econ\\_facts/index.htm#sales](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/index.htm#sales)

Klemm, S. (2020, September 29). *Benefits of coffee*. Retrieved July 27, 2021, from <https://www.eatright.org/health/wellness/preventing-illness/benefits-of-coffee>

March of Dimes. (2016, April). *Alcohol during pregnancy*. Retrieved July 18, 2021, from <https://www.marchofdimes.org/pregnancy/alcohol-during-pregnancy.aspx>

MedlinePlus (2021, July 2). *Caffeine*. National Library of Medicine. Retrieved July 27, 2021, from <https://medlineplus.gov/caffeine.html>

National Conference of State Legislatures. (2021, August 23). *State medical cannabis laws*. Retrieved July 18, 2021, from <https://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx>

National Institute on Drug Abuse (NIDA). (2019, December 24). *Marijuana drugFacts*. U.S. Department of Health and Human Services, National Institutes of Health. Retrieved July 29, 2021, from <https://nida.nih.gov/publications/drugfacts/marijuana>

Rutgers Center of Alcohol & Substance Use Studies. (n.d.). *History*. Retrieved July 18, 2021, from <https://alcoholstudies.rutgers.edu/history/>

Sudhir, K. (2018, September 13). *How do cigarettes affect the body* [Video]. TED. [https://www.ted.com/talks/krishna\\_sudhir\\_how\\_do\\_cigarettes\\_affect\\_the\\_body](https://www.ted.com/talks/krishna_sudhir_how_do_cigarettes_affect_the_body)

U.S. Department of Agriculture & U.S. Department of Health and Human Services. (2020). *Dietary guidelines for Americans, 2020-2025* (9th ed.). <https://www.dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials>

U.S. Department of Health and Human Services. (2020). *Smoking cessation: A report of the Surgeon General*. Retrieved July 19, 2021, from <https://www.hhs.gov/sites/default/files/2020-cessation-sgr-full-report.pdf>

# 5. Sedative Hypnotics, Psychotherapeutic Drugs, Psychedelics, and Hallucinogens

## Introduction

Drugs in the sedative hypnotic, psychotherapeutic, hallucinogenic, and psychedelic categories are primarily used to treat insomnia, anxiety, depression, schizophrenia, and some addiction issues. Addiction issues carry a high risk of misuse and cause the user to experience physical and psychological problems that stem from their drug use.

### *Learning Objectives*

- Understand and explain sedative hypnotics and psychotherapeutic drugs.
- Understand and explain hallucinogens.
- Describe the effects of sedative hypnotics, psychotherapeutic drugs, and hallucinogens on the brain and their impact on mood, behavior, sleep, anxiety, and depression.
- Explain how sedative hypnotics, psychotherapeutic drugs, and hallucinogens work in the body.
- Understand how sedative hypnotics, psychotherapeutic drugs, and hallucinogens are used and misused.

**Image 5.1 – Woman Covering her Face with her Hands**



Photo by Dev Asangbam, [Unsplash](#), Unsplash License

# Learning Content

## Sedative Hypnotics and Psychotherapeutics

### History and Background

Barbiturates were the first known sedative hypnotic. Barbiturates were used to treat anxiety, depression, and insomnia. Despite their addictive nature, they continued to be used more and more in the 1950s and 1960s. The use of these drugs from 1930 to 1960 accounted for many suicides, attempted suicides, accidental deaths, and misuse.

The benefits of psychotherapeutic drugs were discovered in the late 1940s and early 1950s with the development of lithium, chlorpromazine, and monoamine oxidase inhibitors. These drugs played a major role in changing the treatment of psychiatric patients as many state hospitals and institutions closed and drugs became an additional solution for treating people with mental illness.

### Sedative Hypnotics and Psychotherapeutics' Effects on the Body

Sedative hypnotics and psychotherapeutics are best brought into the body orally or through intravenous injection.

#### **Sedative Drugs:**

- **Benzodiazepines** are approved for short term use in treating anxiety and sleep disorders. They are highly addictive and can only be used for up to six weeks.
  - ? Common Brand Names: Halcion, Estazolam, and Quazepam
- **Barbiturates** were once used to treat sleep problems and to encourage relaxation but because of risk of overdose barbiturates are used today as anticonvulsants and general anesthetics.
  - ? Common Brand Names: Luminal, Seconal, Fiorinal
- **Nonbenzodiazepines** are used to treat sleep problems. These drugs are highly addictive and can only be used for a short period of time. These drugs are very similar to Benzodiazepines.
  - ? Common Brand Names: Ambien and Lunesta
- **Methaqualone** is a sedative and a hypnotic medication, relaxing you and inducing sleep. Methaqualone is not really prescribed anymore because of the high risk of misuse.
  - ? Common Brand Names: Quaalude

## Psychotherapeutic Drugs:

- **Benzodiazepines** are approved as anti-anxiety agents as well as sleep-aid medications.
- **SSRI's** are antidepressants that treat depression, major depression and bipolar disorder.
  - ? Common Brand Names: Paxil, Prozac, Zoloft, Lexapro
- **Antipsychotics** are used to treat schizophrenia; chlorpromazine was the first antipsychotic drug that was introduced over 60 years ago and is still being used today in treatment.
  - ? Common Brand Names: Tindal, Acezine, Bromidal
- **Mood Stabilizers** are drugs used to treat bipolar disorder and other mood disturbances related to mania and depression. One of the first mood stabilizers introduced to the drug market in the 1940s was Lithium. From 1940-1980 several mood stabilizers were introduced to the drug market and are still in use today.
  - ? Common Brand Names: Latuda, Abilify, Risperdal

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *Multiple Choice 5.1*

If you recently suffered a traumatic event in your life and were struggling to sleep, which drug would your doctor prescribe for you to use on a short-term basis?

1. Ambien
2. Luminal
3. Halcion

### *Multiple Choice 5.2*

Which type of drug is best used to treat schizophrenia?

1. An antipsychotic
2. An SSRI
3. A mood stabilizer
4. A barbiturate

## How Sedative Hypnotics and Psychotherapeutics Work in the Body

Sedative hypnotic drugs enhance the effects of the neurotransmitter GABA in the brain. When prescribed in high doses, sedative hypnotics can repress the central nervous system and cause body systems to shut down. Short-term use of these drugs is encouraged because these drugs have high risk of misuse.

Psychotherapeutics alter neurotransmitters in the brain. People taking these drugs by prescription report difficulty feeling emotion once the drug has accumulated in their body. Users complain of being unable to cry, laugh, or experience feelings.

Side effects associated with use of both of these drugs include nervousness, rapid heart rate, chest pains, dizziness, headaches, and irritability.

## Use, Misuse, and Overuse

Sedative hypnotics are often used in conjunction with recreational drugs, making the risk of misuse a concern. Many sedative hypnotics are controlled substances because of the high risk of misuse and concerns with long term use. There is risk with use and concern with misuse when not taken as prescribed.

## Lifespan Considerations

Use of these drugs needs to be monitored by a healthcare provider. The risk of misuse with these drugs is high and therefore careful monitoring of use is important.

### *Critical Thinking*

Think about all of the mental health concerns mentioned in this section so far; anxiety, depression, insomnia, Bipolar disorder and schizophrenia.

Why are drugs used to treat these mental health conditions? What other things can people experiencing mental-health issues engage in as part of their treatment plan?

# Hallucinogens

**Image 5.2 – Images of Psilocybin Mushrooms, LSD, and Salvia Divinorum Hallucinogenic Compounds**



“Psilocybin mushrooms, LSD, and Salvia divinorum” by the National Institute on Drug Abuse, [Hallucinogens and Dissociative Drugs](#), Public Domain

## History and Background

Throughout history, hallucinogens and psychedelics have been used in ritual and religious ceremonies. Recently, use of these drugs has been centered around recreational use to help people with stress, to have fun, and have spiritual experiences. **LSD** and other manufactured hallucinogens and psychedelics first became widely used in the U.S. and Europe in the 1960s when people used them to feel pleasure, alter their mind, or experience a “**trip**”. PCP or phencyclidine, is a dangerous drug that was originally developed in the 1950s as a general anesthetic for surgery.

## Hallucinogens’ Effects on the Body

Hallucinogens can be brought into the body through injection or inhalation, or intranasally, conjunctivally (via eye drops), or orally by placing the pill or blotter paper under the tongue.

There are two forms of hallucinogens: classic hallucinogens and dissociative hallucinogens. Both cause hallucinations, which are images or sensations that are not real; dissociative hallucinogens can also cause the user to feel disassociated from their body or environment. Some hallucinogens are extracted from mushrooms and some are man-made.

### *Classic Hallucinogens:*

- **LSD** is one of the most powerful mind-altering drugs. It is a white or clear odorless material made from lysergic acid. For more information see: [LSD Fact Sheet](#)
- **DMT** is a chemical found in Amazonian plants or manufactured in a lab. It is a white powder that has a crystal look. Another name for DMT is Dimitri.
- **Mescaline** also known as Peyote comes from a cactus that contains mescaline. Mescaline can also be

made in a lab. Slang names for mescaline include cactus, button and mesc.

### *Dissociative Hallucinogens:*

- **PCP** is also known as Phencyclidine. PCP was first developed as a general anesthetic drug that was used in surgeries. There were serious side effects with use and PCP is no longer in use medically. PCP is available in tablets, capsules, liquid and white crystal powder. Slang names for PCP include Angel Dust, Hog, Love Boat and Peace Pill.
- **Ketamine** is an anesthetic used in surgery for animals and humans. Ketamine is a legal drug but it is widely available illegally and typically comes from veterinary offices. It is available as a liquid used with an IV, but is mostly sold as pills or in powder form. Slang names for Ketamine are K, Special K and Cat Valium.
- **DXM** is a cough suppressant and the main mucus clearing ingredient in cold and cough medicine available over-the-counter. For more information see: [Drug Fact Sheet: DXM](#)

#### *Critical Thinking*

Read the following article on DXM and become familiar with the risk of use. [Dextromethorphan/DXM Overdose: Dangers of Abusing Cough Medicine](#)

Reflect on these questions as you think about the misuse of a common over-the-counter drug. What are the risks associated with the use of DXM? Why is DXM misused by young people? What “high” are young people trying to achieve by using DXM?

### *Other Hallucinogens:*

- **MDMA** is chemically similar to hallucinogens and stimulants. It is a synthetic drug that alters mood and perception. An added risk to this drug is that it often contains other drugs, such as cocaine, ketamine, methamphetamine, and bath salts. These combinations increase the risk of use, as individuals may not be aware of what they are ingesting. Slang names used for MDMA are Molly and Ecstasy. Review this MDMA information: [10 Facts About MDMA](#)

### Image 5.3 – Colorful Ecstasy Pills



“Ecstasy Monogram” by Drug Enforcement Administration, [Wikimedia Commons](#), Public Domain

#### Critical Thinking

After reviewing all of the hallucinogens described above, what are the primary concerns you have with using these drugs? If you had to tell a friend about one of these drugs, which one would it be and why would you want to share the information with them?

## How Hallucinogens Work in the Body

Hallucinogens are substances that tend to alter perceptions, thought, or mood. Hallucinogens are likely to cause changes in mood or in thought and provide a false sensation that has no basis in reality. They work to disrupt the communication between the brain chemical systems throughout the brain and spinal cord. Some hallucinogens can interfere with serotonin production in the brain. When serotonin levels are impacted

because of hallucinogen use, mood is altered, sensory perception is not as sharp, and users can feel sleepy, hungry, and hot. When hallucinogens are taken, their effects can begin within 20 to 90 minutes and can last for up to 12 hours. While users can experience hallucinations, taking this type of drug can also cause an increase in heart rate, nausea, changes in sense of time, loss of appetite, dry mouth, and sleep problems.

## Use, Misuse, and Overuse

Hallucinogens have been used for religious reasons, but are also used as cough suppressants and anesthetics. Many hallucinogens are not addictive but they do cause tolerance so larger amounts of the drug would be needed over time to achieve the same “trip.”

## Lifespan Considerations

There are many known risks with hallucinogen use: bizarre behaviors, coma, poisoning that can lead to death, suicide concerns, and death from overdose. Certain hallucinogens are addictive, and individuals can develop tolerance to the drugs they are taking. Long-term impacts can include persistent psychosis and flashbacks.

## Answers

### Multiple Choice 5.1

**Answer:** 1. Ambien

**Explanation:** Ambien is a sleep aid that is prescribed to help people get relief from insomnia. The drug is meant to be used for a short period of time until normal sleep patterns return. Luminal is a barbiturate and Halcion is a benzodiazepine.

### Multiple Choice 5.2

**Answer:** 1. An antipsychotic

**Explanation:** Antipsychotic drugs are used to treat schizophrenia. SSRIs are antidepressants used to treat depression, major depression, and bipolar disorder. Mood stabilizers are used to treat bipolar disorder and disturbances related to mania and depression. Barbiturates encourage relaxation and are used to help and treat sleep disturbances.

## Supplemental Resources

Drug Enforcement Administration. (2020). *Drug Fact Sheet: Ketamine*. Retrieved July 28, 2021, from [https://www.dea.gov/sites/default/files/2020-06/Ketamine-2020\\_1.pdf](https://www.dea.gov/sites/default/files/2020-06/Ketamine-2020_1.pdf)

Drug Enforcement Administration. (2020). *Drug Fact Sheet: Salvia divinorum*. Retrieved July 28, 2021, from [https://www.dea.gov/sites/default/files/2020-06/Salvia%20Divinorum-2020\\_0.pdf](https://www.dea.gov/sites/default/files/2020-06/Salvia%20Divinorum-2020_0.pdf)

Liechti M. E. (2017). Modern clinical research on LSD. *Neuropsychopharmacology: Official publication of the American College of Neuropsychopharmacology*, 42(11), 2114–2127. <https://doi.org/10.1038/npp.2017.86>

National Institute on Drug Abuse. (2019, April 22). *Hallucinogens drugFacts*. U.S. Department of Health and Human Services, National Institutes of Health. Retrieved July 28, 2021, from <https://nida.nih.gov/publications/drugfacts/hallucinogens>

National Institute on Drug Abuse. (2020, June 15). *MDMA (ecstasy/molly) drugFacts*. U.S. Department of Health and Human Services, National Institutes of Health. Retrieved July 28, 2021, from <https://nida.nih.gov/publications/drugfacts/mdma-ecstasymolly>

National Institute on Drug Abuse. (2021, July 16). *Hallucinogens and dissociative drugs research report*. U.S. Department of Health and Human Services, National Institutes of Health. Retrieved September 6, 2021, from <https://nida.nih.gov/publications/research-reports/hallucinogens-dissociative-drugs/director>

Van Havere, T., Vanderplasschen, W., Lammertyn, J., Broekaert, E. & Bellis, M. (2011). Drug use and nightlife: More than just dance music. *Substance Abuse Treatment, Prevention, and Policy*, 6. <https://doi.org/10.1186/1747-597X-6-18>

## References

Drug Enforcement Administration. (2020, June 16). *Ecstasy monogram.jpg*. *Wikimedia Commons*. Retrieved September 7, 2021, from [https://commons.wikimedia.org/w/index.php?title=File:Ecstasy\\_monogram.jpg&oldid=426688409](https://commons.wikimedia.org/w/index.php?title=File:Ecstasy_monogram.jpg&oldid=426688409)

# 6. Opioids, Stimulants, Depressants, and Inhalants

## Introduction

Opioids, stimulants, and depressants are the top three drugs that have shown to cause addiction in the user. They are the most widely used and prescribed medications today. The impacts on the central nervous system make the use of these drugs concerning for the user and communities and families that are impacted when these drugs are used or misused. Your familiarity and knowledge about these drugs can help advocate and educate for change and prevention that is needed to stop the crisis that is arising around these drugs.

### *Learning Objectives*

- Understand and describe what opioids are.
- Understand and describe what stimulants are.
- Understand and describe what depressants are.
- Understand the implications of use and misuse of opioids, stimulant and depressants.
- Explain how opioids, stimulants, depressants, and inhalants work in the brain and body.
- Understand how opioids, stimulants, depressants, and inhalants are used and misused.

**Image 6.1 – Syringe with Brown Liquid**



Photo by Raghavendra V. Konkathi, [Unsplash](#), Unsplash License

# Learning Content

## Opioids

### History Of Opioids

- 1911 to 1990s: Federal Drug Administration (FDA) allowed opioids to be used to treat acute pain and cancer pain.
- 1995: FDA approves Oxycontin.
- 1998: FDA approves Fentanyl.
- 2003: FDA sends warning letters to “Big Pharma” about misleading opioid information.
- 2014: Naloxone is approved to help address opioid overdose concerns.
- 2016 to present: FDA responds to concerns around the opioid crisis/epidemic.(USFDA, *Timeline of Selected FDA Activities and Significant Events Addressing Opioid Misuse and Abuse*, 2021)

### Opioid Forms and Types of Use

Opioids are a class of drugs that include legally prescribed pain relievers, illegal drugs, and synthetic opioids. Most prescribed opioids are used to treat moderate to severe pain but can also be prescribed for coughs and diarrhea. Other opioids can make people feel relaxed or euphoric, causing the drugs to be used for nonmedical reasons. Opioids can be taken orally, by suppository, injected via a needle, inhaled, applied dermally on the skin.

#### *Pain relievers legally prescribed by a healthcare provider:*

- Oxycodone [Drug Fact Sheet: Oxycodone](#)
- Hydrocodone [Hydrocodone \(Oral Route\) Description and Brand Names](#)
- Codeine [Codeine \(Oral Route\) Description and Brand Names](#)
- Morphine [Drug Fact Sheet: Morphine](#)

#### *Illegal Opioids:*

- Heroin [10 Facts About Heroin](#)

## *Synthetic Opioids:*

- Fentanyl [Fact Sheet: Fentanyl and Synthetic Opioids](#)

### *Critical Thinking*

Review one of the fact sheets from the pain reliever category and both fact sheets in the illegal and synthetic opioid category. What do you notice about these drugs? What risks are you more aware of when it comes to using these drugs?

## Opioids' Effects on the Body

Opioids interact with opioid receptors on nerve cells in the brain and body. The opioids bind to opioid receptors in the brains, spinal cord, and other organs in the body. Opioids block pain signals by releasing large amounts of dopamine throughout the body encouraging the desire to take more to repeat the dopamine high or drug high. Opioids make you feel happy and relaxed. The feeling of euphoria that users get when taking opioids is something that opioid users desire. There are adverse effects with opioid use. They include drowsiness, confusion, nausea, constipation, slowed breathing, overdose, or death. It is important to understand all of the risks associated with use of these drugs, and, if prescribed, to use them under the guidance of a medical professional.

## Use, Misuse, and Overuse

Having a mild headache or a muscle pain or ache can often be managed with over-the-counter pain relievers (acetaminophen or ibuprofen), but when your pain becomes more severe, you may need something stronger. An opioid prescription obtained from your doctor can help with the pain. Prescription use is generally safe when taken for a short time. When opioids are taken in a way other than prescribed—if a person takes another person's prescription or takes the opioid to get a “high”—concerns arise with use. Unfortunately, prescription opioid use can lead to addiction concerns.

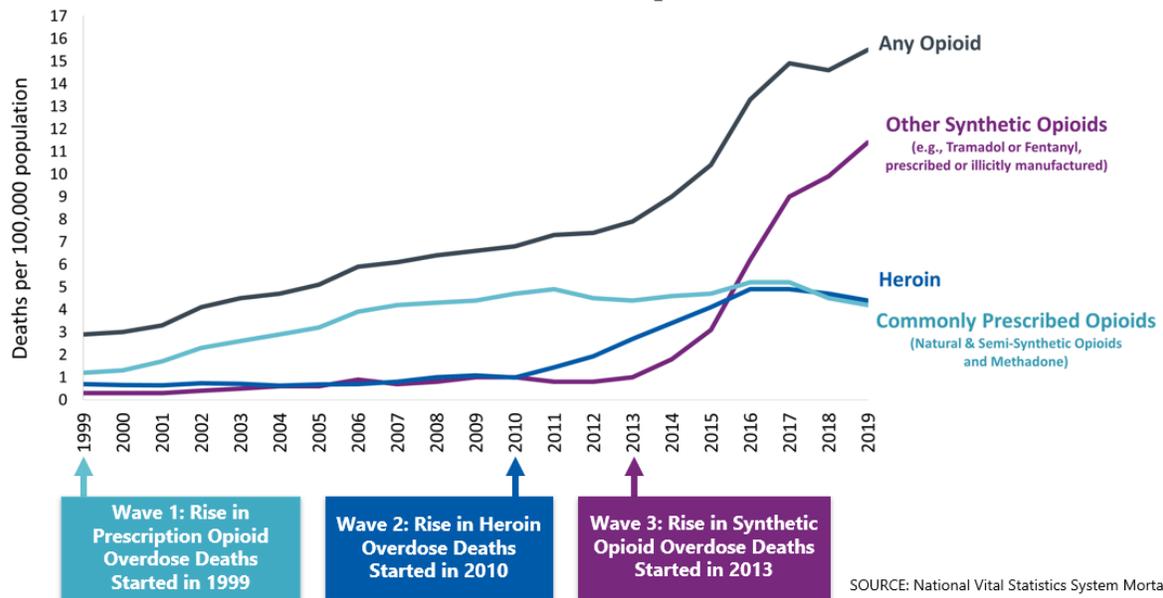
Opioids can be misused because the euphoria they create—along with the pain relief they provide—may cause individuals to want to use the drug more. Therefore, it is critical to understand that using opioids, even prescribed medically, can lead to dependence, addiction, overdose, and other harmful incidents, and even death.

Critical Thinking

Look at the graphs below. What do you notice about the rise of Opioid deaths? Look back at the fact sheets above to gain more information on why the U.S. is seeing the increase in use and deaths associated with opioid use, misuse, and addiction.

Table 6.1 – Three Waves of the Rise in Opioid Overdose Deaths

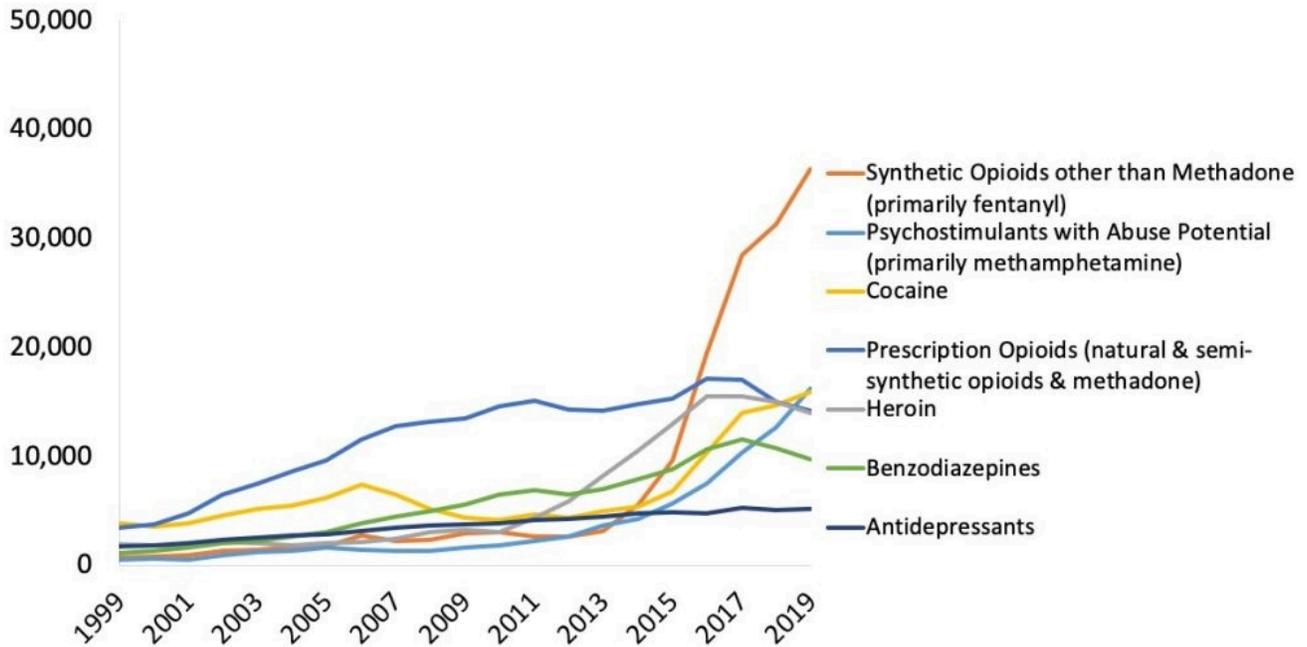
## Three Waves of the Rise in Opioid Overdose Deaths



“Three Waves of the Rise in Opioid Overdose Deaths” by the Centers for Disease Control and Prevention, [Overdose Graphics](#), Public Domain

Table 6.2 – National Drug-Involved Overdose Deaths 1999-2019

### National Drug-Involved Overdose Deaths\*, Number Among All Ages, 1999-2019



\*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2019 on CDC WONDER Online Database, released 12/2020.

“National Drug-Involved Overdose Deaths, Number Among All Ages, 1999-2019” by National Institute on Drug Abuse, [Overdose Death Rates](#), Public Domain

Watch the following video related to the opioid crisis:

#### [Video 6.1 – Addicted to Death](#)

##### Critical Thinking

After watching this video, what thoughts come to your mind about drug use and addiction risk? Why in the United States do we hear so much about the Opioid Crisis?

## Lifespan Considerations

Opioid use remains a concern throughout your life. Accidental misuse can happen at any age, but as you age, the risk increases—you may be taking more multiple prescriptions and there is risk with misuse.

If you are using opioids by injection, sharing of needles is a concern. HIV risk from unprotected sex is a concern with opioids injection users. Treatment can be long-term, costly, and necessary to recover from opioid addiction. The most concerning with use of opioids is risk of death from overdose. The long-term implications and concerns will take a toll on the life of a user.

### Image 6.2 – Pills and a Spoon



Photo by Michael Longmire on [Unsplash](#), Unsplash License

## Stimulants

### History and Background

Amphetamines were the first synthetic stimulant discovered in the 1930s. They were first used to treat nasal congestion. Eventually they were used to treat other conditions, such as alcoholism, obesity, depression, hyperactivity, and more. In the 1960s crystal methamphetamine (crystal meth) came on the scene, followed by widespread amphetamine misuse. In the 1970s methamphetamine use was prevalent with few, if any, laws in place to regulate the amount prescribed or used illegally.

## Stimulant Forms and How they are Used

Stimulants are administered orally, by injection, or through inhalation. They are generally used to treat ADHD (Attention Deficit Hyperactivity Disorder), uncontrolled issues with deep sleep; these drugs can increase alertness, attention, and energy, and are often used by college students at the end of the semester to help them stay awake.

**Below is a list of legal and illegal stimulants.**

### *Legal Stimulants:*

- amphetamines [Amphetamines](#)
- methylphenidate [Methylphenidate](#)
- diet pills/diet aids [Office of Dietary Supplements \(ODS\)](#)
- [dietary supplements for weight loss](#)
- [caffeine](#)

### *Illegal Stimulants:*

- methamphetamine [10 Facts About Methamphetamines](#)
- cocaine; [10 Facts About Cocaine](#)
- spice/K2 [Synthetic Cannabinoid Fact Sheet](#)
- bath salts [Fact Sheet: Synthetic Cathinones](#)

#### *Critical Thinking*

Which of the above stimulants (if any) do you use the most? Review the factsheet for that stimulant. Then look at one that you know is being used in your community. What concerns you about the use of that stimulant?

## Stimulants' Effects on the Body

Stimulants increase the chemicals **norepinephrine** and **dopamine** in the brain. Stimulants provide a “rush” in the body that activates the central nervous system and speeds up communication. Stimulants, in general, activate or excite the nervous system. They also increase energy in the body. Stimulant drugs work by increasing the release of neurotransmitters in the body. Stimulants tend to create effects that can be mild to intense, depending upon the stimulant being used. Individuals taking stimulants have an increased sense of well-being, high energy levels, increased confidence, concentration, and alertness along with a reduced need for sleeping and eating. Stimulants provide that “adrenaline” rush that one might get naturally from winning the big game, climbing a mountain, riding a roller coaster, but unfortunately, with continued use, that rush is harder to achieve when using drugs.

## Use, Misuse, and Overuse

Stimulants are used to treat depression, morbid obesity, narcolepsy, chronic lethargy, **ADD (attention-deficit disorder)** and **ADHD** (attention-deficit/hyperactivity disorder). All this energy that the user experiences comes from the body’s reserves and must be recharged. The “recharging” period is difficult, and people often experience an extreme version of the conditions they were trying to avoid by taking the stimulant in the first place. Continued fatigue, lack of concentration, depression, and low energy drives. This drives many to take more of the stimulant, rather than allowing their body to recover from the first high, and to repeat in an effort to avoid the low. Given the addictive nature of most stimulants, dependence follows pretty quickly. As with many drugs, including stimulants, misuse can happen when you do not take the stimulant as prescribed, you take someone else’s stimulant prescription, or you take the stimulant to get high.

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *Multiple Choice 6.1*

What stimulant would be safer to start taking and using?

1. Diet pills
2. Bath salts
3. Caffeine

## Lifespan Considerations

When using stimulants it is important to consider the type of stimulant and its impact it could have on your brain and body. Stimulants affect everyone differently. One person can drink caffeine all day and sleep at night, and the next person can drink one cup and can't sleep at all that evening. It is important to understand how stimulants impact you.

The main concerns with long-term stimulant use include impairments in cognitive areas, reaction time, memory, working memory and executive control in the brain, as well as addiction that happens quickly and can often be difficult to reverse.

### *Critical Thinking*

Have you ever tried to give up your coffee or your diet coke? What happened?

## Depressants

### History and Background

Alcohol was one of the first depressants ever used. Many other natural depressants, like opium, have roots in ancient origins. Other forms of depressant and antidepressant drugs started being used in the 1960s, with many newer antidepressants coming to the market in the 1980s. Today antidepressants are one of the most widely used and prescribed drugs.

### Depressant Forms and How they are Used

Depressants are used therapeutically to induce sleep, relieve anxiety, relax or reduce muscle spasms, and prevent seizures. Depressants can also cause amnesia, reduce reaction time, impair mental health and judgement, and cause confusion. Long term use produces physical and psychological dependence, and withdrawal from depressants use can be life-threatening.

**Below is a list of legal and illegal depressants.**

## *Legal Depressants:*

- [barbiturates](#)
- [benzodiazepines](#)
- sedative hypnotics [Sleep Disorder \(Sedative-Hypnotic\) Drug Information | FDA](#)
- [meprobamate](#)
- [methaqualone](#)

## *Illegal Depressants:*

- [GHB](#)

### *Critical Thinking*

Why is GHB such a concern in society today?

## Use, Misuse, and Overuse

Depressants are used to treat anxiety, depression, insomnia, obsessive compulsive-disorder ,and seizures. Depressants come in pill, capsule, and liquid form and are taken orally. Depressants increase the neurotransmitter **GABA** which leads to reduced brain activity and a relaxing effect for the user. As with many drugs misuse can happen when you do not take the depressant as prescribed, you take someone else's depressant prescription, or you take the depressant to get high.

## Lifespan Considerations

Withdrawal from depressant use can be severe and potentially life-threatening. Individuals taking depressants can develop health problems and with long term use may fail to meet responsibilities at work, school, and home. Monitoring the use of prescribed depressants is important.

# Inhalants

## History and Background

Inhalants were first discovered in the 1799 but were not widely used until the 1800s. Nitrous oxide, ether and chloroform were first used as anesthetics. Nitrous oxide was also used in surgical procedures and patient operations as an anesthetic, and is still used today primarily as “laughing gas” used to calm people during dental procedures, to calm people during pregnancy labor, and other regulated uses. Inhalants became widely used recreationally between the 1940’s and 1960’s and are still pervasively used by adolescents today.

## Inhalant Forms and How they are Used

**Image 6.3 – Picture of Household Inhalants**



“Inhalants” by Partners for Prevention in Allegany County, [Inhalants](#), All Rights Reserved

Inhalants are invisible, volatile chemicals found in common household, industrial, and medical products. Inhalants are typically volatile solvents, an aerosols, or gases. These chemicals produce vapors that, when inhaled, induce psychoactive or mind altering effects.

**Below is a list of legal and illegal inhalants.**

## *Legal Inhalants*

- Nitrous Oxide is used during medical procedures to relax an individual; it is typically used for dental procedures.
- Nitrites are prescribed to help relieve chest pain.

## *Commonly Misused Inhalants, which includes solvents, aerosols and gases*

- sharpie markers and pens
- rubber cement
- keyboard cleaner
- hairspray
- cooking spray
- correction liquid
- gasoline/kerosene (NIDA, *Inhalants drugFacts*, 2020)

## Inhalants' Effects on the Body

Inhalants damage the brain and can lead to mild brain impairments or severe dementia with prolonged use. Individuals may also experience nausea, loss of muscle control, have vision impairment, cardiac arrest, have damage to their internal organs, and even death because using inhalants speeds up the heart. Inhalants depress the central nervous system, while nitrites dilate and relax blood vessels.

## Use, Misuse, and Overuse

Inhalants are easy to obtain and typically inexpensive. Addiction with inhalants is very concerning because the typical user is under the age of 18. Most inhalants are breathed in through the mouth or nose. Often they are sniffed, snorted, huffed, or inhaled from a plastic or paper bag. Huffing, sniffing, snorting, and popping are all ways people use inhalants. If you are concerned about someone that is using inhalants look for these signs; strange odors in their breath, irritated eyes and nose, residue or paint on the fingers, and sores in the nose and mouth. These products are common household, industrial, and medical products so many people assume that they are safe, but when the products are inhaled, they can be detrimental to the user.

## Lifespan Considerations

Many inhalants speed up the heart rate and can cause the heart to beat irregularly. Sometimes speeding up the heart can cause the heart to stop, leading to death. This can happen with one use, which makes inhalant use such a concern (Get Smart About Drugs, *Drug fact sheets*, 2021).

## Check Your Knowledge

Go back and look at some of the resources for the various drugs mentioned in this section. Use the resources to answer the following questions.

Refer to the end of the chapter for answers.

### *Multiple Choice 6.2*

What opioid was used in a skin patch to help with chronic pain?

1. Fentanyl
2. Oxycodone
3. Heroin

### *Multiple Choice 6.3*

Inhalant use is most common with people aged:

1. 12 and under
2. 18 and under
3. 25 and under
4. 55 and under

### *Multiple Choice 6.4*

Which drug is best used to treat long term chronic pain?

1. Oxycodone
2. Morphine
3. Hydrocodone
4. Codeine

### *Multiple Choice 6.5*

If you have Narcolepsy, which drug might you consider taking if your doctor recommends one?

1. Stimulant
2. Inhalant
3. Opioid
4. Depressant

## **Answers:**

### **Multiple Choice 6.1**

**Answer:** 3. Caffeine

**Explanation:** The amount of caffeine you take can easily be adjusted; you have control over the amount of caffeine you put into your body, but you need to be aware of the hidden caffeine in many substances. Diet pills can induce unpleasant side effects and damaging effects on the body. Bath salts are synthetic stimulants; they tend to mimic similar effects to cocaine, Meth, and MDMA.

### **Multiple Choice 6.2**

**Answer:** 1. Fentanyl.

**Explanation:** The fentanyl skin patch was developed to treat chronic pain.

## Multiple Choice 6.3

**Answer:** 2. 18 and under

**Explanation:** People under age 18 are most likely to use inhalants; there is wide use among kids aged 11-13.

## Multiple Choice 6.4

**Answer:** 3. Hydrocodone

**Explanation:** Hydrocodone is meant to be used for long-term chronic pain; other opioids are typically used for mild to moderate pain and pain relief that is not long-term.

## Multiple Choice 6.5

**Answer:** 1. Stimulant

**Explanation:** Stimulants help keep you awake.

## Supplemental Resources

American Society of Health-System Pharmacists, Inc. (2020, February 15). *Amphetamine* [Drug information]. AHFS Consumer Medication. <https://medlineplus.gov/druginfo/meds/a616004.htm>

Anxiety and Depression Association of America (2019, July). *Medication options*. <https://adaa.org/find-help/treatment-help/medication-options>

Arablouei, R., & Abdelfatah, R. (2019). *A history of opioids in America*. <https://www.npr.org/2019/04/04/709767408/a-history-of-opioids-in-america>

Baydala L. (2010). Inhalant abuse. *Paediatrics & child health*, 15(7), 443-454 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2948777/>

Cleveland Clinic. (2016, February 23). *Attention deficit hyperactivity disorder (ADHD): Stimulant therapy*. <https://my.clevelandclinic.org/health/treatments/11766-attention-deficit-hyperactivity-disorder-adhd-stimulant-therapy>

Cleveland Clinic. (2019, October 11). *Inhalant abuse*. <https://my.clevelandclinic.org/health/diseases/15742-inhalant-abuse>

Drug Enforcement Administration. (2020, April). Drug fact sheet: Depressants. <https://www.dea.gov/sites/default/files/2020-06/Depressants-2020.pdf>

Drug Enforcement Administration. (2020, April). Drug fact sheet: Inhalants. <https://www.dea.gov/sites/default/files/2020-06/Inhalants-2020.pdf>

Drug Policy Alliance. (2016, September). Fact sheet: Fentanyl and synthetic opioids. <https://drugpolicy.org/sites/default/files/Synthetic-Opioids-Fact-Sheet.pdf>

Drug Policy Alliance. (2018, March). 10 facts about heroin. [https://drugpolicy.org/sites/default/files/heroinfacts\\_03\\_18\\_0.pdf](https://drugpolicy.org/sites/default/files/heroinfacts_03_18_0.pdf)

Get Smart About Drugs. (2021). Drug fact sheets. <https://www.getsmartaboutdrugs.gov/publication/drug-fact-sheets>

Get Smart About Drugs. (n. d.). True Stories. <https://www.getsmartaboutdrugs.gov/consequences/true-stories>

Griebel, G., & Holmes, A. (2013). 50 years of hurdles and hope in anxiolytic drug discovery. *Nature Reviews Drug Discovery*, 12(9), 667–687. <https://doi.org/10.1038/nrd4075>

Just Think Twice. (n.d.). True Stories. <https://www.justthinktwice.gov/true-stories>

Lakhan, S. E., & Kirchgessner, A. (2012). Prescription stimulants in individuals with and without attention deficit hyperactivity disorder: Misuse, cognitive impact, and adverse effects. *Brain and Behavior*, 2(5), 661–677. <https://doi.org/10.1002/brb3.78>

Lyden J. & Binswanger I. A. The United States opioid epidemic. *Semin Perinatol*, 43(3), 123-131. <http://doi.org/10.1053/j.semperi.2019.01.001>

Mayo Clinic. (n.d.). *Drugs and stimulants*. <https://www.mayoclinic.org/drugs-supplements>

MedlinePlus. (2021, December 14). Dietary supplements. National Library of Medicine. <https://medlineplus.gov/dietarysupplements.html>

MedlinePlus. (2021,. August 2). *Inhalants*. <https://medlineplus.gov/inhalants.html>

National Institute of Diabetes and Digestive and Kidney Diseases. (n.d.). “Opioids.” *LiverTox: Clinical and Research Information on Drug-Induced Liver Injury*. <https://pubmed.ncbi.nlm.nih.gov/31643200>

National Institute on Drug Abuse. (2010). *Inhalant abuse*. <https://casaa.unm.edu/ctn/ctn%20mod%20tool%20kit/General%20Information/Inhalants/NIDA%20Research%20Report%20-%20Inhalants.pdf>

National Institute on Drug Abuse. (2018, March 6.) Prescription CNS depressants drugFacts. <https://nida.nih.gov/publications/drugfacts/prescription-cns-depressants>

National Institute on Drug Abuse. (2019, May 16). *Methamphetamine drugFacts*. <https://nida.nih.gov/publications/drugfacts/methamphetamine>

National Institute on Drug Abuse. (2020, May 20). *What are the short- and long-term effects of inhalant use?* <https://nida.nih.gov/publications/research-reports/inhalants/what-are-short-long-term-effects-inhalant-use>

The National Institute for Occupational Safety and Health. (2018, April 24). *Nitrous oxide*. Centers for Disease Control and Prevention. <https://www.cdc.gov/niosh/topics/nitrousoxide/default.html>

Trickey, E. "America's 19th century opiate addiction." *The Smithsonian*. <https://www.smithsonianmag.com/history/inside-story-americas-19th-century-opiate-addiction-180967673/>

U. S. Food and Drug Administration. (2017, November 29). *What you need to know about dietary supplements*. <https://www.fda.gov/food/buy-store-serve-safe-food/what-you-need-know-about-dietary-supplements>

World Health Organization. (n. d.). *Drugs (psychoactive)*. <https://www.who.int/health-topics/drugs-psychoactive>

## References

National Center for Injury Prevention and Control. (2021, March 18). *Three waves of the rise in opioid overdose deaths* [Infographic]. Centers for Disease Control and Prevention. Retrieved July 27, 2021, from <https://cdc.gov/drugoverdose/resources/graphics/overdose.html>

Just Think Twice. (n.d.). *Amphetamines*. Retrieved July 27, 2021, from <https://www.justthinktwice.gov/drugs/amphetamines>

National Institute on Drug Abuse. (2021, January 29). *Overdose death rates*. Retrieved July 27, 2021, from <https://nida.nih.gov/drug-topics/trends-statistics/overdose-death-rates>

NIDA. (2020, April 16). *Inhalants drugFacts*. <https://nida.nih.gov/publications/drugfacts/inhalants>

NIH. (2021). *Office of Dietary Supplements*. <https://ods.od.nih.gov/>

sfm004. (2016, November 28). *Addicted to Death* [Video]. YouTube. <https://youtu.be/VvLgfyJRLQ>

U.S. Food and Drug Administration. (2021, July 7). *Timeline of selected FDA activities and significant events addressing opioid misuse and abuse*. Retrieved July 27, 2021, from <https://www.fda.gov/drugs/information-drug-class/timeline-selected-fda-activities-and-significant-events-addressing-opioid-misuse-and-abuse>

# 7. Prescription Medication, Over-the-Counter Drugs, Dietary Supplements, and Appearance and Performance Enhancers

## Introduction

Fifty-seven percent of American adults use dietary supplements.

Forty-seven percent of American adults have used a prescription drug in the last 30 days.

Five percent of American adults have used appearance and performance enhancers, most specifically steroids.

These kinds of drugs are often thought of as safe. When prescribed and taken under the guidance of a medical provider or pharmacist, over-the-counter (OTC) and prescription drugs are used to successfully cure, prevent, or treat a variety of diseases and illnesses. You might take these drugs because you need help with aches, pains, muscle concerns, or dietary issues, or to perform better in sports or in school. You may have also been introduced to many of these drugs because friends or others have used them with success. But even these drugs can be misused and cause harm to the individual. Many OTC and prescription drugs interact with other medicines, can cause an allergic reaction, or can be misused and lead to addiction and death (MedlinePlus, *Drug reactions*, 2021). According to the Centers for Disease Control and Prevention (2021), overdose deaths involving prescription opioids more than quadrupled from 1999 to 2019. Similarly to prescription drugs, some OTC medicines have active ingredients with the potential for misuse at higher-than-recommended dosages. It is important to understand that any use of drugs can be unsafe and that there are risks with taking all drugs, even ones you might think are safe.

### *Learning Objectives*

- Understand what prescription medications are, how they should be obtained, and how they should be used.
- Understand what OTC drugs are and how they are used.
- Understand what performance enhancers are and be familiar with the concerns with their use.
- Understand what dietary supplements are and how they are used.

- Describe the legal differences between drugs and dietary supplements.
- Explain the concepts behind the terms GRAS, GRAE, SAFE, and GRAHL.
- Explain the difference between prescription medications, OTC drugs, dietary supplements, and performance enhancers.

### Image 7.1 – Pharmacist with Prescription Medications



Photo by National Cancer Institute on [Unsplash](#), Unsplash License

## Learning Content

### Prescription Medications

Watch this short video from Mayo Clinic Radio titled “Cost of prescription drugs” on prescription drugs and the costs associated with using them:

[Video 7.1 – Cost of Prescription Drugs](#)

## History and Background

In 1938 prescription drugs were required to be approved for use.

## Forms of Prescription Medication and How it is Consumed

A prescription drug product requires authorization (e.g., often in the form of a written order known as a prescription) by a licensed practitioner (e.g., a medical doctor) before that drug product may be dispensed or given to a patient.

Here is the definition of a prescription drug: a drug that is intended for use by man and, which because of its toxicity or other potentiality for harmful effect, or the method of its use, or the collateral measures necessary to its use, is not safe for use except under the supervision of a practitioner licensed by law to administer such drug; or it is one that is limited by an FDA-approved application for use only under the professional supervision of a practitioner licensed by law to administer such drug.

All drugs must have labeling that bears “adequate directions for use.” Prescription drugs, however, by definition, require the intervention of a licensed healthcare professional. A prescription drug product requires authorization by a licensed practitioner before that drug product may be dispensed or given to a patient.

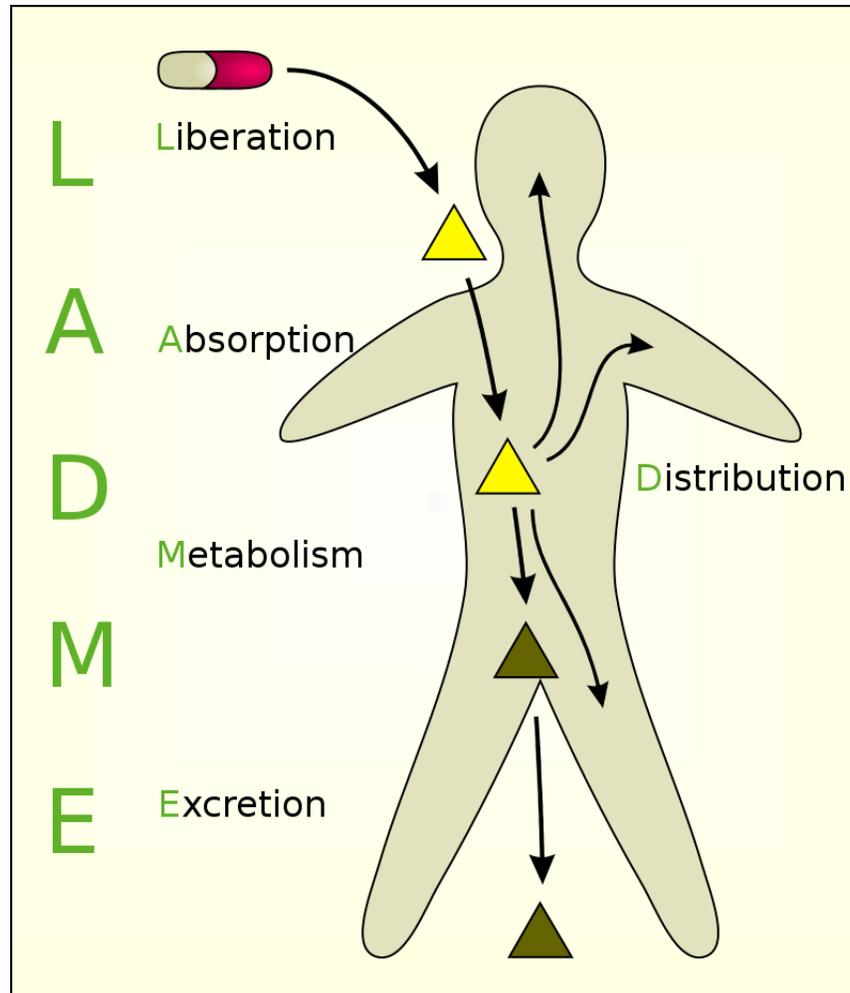
## Prescription Medications’ Effects on the Body

Pharmacokinetics is the study of how drugs move through the body after administration.

A number of phases occur once the drug enters into contact with the organism, these are described using the acronym LADME:

- Liberation of the active substance from the delivery system; Liberation is the first step in the phase that allows medication to enter the body and liberate the active ingredient
- Absorption of the active substance by the organism
- Distribution through the blood plasma and different body tissues
- Metabolism, sometimes called xenobiotic metabolism, is the process of transforming substances so that can be excreted more easily from the body
- Excretion or elimination of the substance or the products of its metabolism

## Infographic 7.1 – Infographic Depicting LADME Acronym



“Pharmacokinetics” by Scivit, [Wikimedia Commons](#), CC BY 4.0

### Key terms related to how prescription drugs work in the body

- **Dose:** Amount of drug administered
- **Dosing interval:** Time between drug dose administrations
- **Volume of distribution:** The apparent volume in which a drug is distributed (i.e., the parameter relating drug concentration in plasma to drug amount in the body)
- **Concentration:** Amount of drug in a given volume of plasma
- **Absorption half-life:** The time required for 50% of a given dose of drug to be absorbed into the systemic circulation
- **Absorption rate constant:** The rate at which a drug enters into the body for oral and other extravascular routes
- **Elimination half-life:** The time required for the concentration of the drug to reach half of its original value
- **Elimination rate constant:** The rate at which a drug is removed from the body

The Food and Drug Administration (FDA) is a federal agency of the U.S. Department of Health and Human Services. Visit the [FDA website](#) to review regulation information. The FDA is responsible for protecting and promoting public health through the control and safety of prescription medications (and many other drugs and medical devices).

Many people make the mistake of thinking that all prescription medications are safe. While prescription medications are highly regulated, these substances still come with many dangers when misused or inappropriately combined with other drugs or substances. In order to ensure safe use of prescription medications:

- **Make sure you are getting the right medication.** Make sure your doctor clearly understands your condition and the signs and symptoms you are experiencing. Tell your doctor about all of your prescriptions, as well as any OTC medications, herbals and supplements, and alcohol, and other drugs you are using. Ask your doctor whether there is an alternative medication with ingredients that have less potential for addiction.
- **Check in with your doctor.** Talk with your doctor on a regular basis to make sure that the medication you are taking is working and that you are taking the right dose.
- **Follow directions carefully.** Use your medication the way it was prescribed. Do not stop or change the dose of a drug on your own if it does not seem to be working. For example, if you are taking a pain medication that is not adequately controlling your pain, do not take more without first consulting with your doctor or prescribing pharmacist.
- **Know what your medication does.** Ask your doctor or pharmacist about the effects of your medication, so you know what to expect. Also check if other drugs, OTC products, or alcohol should be avoided when taking this medication.
- **Never use another person's prescription.** Everyone is different. Even if you have a similar medical condition to that of another person, their medication may not be the right medication for you.
- **Do not order prescriptions online unless they are from a trustworthy pharmacy.** Some websites sell counterfeit prescription and nonprescription drugs that could be dangerous.

Watch the below video to learn more about the dangers of mixing drugs.

[Video 7.2 – The Dangers of Mixing Drugs](#)

## Check Your Knowledge

Refer to the end of the chapter for answers. (Exercise continued on the next page.)

## Multiple Choice 7.1

What is the name of the U.S. agency that regulates the safety of prescription medications?

1. Consumer Food and Drug Authority
2. Centers for Disease Control and Prevention
3. Food Prescription and Drug Authority
4. Food and Drug Administration

## Use, Misuse, and Overuse

Most of the time, medicines make our lives better. Medications reduce aches and pains, fight infections, and control problems such as high blood pressure or diabetes. But medicines can also cause unwanted reactions.

One problem that may occur when taking medications is possible interactions with other substances, which may occur between

- two drugs, such as aspirin and blood thinners;
- drugs and food, such as statins and grapefruit;
- drugs and supplements, such as ginkgo and blood thinners;
- drugs and diseases, such as aspirin and peptic ulcers.

Interactions can change the actions of one or both substances. The drugs might not work, or you could get side effects.

Side effects are unwanted effects caused by the drugs. Most side effects are mild, such as a stomach aches or drowsiness, and go away after you stop taking the drug. Others can be more serious.

Drug allergies are another type of reaction. They can be mild or life-threatening. Skin reactions, such as hives and rashes, are the most common type of drug reaction. [Anaphylaxis](#), a serious allergic reaction, is more rare.

When you start a new prescription or OTC medication, make sure you understand how to take it correctly. Know the other medications and foods you need to avoid. Ask your health care provider or pharmacist if you have questions (MedlinePlus *Drug reactions*, 2021).

## Infographic 7.2 – How Prescription Medications are Misused



"The Spectrum of Prescription Drug Abuse" by the National Institute on Drug Abuse, [Prescription Drug Facts, Effects, Teen Use](#), Public Domain

Prescription medications can be misused by:

- taking someone else's prescription medication, even if it is for a medical reason (such as to relieve pain, to stay awake, or to fall asleep)
- taking a prescription medication in a way other than prescribed—for instance, taking more than the prescribed dose or taking it more often, or crushing pills into powder to snort or inject the drug
- taking the prescription medication to get "high"
- mixing it with alcohol or certain other drugs. Your pharmacist can tell you what other drugs are safe to use with specific prescription drugs (NIDA, *Over-the-counter medicines*, 2021).

### Critical Thinking

Have you ever had a reaction using a prescription drug? Have you ever misused prescription drugs?

## Lifespan Considerations

### *Infants, School Age Children, Teens*

Children of all ages metabolize medications differently. Many medications for children are based on weight. It is important to understand dosing and ensure that children are taking the correct doses when using prescriptions.

### *Older Adults*

As baby boomers age they experience, like most older adults, a greater frequency of illness and disease. Among the older baby boomer generation, there is a greater demand for prescription drugs, especially pain medications.

The primary risk with aging adults is addiction with use of long-term prescription medications, especially opioids. It is important to take prescriptions under the advice of a medical care provider and to consistently use the same pharmacist so that they can monitor prescriptions you have as well as check for interactions with drugs you may be getting from various doctors.

Older adults are more likely to experience polypharmacy. Polypharmacy is used to describe the use of multiple medications at one time. Many aging individuals are taking 5 to 11 medications at one time for various diseases, ailments, and health concerns. It can be hard at times to keep track of the drugs being taken, leading to risk with overdose and possible death.

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *Fact or Fiction 7.2*

In the last year 1 in 20 high school students have taken cough medicine to get high.

### *Fact or Fiction 7.3*

When it was first developed, aspirin was used to treat syphilis.

## Fact or Fiction 7.4

Aspirin and ibuprofen are twice as effective for protecting people against heart attacks when taken together.

## Over-the-Counter Drugs

**Image 7.2 – Equate Allergy Relief Pills in Container**



Photo by Obi Onyeador on [Unsplash](#), Unsplash License

What exactly is an OTC drug?

There are hundreds of OTC drugs at your local pharmacy. Many items like cosmetics, dietary supplements, or other medical devices, which have their own regulatory requirements, may also be classified as “drugs.”

The term “drug” is a legal one. As described in the Federal Food, Drug, and Cosmetic Act: a drug is an article intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease and/or an article (other than food) intended to affect the structure or function of the human body and/or an article intended for use as a component of such an article. The intended use of a product is very important in determining how a product is regulated.

## History and Background

From 1938 to 1962, several thousand prescription and OTC drugs were introduced into the marketplace. In 1972 OTC drugs were required to be proven safe and effective for use. In 1972 the National Research Council conducted a study of these drugs and evaluated them based on their active ingredients. The drugs were then put into one of three categories:

**Table 7.1 – OTC Drug Categories**

<b>Drug Category</b>	<b>Category Description</b>
Category I	drugs determined to be safe, effective, and properly labeled
Category II	drugs not generally recognized as safe and effective, or recognized as mislabeled
Category III	drugs lacking sufficient data to generally be determined safe and effective

### **OTC Drug Terms You Should Know:**

- **OTC:** Over-the-counter
- **BTC:** Behind-the-counter, meaning behind the pharmacy counter but still able to be purchased without a prescription. For example, pseudoephedrine is a BTC drug.
- **GRAS:** Generally recognized as safe
- **SAFE:** Safe means the drugs have a low incident of adverse reactions or significant side effects when taken. Additionally, the drugs contain adequate directions for use and warnings against unsafe use as well as a low potential for abuse.
- **GRAE:** Generally recognized as effective
- **GRAHL:** Generally recognized as honestly labeled
- **Brand name:** A patented drug sold by a drug company under a specific name or trademark. Brand-name drugs may be available by prescription or over the counter.
- **Generic:** Copies of brand-name drugs that have the same dosage, safety, strength, and quality of brand-name drugs.

An OTC drug is considered safe and effective for use by the general public without a prescriber's authorization (HealthCare.gov, n. d.).

Necessary characteristics for OTC drugs:

1. The product has an acceptable safety margin.
2. The product has low misuse potential under conditions of widespread availability.

3. The drug can be purchased without a prescription.
4. The product has adequate labeling.

## Forms of OTC Drugs and How they are Consumed

OTC medicines are drugs with a low incidence of misuse that you can buy without a prescription. Some OTC medicines relieve aches, pains, and itches. Some prevent or cure diseases, like tooth decay and athlete's foot. Others help manage recurring problems, like migraines and allergies (MedlinePlus *Over-the-counter medicine*, 2017).

OTC drugs are used to treat allergies, pain, headache, fever, cut and burns, digestive and stomach issues, itches, rashes and other skin irritations.

## OTC Drug Types and Uses

**Table 7.2 – OTC Drug Types and Uses**

<b>Antacids:</b> Curtail stomach acidity	<b>Herbal Drugs:</b> Herbal supplements that come in the form of pills, teas, incense, powders	<b>Cold and Allergy Drugs:</b> Antihistamines, cough medicines and decongestants
<b>Weight-loss aids:</b> PPA is an appetite suppressant	<b>Analgesics:</b> Drugs used to relieve pain	<b>Anti-Inflammatory Drugs:</b> NSAIDS; ibuprofen
<b>Stimulants:</b> Caffeine and weight loss aids	<b>Decongestants:</b> Constrict blood vessels of the nasal passages, improve air flow and obstruct secretions that go to the back of the throat	<b>Anti-fungal creams:</b> Used to treat athlete's foot and other fungal conditions

### Critical Thinking

Take some time to look through your medicine cabinet. What over-the-counter medications do you have? Why do you have these medications? Do you understand the risks with using all of the over-the-counter medications you have in your cabinet?

## Used, Misuse, and Overuse

OTC medicines that have the potential for misuse include:

- dextromethorphan (DXM), a cough suppressant found in many OTC cold medicines
- loperamide, an anti-diarrheal (NIDA, 2017).

Make sure to follow the instructions on the drug label. If you do not understand the instructions, ask your pharmacist or health care provider (MedlinePlus, *Drug reactions*, 2021).

Risks with taking OTC drugs:

- The medicine could interact with other medicines, supplements, foods, or drinks you are taking.
- Some medicines should not be used by people with certain medical conditions. For example, people with high blood pressure should not take certain decongestants.
- Some people are allergic to certain medicines.
- Many medicines are not safe during pregnancy. If you are pregnant, check with your health care provider before taking any medicine.
- Be careful when giving medicine to children. Make sure that you give your child the correct dose. If you are giving your child a liquid medicine, do not use a kitchen spoon. Instead use a measuring spoon or a dosing cup marked in teaspoons.

## Lifespan Considerations

OTC drugs can be just as addictive as illegal or prescription drugs. The risk of accidental overdose is high, and there can be long-term damage to the brain and body, causing life-threatening or life-changing concerns for the user. Do not take OTC medications without checking with your healthcare provider or pharmacist; be sure to understand all of the risks associated with the use of the drugs.

## Dietary Supplements

Many adults and children in the United States take one or more vitamins or other dietary supplements. In addition to vitamins, dietary supplements can contain minerals, herbs or other botanicals, amino acids, enzymes, and many other ingredients. Dietary supplements are not regulated by the FDA and there are risks with use. Always know what you are putting into your body and make decisions about supplements with advice from your medical care provider (NIH, *What you need to know*, 2020).

Watch this video on dietary supplements to get a better understanding on what they are and if you should consider taking them.

## [Video 7.3 – Dietary Supplements: What You Need to Know](#)

### Forms of Dietary Supplements and How they are Consumed

**Image 7.3 – Dietary Pills in Yellow Bowl**



Photo by the U.S. Food and Drug Administration, [What You Need to Know about Dietary Supplements](#), Public Domain

Dietary supplements come in a variety of forms, including tablets, capsules, gummies, and powders, as well as drinks and energy bars. Popular supplements include vitamins D and B12; minerals like calcium and iron; herbs such as echinacea and garlic; and products like glucosamine, probiotics, and fish oils.

Some common dietary supplements:

- calcium: to help build bones
- echinacea: to possibly stimulate the immune system to fight colds and other infections
- fish oil: to provide omega 3-fatty acids
- garlic: to improve conditions related to the heart and blood vessels, including high cholesterol and blood pressure
- vitamin D: to promote calcium absorption
- St. John's Wort: to help depression
- ginkgo: to act as an antioxidant and stimulate blood flow to the brain
- green tea extract: to help with weight loss, blood sugar regulation, disease prevention, and exercise recovery (NIH, *What you need to know*, 2020).

## Dietary Supplements' Effects on the Body

Some dietary supplements can help provide adequate amounts of essential nutrients if you do not eat a nutritious variety of foods. However, supplements cannot take the place of the variety of foods that are important to a healthy diet.

Some dietary supplements can improve overall health and help manage some health conditions. For example:

- Calcium and vitamin D help keep bones strong and reduce bone loss.
- Folic acid decreases the risk of certain birth defects.
- Omega-3 fatty acids from fish oils might help some people with heart disease.
- A combination of vitamins C and E, zinc, copper, lutein, and zeaxanthin (known as AREDS) may slow down further vision loss in people with age-related macular degeneration (AMD).

Many other supplements need more study to determine if they have value. The [U.S. Food and Drug Administration](#) (FDA) does not determine whether dietary supplements are effective before they are marketed (NIH, *What you need to know*, 2020).

## Use, Misuse, and Overuse

Many supplements contain active ingredients that can have strong effects in the body. Always be alert to the possibility of a bad reaction, especially when taking a new product.

You are most likely to have side effects from dietary supplements if you take them at high doses or instead of prescribed medicines, or if you take many different supplements. Some supplements can increase the risk of bleeding or, if taken before surgery, can change your response to anesthesia. Supplements can also interact with some medicines in ways that might cause problems. Here are a few examples:

- Vitamin K can reduce the ability of the blood thinner warfarin to prevent blood from clotting.
- St. John's Wort can speed the breakdown of many medicines and reduce their effectiveness (including some antidepressants, birth control pills, heart medications, anti-HIV medications, and transplant drugs).
- Antioxidant supplements, such as vitamins C and E, might reduce the effectiveness of some types of cancer chemotherapy.

Manufacturers may add vitamins, minerals, and other supplement ingredients to foods you eat, especially breakfast cereals and beverages. As a result, you may get more of these ingredients than you think, and more might not be better. Taking more than you need costs more and might also raise your risk of side effects. For example, too much vitamin A can cause headaches and liver damage, reduce bone strength, and cause birth defects. Excess iron causes nausea and vomiting, and may damage the liver and other organs.

Be cautious about taking dietary supplements if you are pregnant or nursing. Also, be careful about giving supplements to a child, unless recommended by their healthcare provider. Many supplements have not been well tested for safety in pregnant women, nursing mothers, or children (NIH, *What you need to know*, 2020).

## Lifespan Considerations

Products intended to supplement the diet are not medicines and are not intended to diagnose, treat, mitigate, prevent, or cure diseases. The FDA is the federal agency that oversees both supplements and medicines, but the FDA regulations for dietary supplements are different from those for prescription or over-the-counter medicines.

Here are things you should think about when considering dietary supplement use throughout your lifetime (U. S. Food and Drug Administration *What you need to know about dietary supplements*. 2017):

- When searching for supplements on the internet, use noncommercial sites (e.g. National Institute of Health or NIH, FDA, U.S. Department of Agriculture or USDA) rather than depending on information from sellers.
- If claims sound too good to be true, they probably are. Be mindful of product claims such as “works better than [a prescription drug],” “totally safe,” or has “no side effects.”
- Be aware that the term “natural” does not always means safe.
- Ask your healthcare provider if the supplement you are considering would be safe and beneficial for you.
- Always remember – safety first!

## Appearance and Performance Enhancers

Appearance and performance enhancing drugs (APEDs) are most often used by males to improve looks by building muscle mass or to increase competitiveness in athletic performance. Although APEDs may directly and indirectly have effects on a user’s mood, they do not produce a euphoric high, which makes APEDs distinct from other drugs such as cocaine, heroin, and marijuana. However, users may develop a substance-use disorder, defined as continued use despite adverse consequences. (NIDA, 2021).

## History and Background

**Image 7.4 – Women Running a Track Race**



Photo by Nicolas Hoizey on [Unsplash](#), Unsplash License

1935: Testosterone was used in Germany to treat depression.

1954: Professional athletes began misusing anabolic steroids during the 1954 Olympics when Russian weightlifters were given testosterone.

1980: Anabolic steroids started being used by the general population; young men started using anabolic steroids to improve personal appearance and enhance athletic performance.

1991: The Anabolic Steroids Control Act of 1990 places anabolic steroids into Schedule III of the Controlled Substances Act (CSA).

## Forms of Appearance and Performance Enhancing Drugs and How they are Consumed

Anabolic steroids are synthetically produced variants of the naturally occurring male hormone testosterone. Both males and females have testosterone produced in their bodies: males in the testes, and females in the ovaries and other tissues. The full name for this class of drugs is androgenic (promoting masculine characteristics) anabolic (tissue building) steroids (the class of drugs). Some of the most misused steroids include Deca-Durabolinâ, Durabolinâ, Equipoiseâ, and Winstrolâ. The common street (slang) names for anabolic steroids include “arnolds,” “gym candy,” “pumpers,” “roids,” “stackers,” “weight trainers,” and “juice” (Drug Enforcement Administration, Diversion Control Division, 2004).

Society's emphasis on competition could push people into taking drugs to gain an athletic advantage. Society's emphasis on body image and sex could encourage a person to enhance sexual performance and experiences. These are reasons why appearance and performance enhancers have and are used.

Long term use of APEDs can lead to early heart attacks, strokes, liver tumors, kidney failure, and psychiatric problems. In addition, stopping use can cause depression, often leading to resumption of use.

Because steroids are often injected, users who share needles or use nonsterile injecting techniques are also at risk for contracting dangerous infections such as viral hepatitis and HIV (NIDA, 2018).

## Appearance and Performance Enhancers' Effects on the Body

### Image 7.5 – Pen and Cell Phone on Paper Exam



Photo by Miguel Henriques on [Unsplash](#), Unsplash License

Anabolic steroids dispensed for legitimate medical purposes are administered several ways including intramuscular or subcutaneous injection, pellet implantation under the skin and by application to the skin (e.g. gels or patches), and by mouth. These same routes are used for purposes of misusing steroids, with injection and oral administration being the most commonly used technique. People misusing steroids may take anywhere from 1 to 100 times the normal therapeutic doses of anabolic steroids. Steroid users often take two or more steroids concurrently, a practice called “stacking.” People misusing steroids will often alternate periods (6 to 16 weeks in length) of high dose use of steroids with periods of low dose use or no drug at all. This practice is called “cycling.”

Doses of anabolic steroids used will depend on the particular objectives of the steroid user. Athletes (middle or high school, college, professional, and Olympic) usually take steroids for a limited period of time to achieve a particular goal. Bodybuilders, law enforcement officers, fitness buffs, and bodyguards, sometimes take steroids for extended periods of time. The length of time that steroids stay in the body varies from a couple of days to more than 12 months (Drug Enforcement Administration, Diversion Control Division, 2004).

## Use, Misuse, and Overuse

Steroids may be taken orally, injected intramuscularly and others can be applied to the skin in the forms of gels and creams. Many users start taking steroids orally and move to injectable forms, which can cause serious liver damage.

There is increasing concern regarding possible serious health problems that are associated with the misuse of steroids, including both short-term and long-term side effects. The short-term adverse physical effects of anabolic steroid misuse are fairly well known. Short-term side effects may include sexual and reproductive disorders, fluid retention, and severe acne. The short-term side effects in men are reversible when steroid use is discontinued.

Masculinizing effects seen in women, such as deepening of the voice, body and facial hair growth, enlarged clitoris, and baldness are not reversible.

The long-term adverse physical effects of anabolic steroid misuse in men and in women, have not been studied, and as such, are not known. However, it is speculated that possible long-term effects may include adverse cardiovascular effects such as heart damage and stroke.

### *Possible physical side effects include the following:*

- high blood cholesterol levels – high blood cholesterol levels may lead to cardiovascular problems
- severe acne
- thinning of hair and baldness
- fluid retention
- high blood pressure
- liver disorders (liver damage and jaundice)
- steroids can affect fetal development during pregnancy
- risk of contracting HIV and other blood-borne diseases from sharing infected needles
- sexual & reproductive disorders, including:

**Table 7.3 – Sexual & Reproductive Disorders from Long-Term Anabolic Steroid Misuse**

Males	Females
<ul style="list-style-type: none"> <li>• atrophy (wasting away of tissues or organs) of the testicles</li> <li>• loss of sexual drive</li> <li>• diminished or decreased sperm production</li> <li>• breast and prostate enlargement</li> <li>• decreased hormone levels</li> <li>• sterility</li> </ul>	<ul style="list-style-type: none"> <li>• menstrual irregularities</li> <li>• infertility</li> <li>• masculinizing effects such as facial hair, diminished breast size, permanently deepened voice, and enlargement of the clitoris</li> </ul>

*Possible psychological disturbances include the following:*

- Mood swings (including manic-like symptoms leading to violence)
- Impaired judgment (stemming from feelings of invincibility)
- Depression
- Nervousness
- Extreme irritability
- Delusions
- Hostility and aggression (Drug Enforcement Administration, Diversion Control Division, 2004).

## Other performance enhancers you should know about

### *Creatine*

Creatine is an amino acid nutritional supplement that is not regulated by the FDA. Creatine is an amino acid that is believed to increase water content in the muscles, adding to their size and possibly their ability to function. Advantages of use include improved athletic performance especially for swimmers and sprinters. Disadvantages of use include kidney problems, gastro-intestinal disorders, nausea, seizures, muscle cramping and dehydration.

### *HGH*

Human growth hormone (HGH) began being used as a performance enhancer in 1980. It stimulates protein synthesis and when used with anabolic steroids it helps improve athletic performance. It is also used as an anti-aging product. For individuals with poor growth and stature, there are medical benefits to being prescribed the HGH hormone. Concerns with use include nerve, muscle or joint pain, swelling in the body's tissues, high cholesterol, possible cancer tumor growth and an increased risk of diabetes.

## Check Your Knowledge

Match the appearance and performance enhancer with the correct definition. Refer to the end of the chapter for answers.

### *Matching Terms 7.5*

<b>Enhancers:</b>	<b>Definitions:</b>
1. HGH	A. An amino acid that increases water in the muscles
2. Anabolic steroid	B. Steroid taken to gain athletic and academic advantage
3. Creatine	C. Steroid that helps with athletic performance and anti-aging

## Lifespan Considerations

An undetermined percentage of people misusing steroids may become addicted to the drug, as evidenced by their continuing to take steroids in spite of physical problems, negative effects on social relations, or nervousness and irritability. Steroid users can experience withdrawal symptoms such as mood swings, fatigue, restlessness, and depression. Untreated, some depressive symptoms associated with anabolic steroid withdrawal have been known to persist for a year or more after the person misusing steroids stops taking the drugs. It is very important to educate people about the risk associated with steroid use and long term implications of use. (Drug Enforcement Administration, Diversion Control Division, 2004).

## Answers:

### Multiple Choice 7.1

**Answer:** 4. Food and Drug Administration

### Fact or Fiction 7.2

**Answer:** Fact.

**Explanation:** According to the FDA, 5% of 10th- and 12th- grade high school students took cough medicine to get high.

## Fact or Fiction 7.3

**Answer:** Fiction.

**Explanation:** Aspirin was first developed to treat headaches.

## Fact or Fiction 7.4

**Answer:** Fiction.

**Explanation:** According to the U.S. Food and Drug Administration (FDA), ibuprofen can interfere with the anti-clotting effect of low-dose aspirin, potentially making aspirin less effective at protecting you from a heart attack or stroke.

## Matching Terms 7.5

1. **HGH** is **C**, a steroid that helps with athletic performance and anti-aging.
2. **Anabolic steroid** is a **B**, steroid taken to gain athletic and academic advantage
3. **Creatine** is **A**, an amino acid that increases water in the muscles

## Supplemental Resources

American Society of Health-System Pharmacists, Inc. (2021, August 28). *Acetaminophen* [Drug information]. ACFS Consumer Medication Information. <https://medlineplus.gov/druginfo/meds/a681004.html>

American Society of Health-System Pharmacists, Inc. (2021, August 28). *Aspirin* [Drug information]. AHFS Consumer Medication Information. <https://medlineplus.gov/druginfo/meds/a682878.html>

Cable News Network. (2013, June 6). *Performance enhancing drugs in sports fast facts*. <https://www.cnn.com/2013/06/06/us/performance-enhancing-drugs-in-sports-fast-facts>

Mayo Clinic. (2021, September 23). *Cold remedies: What works, what doesn't, what can't hurt*. <https://www.mayoclinic.org/diseases-conditions/common-cold/in-depth/cold-remedies/ART-20046403>

Mayo Clinic. (2018, October 19). Prescription drug abuse. <https://www.mayoclinic.org/diseases-conditions/prescription-drug-abuse/symptoms-causes/syc-20376813>

MedlinePlus. (2021, August 2). Steroids. National Library of Medicine. <https://medlineplus.gov/steroids.html>

National Institute of Child Health and Human Development. (2016, December 1). How are drugs approved for use in the United States? National Institutes of Health, U.S. Department of Health and Human Services. <https://www.nichd.nih.gov/health/topics/pharma/conditioninfo/approval>

National Institute on Drug Abuse. (2018, August 12). Anabolic steroids drugFacts. U.S. Department of Health and Human Services, National Institutes of Health. <https://nida.nih.gov/publications/drugfacts/anabolic-steroids>

National Institute on Drug Abuse. (2020, June). Misuse of Prescription Drugs Research Report. National Institutes on Health, U.S. Department of Health and Human Services. <https://nida.nih.gov/publications/research-reports/misuse-prescription-drugs/>

National Institute on Drug Abuse. (2021, July 16). Prescription drugs. Retrieved from <https://teens.drugabuse.gov/drug-facts/prescription-drugs>

National Institute on Drug Abuse. (n.d.). Over-the-counter medicines. National Institutes of Health, U.S. Department of Health and Human Services. <https://nida.nih.gov/drug-topics/over-counter-medicines>

National Institute on Drug Abuse. (n.d.). Prescription medicines. National Institutes of Health, U.S. Department of Health and Human Services. <https://nida.nih.gov/drug-topics/prescription-medicines>

National Institute of Health, Office of Dietary Supplements. (2021). Dietary supplements for exercise and athletic performance [Fact sheet]. U.S. Department of Health and Human Services. <https://ods.od.nih.gov/factsheets/ExerciseAndAthleticPerformance-HealthProfessional/>

U.S. Food and Drug Administration. (2017, November 13). Prescription drugs and over-the-counter (OTC) drugs: questions and answers. Department of Health and Human Services. <https://www.fda.gov/drugs/questions-answers/prescription-drugs-and-over-counter-otc-drugs-questions-and-answers>

U.S. Food and Drug Administration. (2018, May 16). Understanding over-the-counter medicines. <https://www.fda.gov/drugs/buying-using-medicine-safely/understanding-over-counter-medicines>

U.S. Food and Drug Administration. (2019, October 19). Development & approval process: Drugs. <https://www.fda.gov/drugs/development-approval-process-drugs>

U.S. Food and Drug Administration. (n.d.) History of drug regulation in the United States. <https://www.fda.gov/files/drugs/published/A-History-of-the-FDA-and-Drug-Regulation-in-the-United-States.pdf>

## References

- Drug Enforcement Administration, Diversion Control Division. (2004, March). *Anabolic steroids*. U.S. Department of Justice. <https://www.deadiversion.usdoj.gov/pubs/brochures/steroids/public/>
- Mayo Clinic. (2019, May 11). *Cost of prescription drugs: Mayo Clinic Radio* [Video]. YouTube. <https://youtu.be/dNzc1iMIEZI>
- MedlinePlus. (2021, July 28). *Drug reactions*. National Library of Medicine. <https://medlineplus.gov/drugreactions.html>
- MedlinePlus. (2021, May 27). *Over-the-counter medicine*. National Library of Medicine. <https://medlineplus.gov/overthecountermedicines.html>
- Mishra, S., Stierman, B., Gahche, J. J., & Potischman, N. (2021). *Dietary supplement use among adults: United States, 2017–2018*. (NCHS Data Brief No. 399). National Center for Health Statistics, Centers for Disease Control and Prevention. <https://www.cdc.gov/nchs/products/databriefs/db399.htm>
- Natural Product Association. (n.d.). *How dietary supplements (foods) became regulated*. <https://www.npanational.org/resource/dietary-supplements-foods-became-regulated/>
- National Institute on Drug Abuse. (2017, December 17). *Over-the-counter medicines drugFacts*. U.S. Department of Health and Human Services, National Institutes of Health. <https://nida.nih.gov/publications/drugfacts/over-counter-medicines>
- National Institute on Drug Abuse. (2018, February). *Steroids and Other Appearance and Performance Enhancing Drugs (APEDs) Research Report*. National Institutes of Health, U.S. Department of Health and Human Services. <https://nida.nih.gov/publications/research-reports/steroids-other-appearance-performance-enhancing-drugs-apeds/>
- National Institutes of Health. (2014, June 24). *Dietary supplements: What you need to know* [Video]. YouTube. <https://youtu.be/-tY1Ln9JfVs>
- National Institutes of Health. (2020). *What you need to know: Dietary supplements*. Retrieved from <https://ods.od.nih.gov/factsheets/WYNTK-Consumer/>
- Sports Illustrated. (2008, March 11). *How we got here*. <https://www.si.com/more-sports/2008/03/11/steroid-timeline>
- U.S. Centers for Medicare & Medicaid Services. (n.d.). *Brand name (drugs)*. [Glossary Entry]. HealthCare.gov. <https://www.healthcare.gov/glossary/brand-name-drugs/>
- U. S. Food and Drug Administration. (2017, November 29). *What you need to know about dietary supplements*. U.S. Department of Health and Human Services. <https://www.fda.gov/food/buy-store-serve-safe-food/what-you-need-know-about-dietary-supplements>

Valéry C. (2019, November 12). *The dangers of mixing drugs* [Video]. TED. [https://www.ted.com/talks/celine\\_valery\\_the\\_dangers\\_of\\_mixing\\_drugs](https://www.ted.com/talks/celine_valery_the_dangers_of_mixing_drugs)

# 8. Evidence-Based Prevention and Treatment Models

## Introduction

Substance use and **misuse** often contribute to health related issues such as disease, injury, addiction, overdose and death and are seen as a public health concern. These issues affect individuals and communities collectively: psychologically, physically, socially, and economically. According to the Office of National Drug Policy (2013), **substance** misuse is costly to society and in the year of 2007 alone, the estimated economic cost was \$193 billion. This cost included almost \$120 billion in lost worker productivity (i.e., less workers available due to time away for treatment, incarceration or death), \$11 billion in health care costs, and \$61 billion in criminal justice costs. Given the large burden that substance misuse places on society, it seems prudent to prevent and address these problems before they occur.

### Learning Objectives

- Define and understand terms related to evidence-based substance use prevention and treatment programs.
- Understand the principles of substance use prevention programs.
- Define and discuss effective treatment models for substance use disorders.

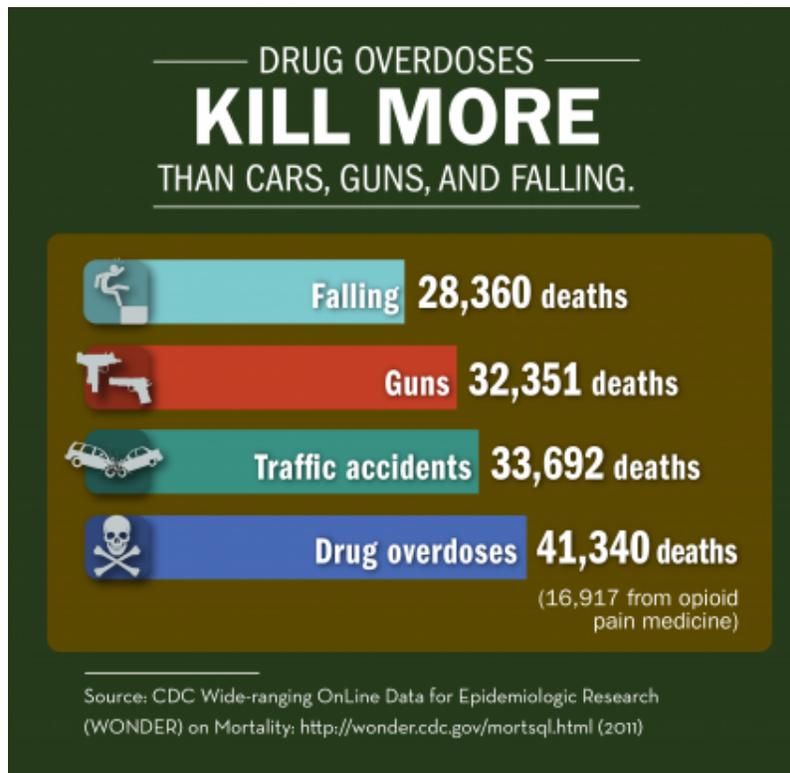
Image 8.1 – Collection of Road Signs



Photo by geralt, [Pixabay](#), Pixabay License

## Learning Content

Image 8.2 – Deaths Related to Falling, Guns, Traffic Accidents and Drug Overdoses



*“Drug Overdoses Kill More Than Cars, Guns, and Falling”* by the National Institute on Drug Abuse, [NIDA Archives](#), Public Domain

Substance misuse is among some of the most costly health problems in the United States. The National Institutes of Health looked at national estimates for the cost of illness for 33 diseases and conditions and found that of the conditions reviewed, alcohol ranked second, tobacco ranked sixth, and drug related disorders ranked seventh. (NIH, 2000). These statistics indicate that programs designed to prevent substance use and misuse are necessary and can help reduce these costs to society.

# Substance Misuse and the Cost to Society

Image 8.3 – Stack of Hundred Dollar Bills



Photo by Giorgio Trovato on [Unsplash](#),  
Unsplash License

- More than \$120 billion per year is lost in worker productivity
  - ? Unemployment, reduced labor participation due to: incarceration, premature mortality, hospitalization, and time away from work for treatment programs
- Crime
- Deaths from overdose
- Domestic abuse and divorce
- Effects on unborn children
- Homelessness
- Spread of HIV/AIDS and Hepatitis C, etc.

## Prevention

Research has shown that early onset of drug use increases one's chance of becoming addicted (NIDA, *Preventing drug use among children and adolescents*, 2020). Therefore, the goal of substance misuse **prevention** programs is to prevent, delay or limit the initiation of drug use and the associated negative consequences. Prevention activities set out to support individuals and the community through health promotion, health education initiatives aimed at preventing the misuse of drugs, preventing the development of substance use disorders and reducing the overall prevalence of drug use (SAMHSA, 2020). While many types of prevention programs exist, currently, there is no consensus on the best models to use to accomplish this goal.

Most prevention programs take a two-pronged approach:

1. Reduce supply: decreased availability of substances reduces opportunities for misuse and **dependence**.
2. Reduce demand: increased health promotion and health education activities around substance misuse decreases the desire to engage in high-risk substance using behavior.

The goal of substance use prevention programs is to change behaviors that encourage substance misuse and to reinforce the positive behaviors and attitudes that discourage or prevent misuse.

## SAMHSA Prevention Framework

The Substance Abuse and Mental Health Services Administration (SAMHSA), a branch of the U.S. Department of Health and Human Services (2019), has created a Strategic Prevention Framework.

The Strategic Prevention Framework is made up of five steps guided by two principles. The steps include:

- **assessment**: Collect data to determine the local population needs, resources, and gaps.
- **capacity**: Mobilize and/or build up resources to address prevention needs.
- **planning**: Development of a comprehensive plan.
- **implementation**: Carry out the plan, using evidence-based prevention programs.
- **evaluation**: Monitor the implementation, measure impact, and determine necessary improvements.

Additionally, it is important to remain mindful of the framework's two overarching goals and to integrate them into each of the five steps. The goals include:

- **sustainability**: The capacity of a community to produce and maintain positive prevention outcomes after initial funding ends, over time, and while also consistently maintaining desired long-term results.
- **cultural competence**: The ability of an individual or an organization to interact effectively with members of diverse population groups.

The SAMHSA framework suggests that prevention efforts should be culturally responsive, meaning that these efforts should be adaptable and relate respectfully to other cultures, and that these efforts should be able to be sustained over time. According to SAMHSA, a program is considered successful after the completion of each step while also remaining aware and integrating both guiding principles (2019).

As substance use and misuse both have a large effect on society as a whole, strategies for prevention programs should focus not only on the individual but should also include population-based interventions.

### *Critical Thinking*

Given what you know so far about substance misuse, why do you think someone might use or misuse substances such as tobacco, alcohol, or other drugs?

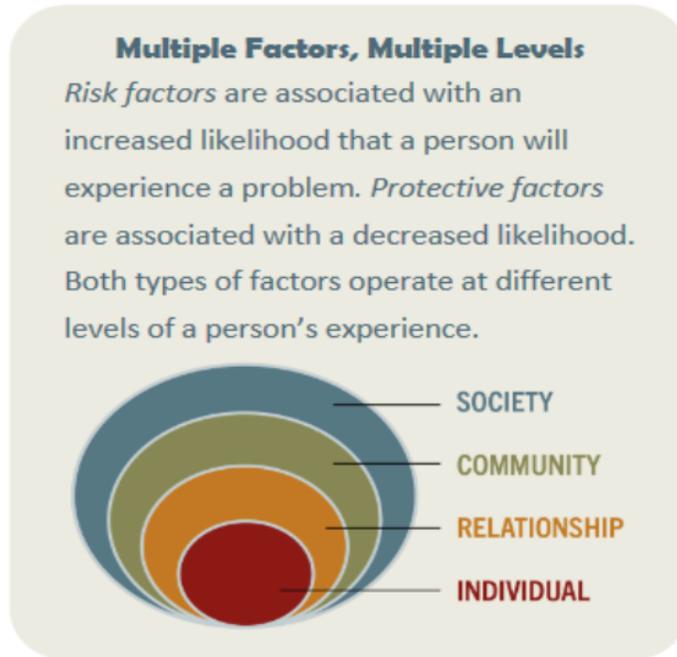
## Risk and Protective Factors

Factors associated with greater potential or vulnerability to use substances are called “risk factors” while factors associated with reduced potential to use substances are called “protective factors” (NIDA, *Preventing drug use among children and adolescents*, 2020). These factors have been used to help identify those individuals who might be more likely to misuse substances. Effective prevention programs work to reduce risk factors and increase protective factors. Both risk and protective factors exist across multiple domains, therefore, prevention programs to address this issue should also cross multiple levels.

## Social-Ecological Model of Substance Use

The social-ecological model demonstrates how people exist within and are shaped by their individual characteristics, families, friends and other relationships, their communities, and society. The overlapping rings illustrate how factors at one level influence factors at other levels.

**Image 8.4 – SAMHSA’s Strategic Prevention Framework**



“Multiple Factors, Multiple Levels” by the Substance Abuse and Mental Health Services Administration, [A Guide to SAMHSA’s Strategic Prevention Framework](#), Public Domain

If we dive even deeper into the social-ecological model we can see how these four levels—individual, relationship, community, and society—relate to and affect one’s experience with substance use. Let’s take a look at each domain individually.

**Image 8.5 – Silhouettes of Many People**



Photo by geralt, [Pixabay](#), Pixabay License

**Individual (self):** perception of risk; self-concept, age; knowledge; attitudes; problem solving skills; mental and physical health; trauma; resilience; developmental history

**Interpersonal (family, friends and peer groups, social groups):** family history; access to drugs; access to peer and family support; peer group use; social support systems; secure family-child relationships

**Community:** access to culturally responsive providers and health care services; health promotion and education campaigns; harm-reduction programming; implementation of evidence-based practices

**Society:** legislation supporting social service and recovery programs; policies that promote racial and health equity; food and housing security; health insurance coverage for mental-health and substance-use treatment; laws and policies on the local, state and national levels

The most effective and successful prevention programs focus on multiple levels including the individual's personal beliefs (individual level), their relationship with their family and their peers (relationship level), and on the characteristics of society as a whole (community and societal level). Many risk and protective factors exist in each of these levels in regards to substance misuse.

Explore: [Factors Influencing Potential for Substance Use](#)

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *Multiple Choice 8.1*

If you feel pressure to use drugs because all of your friends are using and you want to fit in that is considered the [blank] level of the social-ecological model:

1. community
2. individual
3. interpersonal
4. society

**Image 8.6 – D.A.R.E. to Resist Drugs and Violence**



Photo by AnnksPhotography, [Pixabay](#), Pixabay License

## School-Based Programs

A number of factors have been identified that work to either protect adolescents or put them at greater risk for drug use and other high-risk behaviors. These factors are related to issues of community, school, family, peer and friend group dynamics, and individual characteristics. Historically, most school-based programs, such as the Drug Abuse Resistance Education program (D.A.R.E.) have produced disappointing results when evaluated for effectiveness (Botvin, 1986). Additionally, a study conducted by the University of Illinois at Chicago found that the D.A.R.E. program was “counter-productive and the students who participated in the program were more likely to use drugs” (Landmark Recovery, 2020). Recent studies have seen progress and better results for school-based interventions. Given that in the year 2005 alone, 80% of students reported participating in some type of school-based prevention program, it is necessary to look further into these programs to determine the most effective methods for engaging this population. There are several current programs that the National Institute for Drug Abuse (NIDA) lists for use with school-aged children:

**Caring School Community Program**, formerly known as the Child Development Project): This is a universal family-plus-school program to reduce risk and strengthen protective factors among elementary school children. The program focuses on strengthening students’ “sense of community,” or connection, to school. Research has shown that this sense of community has been key to reducing drug use, violence, and mental health problems, while promoting academic motivation and achievement.

**Guiding Good Choices (GGC)**, formerly known as Preparing for the Drug-Free Years: This curriculum was designed to educate parents on how to reduce risk factors and strengthen bonding in their families. In five 2-hour sessions, parents are taught skills on family involvement and interaction; setting clear expectations, monitoring behavior, and maintaining discipline; and other family management and bonding approaches.

**Life Skills Training (LST) Program:** LST, a universal program for middle school students, addresses a wide range of risk and protective factors by teaching personal, social, and drug resistance skills. Universal programs address risk and protective factors common to all children in a given setting, such as a school or community (NIDA, 2020). In addition, an elementary school version was recently developed, and the LST booster program for high school students helps to retain the gains of the middle school program.

**Lions-Quest Skills for Adolescence (SFA):** SFA is a commercially available, universal, life skills education program for middle school students in use in schools nationwide. The focus is on teaching skills for building self-esteem and personal responsibility, communication, decision-making, resisting social influences and asserting rights, and increasing drug use knowledge and consequences.

**Project ALERT:** A 2-year, universal program for middle school students, Project ALERT is designed to reduce the onset and regular use of drugs among youth. It focuses on preventing the use of alcohol, tobacco, marijuana, and inhalants. Project ALERT Plus, an enhanced version, also includes a high school component, which is being tested in 45 rural communities.

**Project STAR:** Project STAR is a comprehensive, drug misuse prevention, community program to be used by schools, parents, community organizations, the media, and health policymakers. The middle-school portion focuses on social influence and is included in classroom instruction by trained teachers over a 2-year timetable. The parent program helps parents work with children on homework, learn family communication skills, and get involved in community action.

**Skills, Opportunity, And Recognition (SOAR),** formerly known as the Seattle Social Development Program: This universal, school-based intervention for grades 1 through 6 seeks to reduce childhood risks for delinquency and drug misuse by enhancing protective factors. The multi-component intervention combines training for teachers, parents, and children during the elementary grades to promote children's bonding to school, positive school behavior, and academic achievement.

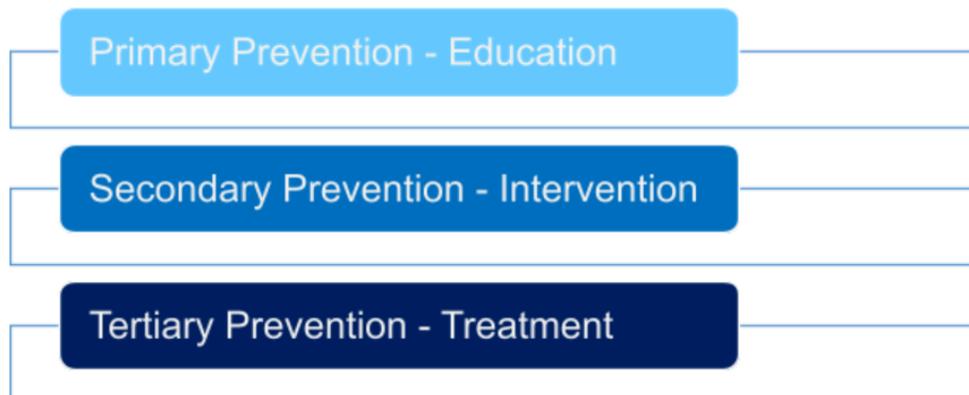
**The Strengthening Families Program: For Parents and Youth 10–14 (SFP 10–14),** formerly known as the Iowa Strengthening Families Program): This universal evidence-based program offers seven 2-hour sessions, each attended by youth and their parents, and is designed to help families to have better communication skills, teach skills about how to resist peer pressure, and prevent teen substance misuse. It has been conducted through partnerships that include state university researchers, cooperative extension staff, local schools, and other community organizations.

Given the amount of time that youth spend in schools, these institutions are vital avenues that can provide primary prevention education on the dangers of substance misuse.

## Levels of Prevention

Prevention activities are typically categorized into three tiers:

**Image 8.7 - Primary Prevention-Education; Secondary Prevention-Intervention; Tertiary Prevention-Treatment**



### *Primary Prevention – Education*

- targets the general population
- prevent initiation of substance use or delay the age of onset
- reduces supply of drugs available
- reduces the demand for drugs
- reduce risk factors and increases protective factors for drug use initiation
- directed mostly at younger children and adolescents

The main goal of the primary level of prevention is to prevent substance misuse from occurring and to prevent the initiation of substance use. If individuals do not begin to experiment with substances until an older age, they are less likely to experience substance misuse. The risk of developing dependence or misuse is greater for individuals who initiate use in adolescence or early adolescence than for those who initiate use during adulthood. Evidence of this increase risk highlights the need for early prevention, screening, and timely intervention among youth (SAMHSA, 2014).

### *Secondary Prevention – Intervention*

- targets individuals in the early stages of substance use
- prevents use becoming a problem and limit the damage to the individual
- targets risk groups, experimenters, and early misuse populations to stem the progression of misuse behaviors



## Treatment

**Recovery** from addiction is not a linear process. Similar to prevention models, effective treatment models are evidence-based and incorporate approaches that address the individual's needs on multiple levels. It is also important to note that relapse is often a part of the recovery process.

### Principles of Effective Treatment

Based on scientific research since the mid-1970s, the following key principles should form the basis of any effective treatment program:

- Addiction is a complex but treatable disease that affects brain function and behavior.
- No single treatment is right for everyone.
- People need to have quick access to treatment.
- Effective treatment addresses all of the patient's needs, not just his or her drug use.
- Staying in treatment long enough is critical.
- Counseling and other behavioral therapies are the most commonly used forms of treatment.
- Medications are often an important part of treatment, especially when combined with behavioral therapies.
- Treatment plans must be reviewed often and modified to fit the patient's changing needs.
- Treatment should address other possible mental disorders.
- Medically assisted detoxification is only the first stage of treatment.
- Treatment doesn't need to be voluntary to be effective.
- Drug use during treatment must be monitored continuously.
- Treatment programs should test patients for HIV/AIDS, hepatitis B and C, tuberculosis, and other infectious diseases as well as teach them about steps they can take to reduce their risk of these illnesses (NIDA, *Treatment approaches for drug addiction drugFacts*, 2019)

### Evidence-Based Approaches to Treating Substance-Use Disorders

The National Institute on Drug Abuse lists several options available for the treatment of substance-use disorders:

- behavioral counseling
- medication
- medical devices and applications used to treat **withdrawal** symptoms or deliver skills training
- evaluation and treatment for co-occurring mental health issues such as depression and anxiety

- long-term follow-up to prevent relapse

There is no single treatment model that works for all. The approach chosen should consider the substance involved and the characteristics of the individual affected. The treatment program should be tailored to the individual and the most effective models offer options for follow-up (NIDA, 2018).

Follow-up care often includes community- and/or family-based recovery support systems. Treatment should include medical services for any physical issue brought on by the sustained drug use as well as mental health services to address the psychological aspects of using behaviors.

Effective options for treatment fall into two categories: behavioral approaches and pharmacotherapies.

## Behavioral Treatment Approaches

There are several examples of behavioral approaches used throughout substance-misuse treatment. A few of those examples have been listed below. These types of models are the most commonly used and seek to provide the individual with tools to modify attitudes and behaviors related to their use by looking at their reasons and motivation to change. Behavioral treatment models provide the individual with skills necessary to handle stressors that may trigger substance use. This approach works to help the individual identify and address their **triggers** (people, places, or events) associated with using behavior (NIDA, 2018).

Behavioral models often include individual, family, or group sessions. These models seek to provide incentives for remaining abstinent by replacing substance-using activities with more constructive and often pro-social activities. Some examples of these types of approaches include:

- **Cognitive-Behavioral Therapy (CBT)**: involves efforts to change thinking patterns and helps patients recognize, avoid, and cope with the situations in which they are most likely to use drugs
- **Community Reinforcement Approach (CRA)**: assists and encourages individuals to adopt a pleasurable and healthy lifestyle that is more rewarding than one using alcohol or drugs
- **Motivational Enhancement Therapy (MET)**: uses positive reinforcement to encourage abstinence from drugs and often incorporates motivational interviewing techniques
- **Twelve-step Therapy (Alcoholics Anonymous [AA], Narcotics Anonymous [NA], Cocaine Anonymous [CA], Heroin Anonymous [HA])**: promotes abstinence by increasing the likelihood of a person misusing substances becoming affiliated with and actively involved in 12-step self-help groups
- **The Matrix Model (Stimulants)**: mainly uses a group-session framework to engage people misusing stimulants (e.g., methamphetamine and cocaine) in treatment and help them achieve abstinence

# Pharmacotherapies

Pharmacotherapy, or the treatment of a disorder or disease with medication, is often used in conjunction with behavioral therapy. These medications are used to assist with withdrawal symptoms and to help reduce drug cravings. Additionally, there are medications available for substance use treatment that work to block the effect of alcohol and other drugs and thus work to prevent relapse. Behavioral approaches in combination with pharmacotherapy can amplify the effects of medications. These different approaches work together to teach individuals coping skills they can practice in treatment, social, and work settings and how to recognize and avoid high-risk situations for relapse. Behavioral and pharmacological treatments are thought to operate by different but complementary mechanisms that can have additive effects.

Particular medications or therapies treat addictions to specific substances:

## **Opioid Addiction**

- methadone

## **Nicotine Addiction**

- nicotine replacement therapy (NRT)
- bupropion (Zyban®)
- varenicline (Chantix®)

## **Alcohol Addiction**

- naltrexone
- acamprosate
- disulfiram
- topiramate

## Check Your Knowledge

Refer to the end of the chapter for answers.

### *True or False 8.2*

The substance-abuse treatment most often utilized today focuses on medical devices and applications.

### Image 8.9 – Signs on Fence: Don't Give Up; You Are Not Alone; You Matter



Photo by Dan Meyers, [Unsplash](#), Unsplash License

## Types of addiction treatment settings

There are several ways that individuals can access behavioral treatment. Many models exist and should be tailored to the strengths and needs of the individual (NIDA, 2018).

### *Long-Term Residential Treatment*

Long-term residential treatment facilities provide 24-hour care. Residential treatment models often follow the idea of a therapeutic community (TC), offering 6 -and 12- month length of stay in a non-hospital setting. TCs focus on the “resocialization” of the individual and use the program’s entire community—including other residents, staff, and the social context—as active components of treatment. Treatment is highly structured, with activities designed to help residents examine damaging beliefs, self-concepts, and destructive patterns of behavior and adopt new, more harmonious and constructive ways to interact with others. Many TCs offer comprehensive services, which can include employment training and other support services, onsite. Research shows that TCs can be modified to treat individuals with special needs, including adolescents, women, homeless individuals, people with severe mental disorders, and individuals in the criminal justice system (NIDA, 2018).

## *Short-Term Residential Treatment*

In contrast, short-term residential programs offer a shorter length, anywhere from a 3- to 6-week length of stay and utilize a modified 12-step approach. These programs were originally designed to treat alcohol problems, but during the cocaine epidemic of the mid-1980s, many began to treat other types of substance-use disorders.

Following a stay in either long-term or short-term residential treatment programs, it is important for individuals to remain engaged in outpatient treatment programs and/or an aftercare program. These programs help to reduce the risk of relapse once a patient leaves the residential setting and is back in the community and home environment (NIDA, 2018).

## *Outpatient Treatment Programs*

Outpatient treatment varies in the types and intensity of services offered. Such treatment typically costs less than residential or inpatient treatment and often is more suitable for people with jobs or extensive social support. Other outpatient models, such as intensive day treatment, can be comparable to residential programs in services and effectiveness, depending on the individual patient's characteristics and needs. In many outpatient programs, group counseling can be a major component. Some outpatient programs are also designed to treat patients with medical problems in addition to their substance use disorders (NIDA, 2018).

## *Individualized Drug Counseling*

Individualized drug counseling not only focuses on reducing or stopping the substance use but it also addresses other related and affected areas of the individual's life such as employment, illegal activity, and family/social relations. Through its emphasis on short-term behavioral goals, individualized counseling helps the patient develop coping strategies and tools to abstain from substance use and maintain abstinence. The addiction counselor often encourages 12-step participation (at least one or two times per week) and makes referrals for needed supplemental services, such as medical, psychiatric, and employment (NIDA, 2018).

## *Group Counseling*

Many therapeutic settings use group therapy to capitalize on the social reinforcement offered by peer discussion and to help promote substance-free lifestyles. Research shows that when group therapy is offered in conjunction with individualized drug counseling or incorporates the principles of cognitive-behavioral therapy then positive outcomes are likely achieved. Current research seeks to test group therapy sessions and study how to make those same sessions more community-friendly (NIDA, 2018).

## Conclusion

The cost of substance use and misuse could be offset by a nationwide implementation of effective prevention policies and programs. Utilizing SAMHSA's Strategic Prevention Framework provides a structure for creating and implementing effective prevention models. Communities should consider prevention programs based on the needs and characteristics of their intended populations. Additionally, treatment for substance-use disorders exists in several forms. Behavioral counseling and medications have been shown to be highly effective and can be used to change the course of addiction in adolescents and adults alike. Similarly to prevention methods, substance misuse treatment also lessens the cost and burden to society. Treatment for substance misuse costs less than incarcerating individuals for drug offenses; less is spent on healthcare as well. In addition, treatment reverses many negative aspects associated with misuse, such as the loss of worker productivity, accidents related to impairment, and overdose deaths.

## Answers:

### Multiple Choice 8.1

**Answer:** 3. Interpersonal

**Explanation:** The interpersonal level consists of influences from family, friends, peers, and other social groups. The community level deals with neighborhood, school, and collective community organizations. The individual level of the social-ecological model consists of one's own personal beliefs and knowledge. The society level of the social-ecological model focuses on the public policies and laws around substance use.

### True or False 8.2

**Answer:** False

**Explanation:** The most commonly used treatment approach is the behavioral treatment approach.

## Supplemental Resources

Buddy, T. (2020, September 15). *How Drug Use Affects Our Society*. Verywell Mind. Retrieved July 20, 2021, from <https://verywellmind.com/what-are-the-costs-of-drug-abuse-to-society-63037>

Meyers, R. J., Roozen, H. G., & Smith, J. E. (2011). The community reinforcement approach: An update of the evidence. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse and Alcoholism*, 33(4), 380–388. <https://pubmed.ncbi.nlm.nih.gov/23580022/>

National Institute on Drug Abuse. (2014, January). *Principles of adolescent substance use disorder treatment: A research-based guide*. National Institutes of Health, U.S. Department of Health and Human Services. Retrieved July 20, 2021, from <https://nida.nih.gov/publications/principles-adolescent-substance-use-disorder-treatment-research-based-guide/>

National Institute on Drug Abuse. (2020, July 10). *Drugs, brains, and behavior: The science of addiction*. National Institutes of Health, U.S. Department of Health and Human Services. Retrieved on July 30, 2021, from <https://nida.nih.gov/publications/drugs-brains-behavior-science-addiction/preventing-drug-misuse-addiction-best-strategy>

## References

Botvin, G. J. (1986). Substance abuse prevention research: Recent developments and future directions. *Journal of School Health*, 56(9), 369-374. <https://doi.org/10.1111/j.1746-1561.1986.tb05775.x>

National Center for Injury Prevention and Control, Division of Violence Prevention. (2021, January 21). *The social-ecological model: A framework for prevention*. Centers for Disease Control and Prevention. Retrieved July 30, 2021, from <https://www.cdc.gov/violenceprevention/about/social-ecologicalmodel.html>

Landmark Recovery. (2020, May 18). *Why the D.A.R.E. program failed*. Retrieved July 25, 2021, Retrieved from <https://landmarkrecovery.com/why-the-dare-program-failed>

National Institute on Drug Abuse. (2018, January). *Principles of drug addiction treatment: A research-based guide (3rd ed.)*. National Institutes of Health, U.S. Department of Health and Human Services. Retrieved on July 20, 2021, from <https://nida.nih.gov/publications/principles-drug-addiction-treatment-research-based-guide-third-edition/preface>

National Institute on Drug Abuse. (2019, January 17). *Treatment approaches for drug addiction drugFacts*. National Institutes of Health, U.S. Department of Health and Human Services. Retrieved July 30, 2021, from <https://nida.nih.gov/publications/drugfacts/treatment-approaches-drug-addiction>

National Institute on Drug Abuse. (2020, June 10). *Preventing drug use among children and adolescents (in brief)*. National Institutes of Health, U.S. Department of Health and Human Services. Retrieved on July 30, 2021, from <https://nida.nih.gov/publications/preventing-drug-use-among-children-adolescents/prevention-principles>

Office of National Drug Control Policy. (n.d.). *How illicit drug use affects business and the economy*. Executive Office of the President. Retrieved July 21, 2021, from <https://obamawhitehouse.archives.gov/ondcp/ondcp-fact-sheets/how-illicit-drug-use-affects-business-and-the-economy>

Substance Abuse and Mental Health Services Administration. (2019, June). *A guide to SAMHSA's strategic prevention framework*. U.S. Department Health and Human Services. <https://www.samhsa.gov/sites/default/files/20190620-samhsa-strategic-prevention-framework-guide.pdf>

Substance Abuse and Mental Health Services Administration. (2019, August). *Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health (HHS Publication No. PEP19-5068, NSDUH Series H-54)*. Center for Behavioral Health Statistics and Quality. Retrieved July 20, 2021, from <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHNationalFindingsReport2018/NSDUHNationalFindingsReport2018.pdf>

Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality. (2014, July 17). *The TEDS report: Age of substance use initiation among treatment admissions aged 18 to 30*. U.S. Department of Health and Human Services. [https://www.samhsa.gov/data/sites/default/files/WebFiles\\_TEDS\\_SR142\\_AgeatInit\\_07-10-14/TEDS-SR142-AgeatInit-2014.htm](https://www.samhsa.gov/data/sites/default/files/WebFiles_TEDS_SR142_AgeatInit_07-10-14/TEDS-SR142-AgeatInit-2014.htm)

# Glossary

## **ADD**

Attention Deficit Disorder

## **ADHD**

Attention Deficit Hyperactivity Disorder

## **Analgesics**

Drugs used to relieve pain

## **Antacids**

Curtail stomach acidity

## **Anti-fungal creams**

Used to treat athlete's foot and other fungal conditions

## **Anti-Inflammatory Drugs**

NSAIDS; ibuprofen

## **Cold and Allergy Drugs**

Antihistamines, Cough medicines and decongestants

## **Controlled substances**

a drug which has been declared by state and federal law to be illegal for use or sale, but may be prescribed by a physician

## **Decongestants**

Constrict blood vessels of the nasal passages, improve air flow and obstruct secretions that go to the back of the throat

## **Dependence**

A substance is often taken in larger amounts or over a longer period than intended. There is a persistent desire or unsuccessful efforts to cut down or control substance use. A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects.

**Distribution**

a person is accused of selling, delivery or providing a controlled substance illegally

**Dopamine**

Dopamine is a neurotransmitter that provides reinforcement for rewarding behaviors.

**GABA**

a neurotransmitter that sends chemical messenger through the brain and nervous system; GABA regulates communication between brain cells

**Herbal Drugs**

Herbal supplements that come in the form of pills, teas, incense, powders

**LSD**

Lysergic acid diethylamide

**Manufacturing**

cultivation or manufacture of a controlled substance via chemical processes or lab production or growing

**Misuse**

The use of illegal drugs or the use of prescription or over-the-counter drugs or alcohol for purposes other than those for which they are meant to be used, or in excessive amounts.

**Norepinephrine**

Norepinephrine is a chemical that functions in the brain and body as a hormone and a neurotransmitter.

**Possession**

most common drug charge at local levels; knowingly and intentionally possessing a controlled substance, having drugs without a prescription and the quantity of the possession are all factors in charging a person

**Prevention**

Any activity designed to avoid substance misuse and reduce its health and social consequences

**Recovery**

Recovery is a process of change through which individuals improve their health and wellness, live self-directed lives, and strive to reach their full potential.

**SSRI's**

SSRI's are Selective Serotonin Reuptake Inhibitors

**Stimulants**

Caffeine and weight loss aids

**Substance**

Any chemical agent (natural or artificial) that affects the mind and is abusively used: alcohol, illegal street drugs, addictive prescription and over the counter drugs, other mind altering substances, and tobacco

**Trafficking**

refers to the illegal sale and or distribution of a controlled substance; typically the amount of drugs found is the primary concern

**Triggers**

A person, place, or event that may cause your brain to flashback to the days when you were using. Triggers are the most common obstacles that can deter an individual from their recovery and sometimes lead to relapse.

**Trip**

Also known as a psychedelic experience or an acid trip.

**Weight-loss aids**

PPA is an appetite suppressant

**Withdrawal**

Symptoms that can occur after long-term use of a drug is reduced or stopped; these symptoms occur if tolerance to a substance has occurred, and vary according to substance. Withdrawal symptoms can include negative emotions such as stress, anxiety, or depression, as well as physical effects such as nausea, vomiting, muscle aches, and cramping, among others. Withdrawal symptoms often lead a person to use the substance again.