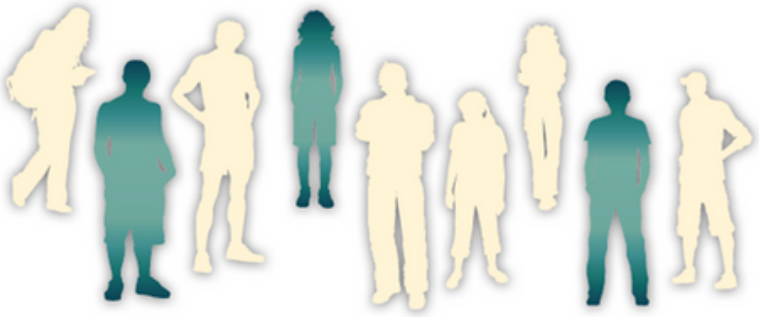
SUD 101
TOOLKIT

AZUSA PACIFIC
UNIVERSITY

County of Los Angeles
Public Health

Why Do I Need This Toolkit?

Access to and availability of substances like alcohol, tobacco, marijuana, and prescription drugs in our communities make early substance use experimentation behaviors common for adolescent populations. Young people are constantly exposed to depictions of alcohol and drugs in a positive light through music, popular movies and social media. This often leads to youth having low risk perceptions of alcohol and drug use; in other words, thinking that "using or drinking is not harmful." National research has established that over the course of adolescence, the proportion of youth who report lifetime drinking and other drug use rises tenfold, from 7% of 12-year-olds to nearly 70% of 18-year-olds.[1]



1 in 3 children starts drinking by the end of 8th grade
... and of them, half report having been drunk.

Impact of Substance Use on Adolescents

While alcohol and drug use are common among adolescents, research has found that most will reduce or cease use as they enter adulthood with effective early intervention efforts. However, unaddressed alcohol and drug use among adolescents have significant health consequences. In the short term, adolescent substance use can result in unintentional consequences including: (1) overdose and death, (2) aggression and victimization, (3) infections and pregnancies from unplanned, unprotected sex, (4) academic and social problems, and (5) mental health issues including anxiety, depression, and suicidality. In the long term, continued use of alcohol and drugs during adolescence can result in long-lasting functional and structural changes in the brain, with an increased risk for developing clinical issues like substance use disorder or addiction later in life.

[1] https://monitoringthefuture.org/data/Prevalence.html#drug=%22%22

SUBSTANCE USE AS A HEALTH BEHAVIOR

Like nutrition, sleep, screen time, and physical activity, substance use is also a health behavior! Some substances, like prescription medications, can be beneficial for your health if prescribed by a doctor, but using illegal substances or misusing legal substances (including prescription medications) is damaging to your health. Before we dive into the difference between the ways substances affect your health, consider the questions below.

When you hear the word "drugs," what comes to mind? What types of substances?

Why is it important to understand the different ways these substances affect your health?

Throughout this unit, we will learn about the different factors that can make substance use a health-damaging behavior and how it can specifically impact young people.

PRESCRIPTION DRUG MISUSE

The study of drugs and how they can be used safely is an ongoing process. Some drugs are created to support health when used as a prescription medication (under the care of a doctor, with limits to the dosage, length of use, etc.) to deliver helpful effects and address certain ailments or sicknesses.

However, when those same controlled drugs are used in ways that are inconsistent with the legitimate medical use (i.e., by someone they were not prescribed for, or by taking more than prescribed), it is called **misuse.** Let's review this a little more.

First, reflect or share: have you ever heard of anyone misusing substances?

What do you think "prescription drug or over-the-counter medicine misuse" means?

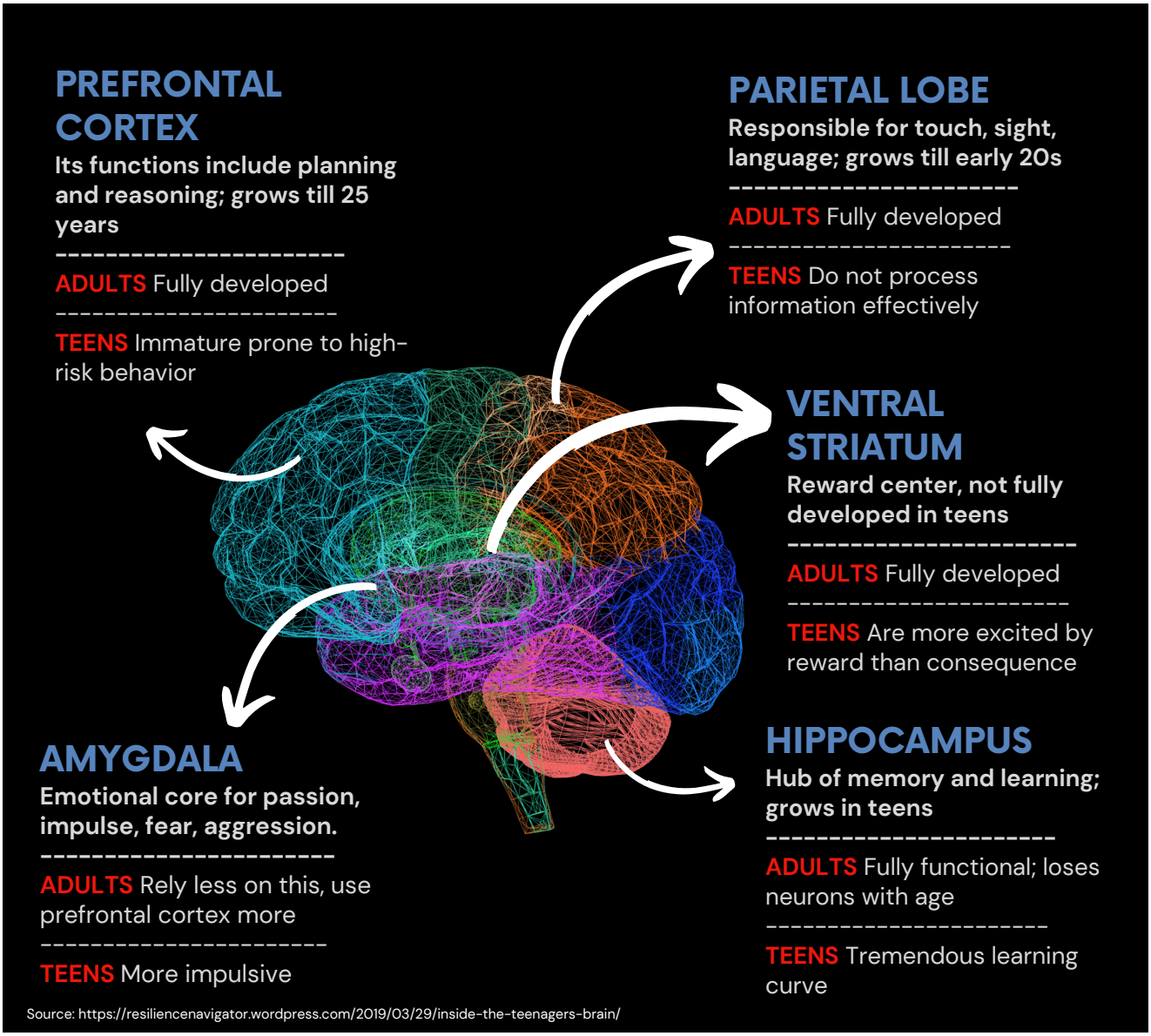
What are some reasons that people might misuse prescription drugs or over-the-counter medications?

Source: https://www.ncbi.nlm.nih.gov/books/NBK53217/

The Developing Brain

The adolescent brain is not fully developed or mature until the age of 25. Hence, an important risk factor to understand is that young people are naturally susceptible to experimenting with alcohol and drugs because their developing brains are **prone to seek excitement**.
In the adolescent brain, there are many core brain systems that are in development (see Figure below). Research has found that there is a maturation gap between the *thinking* and *feeling* parts of the adolescent brain. This means that adolescents process and act on information that is driven by the **amygdala (emotional part of the brain)** rather than the **prefrontal cortex (rational thinking part of the brain)** because the prefrontal cortex is under-developed. This increases the risk of substance use and developing a substance use disorder.

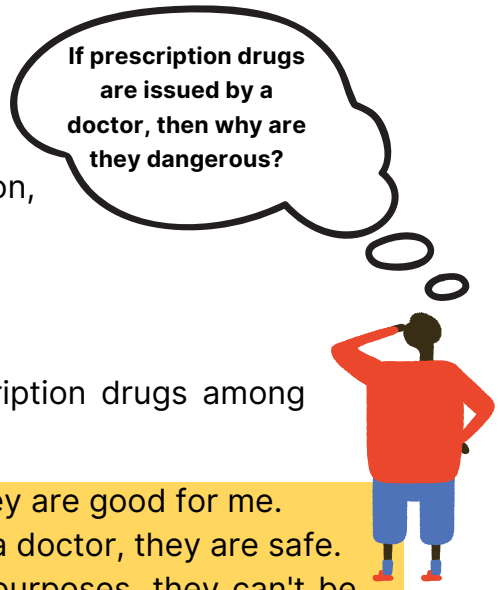
Inside the Teenage Brain



PRESCRIPTION DRUG MISUSE: MYTHS AND FACTS

According to several research reports, prescription drug misuse is on the rise among young people. In other words, young people are getting and using prescription drugs illegally and in ways that are harmful to their health.

Why the rise?



Common reasons for misusing medications:

- To get high (experience pleasure and euphoria)
- For enhancing performance (sports competition, school/grades/studying)
- For recreational and social reasons
- For emotional or physical pain relief

There are **misconceptions** (or myths) about prescription drugs among young people. Here are some common ones:

- **Myth 1:** Since prescription drugs are medicine, they are good for me.
- **Myth 2:** Because prescription drugs are given by a doctor, they are safe.
- **Myth 3:** Since prescription drugs are for health purposes, they can't be harmful.

But the reality is prescription drugs and over-the-counter medicines can be very dangerous and pose serious health concerns when used inappropriately. Here are important FACTS:

- **FACT 1: Misusing drugs can put someone at risk for substance use disorders (addiction).** When prescription drugs are taken in large amounts, and misused frequently, there is increased risk for developing severe and chronic addiction. Also, starting to use substances earlier (i.e. during adolescence) puts one at higher risk for substance use disorder.
- **FACT 2: Misusing drugs can cause serious side effects.** Doctors carefully prescribe these types of drugs to treat illness, with understanding of a person's health background and characteristics. Using them inappropriately can cause side effects that can be serious and dangerous, like overdose and death.
- **FACT 3: Like with other substances, misusing prescription drugs has health consequences.** As with any type of mind-altering drug, prescription drug misuse affects judgment and inhibition, increasing risky behaviors such as accidents, injuries, suicide, sexual behaviors that may lead to HIV and other sexually transmitted infections), and academic behaviors that lead to drop out.

Source: https://teens.drugabuse.gov/drug-facts/prescription-drugs
https://www.samhsa.gov/homelessness-programs-resources/hpr-resources/rise-prescription-drug-misuse-abuse-impacting-teens

DEFINITIONS: LEGAL DRUGS

Some substances are legal to use when you are 21 years old, and others are illegal no matter what. Let's talk about them.

What types of drugs do you think are most commonly used among people your age?

What are some drugs that are legal at the age of 21? Why do you think there are restrictions on their use?

Legal Drugs	Reasons for Restrictions
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Legal drugs (21 and over)

Examples of legal drugs (at the age of 21) are tobacco and alcohol. In 2016, California joined 10 other states in the U.S. and legalized marijuana for recreational use for adults 21 and older.

The word "recreational" means that using alcohol and drugs should NOT be part of your life every day. When they are used beyond recreational use, it becomes a health-damaging substance use behavior, meaning "using excessively" without limits (daily, weekly, monthly). This health-damaging behavioral pattern has been called several terms: misuse, abuse, problem use, and risky use.

Federally, marijuana is still categorized as a Schedule I Illegal Drug, meaning there is a high probability that people use it beyond recreational use, and there is little research showing that it has any benefits.

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6358421/

SUBSTANCE-RELATED POLICIES & PUBLIC HEALTH CONSEQUENCES

THERE ARE RULES AND RESTRICTIONS ON LEGAL DRUGS EVEN WHEN YOU ARE OLD ENOUGH TO USE THEM. THESE RULES ARE SET ON RECREATIONAL DRUGS BECAUSE TOO MUCH OF THEM CAN HAVE SERIOUS HEALTH AND SAFETY CONSEQUENCES. EVEN THOUGH CERTAIN SUBSTANCES ARE LEGAL AT AGE 21, THIS DOES NOT MEAN THEY ARE ALWAYS SAFE.

Alcohol, tobacco, and marijuana are always illegal in any amount for people under age 21 in California. However, even once they are legal (age 21), there are still limitations. Let's consider some examples:

- Drinking and driving with a blood-alcohol concentration of more than 0.08 is against the law and prohibited.
- Low-risk consumption standards (moderate drinking) for adults of the legal drinking age (21 years old) include up to one drink per day for women and up to two drinks per day for men.
- Excessive alcohol consumption (prohibited standards) for adults includes
  - Binge drinking (four or more drinks for women and five or more drinks for men within about 2 hours).
  - Heavy drinking (eight or more drinks a week for women and 15 or more drinks a week for men).
  - Any drinking by pregnant women or those under 21 years of age.
- People who are or who may be pregnant should not drink or smoke because of the risk of harm to their unborn baby. Drinking during pregnancy may have negative consequences on the health of the baby. For this reason, no safe level of alcohol consumption during pregnancy has been established.
- Smoking (cannabis or tobacco) is prohibited indoors publicly everywhere (except your home).

Even though it is legal for adults over age 21 to use substances such as alcohol and, in some states like California, cannabis, there are still standards.
Why do you think that is?

Sources: https://www.dmv.ca.gov/portal/handbook/california-driver-handbook/alcohol-and-drugs/
U.S. Department of Health and Human Services and U.S. Department of Agriculture. 2015 – 2020 Dietary Guidelines for Americans. 8th Edition. December 2015.

DEFINITIONS:
ILLEGAL DRUGS

What are some drugs that are illegal all the time—for any age? Why do you think these drugs are illegal?

Illegal Drugs	Reasons for Restrictions
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Illegal Drugs (for everyone)

Some drugs are always illegal and do not have medical uses, no matter your age. Examples of illegal drugs are cocaine, crack, methamphetamine, heroin, and LSD. Illegal drugs mean that they are **not legal or safe to use**.

Drugs are made up of “psychoactive" chemicals that create chemical reactions in the brain. Effects vary from person to person and depend on how pure the chemical is, how much is taken, and other factors. The scary thing is you usually don’t know about these chemical effects upon initial use of drugs. Additionally, taking drugs that aren't made in a medical setting means you can't always be sure what exactly is in them. What does this mean?

When you take a drug, the substance enters the bloodstream and crosses over to the brain to produce effects. All drugs affect the brain and body via the central nervous system (CNS). This means that taking any substance can have effects on your brain, body, and health.

Did you know? The leading causes of death and disease in the U.S. (like cancer, heart attack, stroke) are largely attributed to health-damaging behaviors, with the top ones including alcohol, tobacco, and illicit drug use.

Source: https://www.ncbi.nlm.nih.gov/books/NBK43744/

Sources: https://www.drugabuse.gov/sites/default/files/Commonly-Used-Drugs-Charts_final_June_2020_optimized.pdf
https://www.ncbi.nlm.nih.gov/books/NBK279390/

PSYCHOACTIVE EFFECTS OF SUBSTANCES

Regardless of drug classification status, legal or illegal, all substances affect the central nervous system—the brain and body.

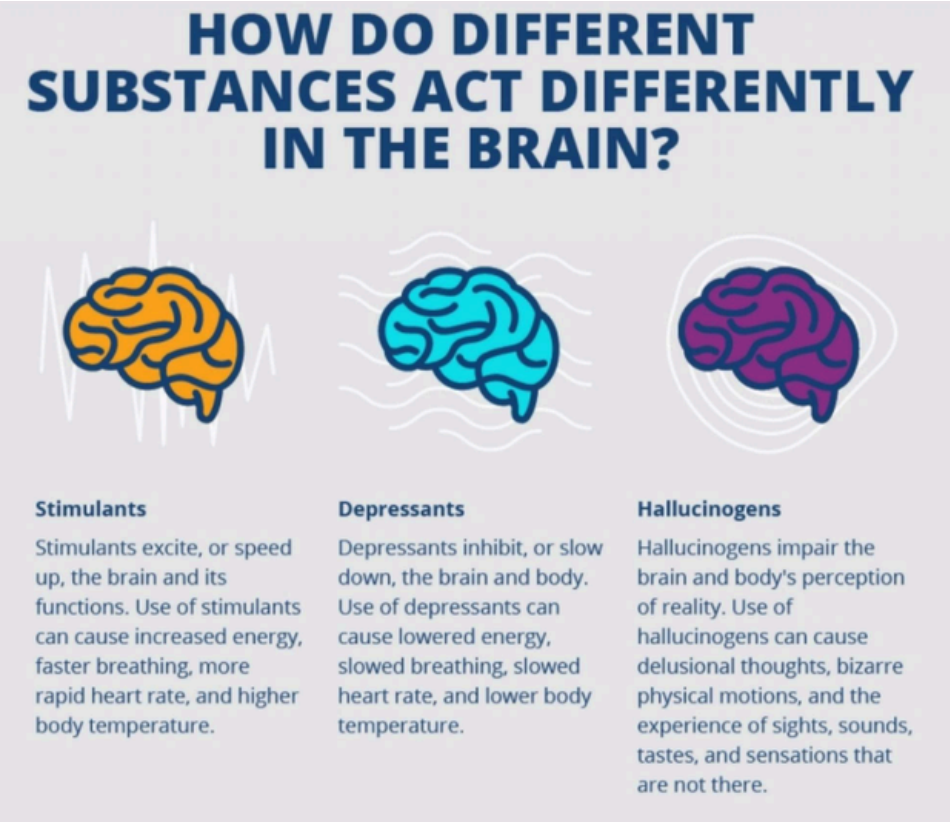


Image source: https://www.sandstonecare.com/resource-library/drugs/the-effects-of-drugs-on-teens-developing-brains-1

Think about commonly used substances by young people your age. Using the boxes below, list them under each of the categories depending on how you think they affect the central nervous system (brain and body).

Depressants	Stimulants	Hallucinogens

SUBSTANCE USE CONSEQUENCES

All psychoactive chemicals, whether they are prescribed, legal, illegal, depressants, stimulants, or hallucinogens, can have significant effects on your life.

What are those effects? Take some time to reflect on these mental and physical effects you have learned so far. Place them into their respective category below.

PHYSICAL	MENTAL
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

What about the social effects of substances? That is—what are the effects of the substance on school, work, family, and the community (safety)?

SOCIAL
1.
2.
3.
4.
5.

Did you know that caffeine is technically a drug? When consumed, it causes a chemical reaction in the brain that releases dopamine, increases alertness, and can cause other physiological effects in some people depending on frequency and amount such as jitters, anxiety, lack of sleep, digestive trouble. You may have noticed these effects when consuming energy drinks, due to the high caffeine content!

Source: http://www.exploring.org/wp-content/uploads/2015/12/Drug-Abuse-Prevention-4-Teens.pdf

DRUGS EFFECTS ON THE BRAIN AND BODY

All drugs have many negative physical and mental health consequences to the brain and body, no matter whether they are being used to cope with problems, to fit into a certain crowd, or just to experiment. Some of these effects are immediate, and others you won't know about until many years later. That's one of the scary things about drugs. Draw a line to areas of the body that you think each drug affects most.

Using the word bank on the left, **DRAW** lines to the areas of the body on the right that you think are mostly affected. Then **STAR** the drug(s) and area(s) of the body that concern you the most in terms of "dangerous" drug effects.

WORD BANK:

ALCOHOL

COCAINE

CIGARETTES/E-CIGARETTES

CRYSTAL METH

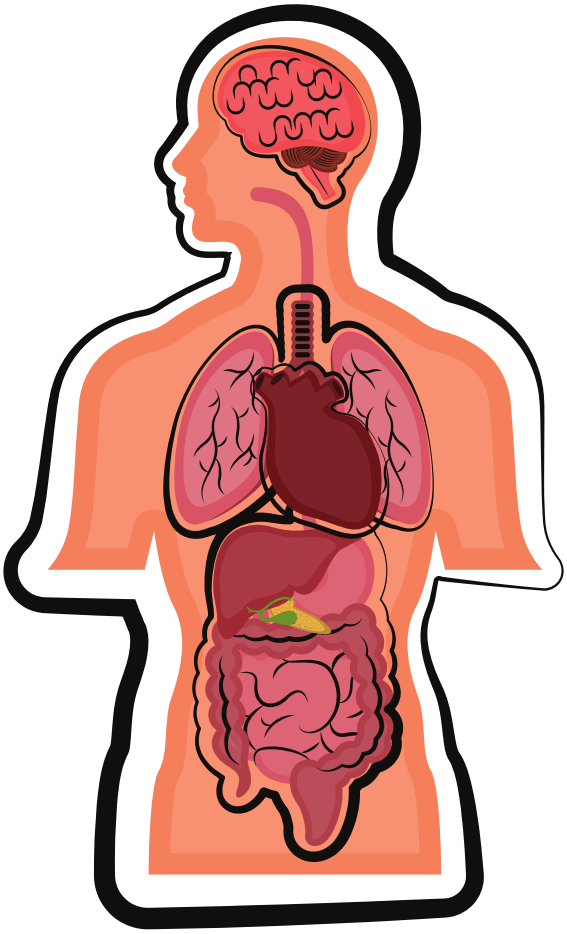
INHALANTS

MARIJUANA

METHAMPHETAMINE

PRESCRIPTION PAIN MEDICATIONS

STEROIDS



DRUG EFFECTS ON THE BRAIN AND BODY

Review the section below that summarizes key points on how various body parts are affected by different drugs. How many areas did you guess right?: _____ (fill in a number)

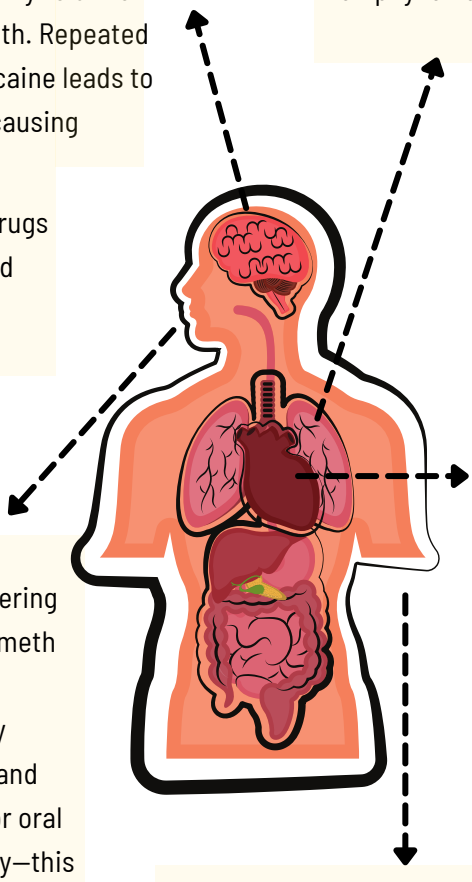
BRAIN

ALL drugs affect the brain in significant ways. Drugs affect a person's ability to make decisions, learn, remember, sleep, and control their behavior or emotions. Frequent use of marijuana decreases a person's IQ and can cause learning problems, poor grades, and an increased risk of school drop-out. Excessive alcohol use impairs a person's ability to drive and causes risk for injury and death. Repeated use of methamphetamine and cocaine leads to long-term neurological damage, causing hostility, anxiety, and paranoia.

Heroin and **prescription opioid** drugs lead to cognitive impairments, and **inhalants** lead to long-term brain damage.

LUNGS

The lungs are significantly affected by **any** smoked forms of drugs. Here are some facts: Inhaling (through vaping or smoking) **marijuana or e-cigarettes** irritates the airways, causing severe damage to the lungs, including inflammation and phlegm buildup. Consequences are chronic cough, bronchitis, respiratory infections, emphysema, cancers, and making it hard to sleep or exercise.



HEART

All drugs affect the heart, because drugs go into your bloodstream and straight to your brain, affecting the blood the heart pumps. Here are a few well-established facts: **stimulants**, like methamphetamine and cocaine, cause the heart to over-work because they raise the heart rate to unhealthy levels; alcohol and **prescription opiates** do the opposite because they are depressants and slow down the heart. Misusing opioids can slow down the heart so much that it stops pumping, resulting in overdose death.

MOUTH

Methamphetamine has an unflattering effect on your mouth by causing "meth mouth"—this is the effect of teeth clenching and a craving for sugary drinks and foods, affecting tooth and gum decay. **Marijuana** causes poor oral health by making users feel hungry—this effect is known as the "munchies," which can lead you to eat high-sugar foods and increases risk for dental cavities.

SKIN

The skin can be greatly affected by certain drugs. Steroids and methamphetamine have been shown to have immediate effects on the skin's outer appearance, making someone look aged and sick. **Steroids** cause acne, baldness in males, and both baldness and facial hair in females. **Methamphetamine** can result in the sensation of bugs crawling under the skin, causing picking or scratching, leaving self-inflicted wounds!

Source: http://www.scholastic.com/drugs-and-your-body/index.htm

SUBSTANCES & MENTAL HEALTH

ALL drugs affect the brain in significant ways. Because of this, substance use can be related to mental health struggles or changes. Mental health effects are commonly experienced in the form of emotional distress, low self-esteem, stress, sadness, loneliness, guilt, shame, fear, and worry. Some people also turn to substances to cope with mental health challenges.

If substance use OR mental health concerns are left unaddressed, there can be numerous long-term consequences. You are not alone if you experience these symptoms. It is important to recognize them and discuss them with a health provider or your counselor.

ADHD

ADHD (attention-deficit/hyperactivity disorder) causes difficulty paying attention. It might be hard to sit still and focus.

Some people may use stimulants like nicotine or prescription medications to cope with these symptoms. Substance use can also decrease impulse control.

BIPOLAR DISORDER

Bipolar disorder causes extreme or rapid changes in mood. Youth might be full of energy, excited, or angry, followed by a period of feeling sad, tired, and hopeless.

Some people may use substances to "numb" the extreme feelings, but substances can also trigger mood shifts.

PERSONALITY DISORDERS

Personality disorders make it hard to maintain interpersonal relationships and care about other people's feelings.

Some people may use substances as a way of seeking social approval or connection.

DEPRESSION

Depression includes periods of feeling very sad, hopeless, or tired.

Some people may use substances to cope with these symptoms, but some substances can also lead to feelings of depression.

CONDUCT DISORDER

Conduct disorder is characterized by behavioral and emotional problems. Behaviors can sometimes be hostile or physically violent.

People with conduct disorder may engage in risky substance use behaviors.

ANXIETY

Anxiety makes you feel nervous, worried, and afraid.

Some people may use substances to cope with these symptoms, but substances can also increase feelings of anxiety.

Source: https://www.drugabuse.gov/sites/default/files/Commonly-Used-Drugs-Charts_final_June_2020_optimized.pdf
https://easyread.drugabuse.gov/content/drug-use-and-mental-health-problems-often-happen-together

DETERMINING MENTAL HEALTH

It is important to evaluate yourself on any mental health signs and symptoms that can be troublesome for you over time. Below is a checklist you can use to evaluate yourself and help you consider if you need to consult with others for help/resources.

Determining Mental Health Checklist

Mood Disorders	☐ Have you ever you felt down, depressed, or hopeless? ☐ How is your energy? (check if good) ☐ How is your sleep? (check if good) ☐ Do you prefer to stay home rather than go out and do new things? ☐ Have you had thoughts of hurting yourself? ☐ Have you ever felt your mood was “too good” for multiple days? ☐ During your “good mood,” did you ever feel like you had a lot of ideas and your brain was working very fast?
Anxiety & Trauma	☐ What kinds of things do you worry about? Do you have difficulty controlling your worry? ☐ Do certain things go through your mind over and over despite your attempts to ignore them? ☐ Do you have continued thoughts, memories, and/or dreams related to an event? ☐ Have you experienced or witnessed a life-threatening event that caused intense fear, helplessness, or horror? ☐ Do you have a difficult time when anything triggers a memory of an event?
Psychosis	☐ Do surroundings sometimes seem strange, confusing, or unreal to you? ☐ Do you find yourself feeling mistrustful or suspicious of other people? ☐ Do you feel that other people are watching you or talking about you? ☐ Do you sometimes feel suddenly distracted by distant sounds that you are not normally aware of? ☐ Have you had the sense that some person or force is around you, although you couldn't see it? ☐ Do you hold beliefs that other people find unusual or bizarre?

DETERMINING MENTAL HEALTH

Determining Mental Health Checklist (Continued)

Attention & Learning Deficits	☐ Do you fail to pay attention to details or make mistakes? ☐ Do you have difficulty following instructions, finishing work or other duties? ☐ Are you forgetful in daily activities? ☐ Do you find it hard to understand what is being said or communicate your thoughts? ☐ Do you have problems with remembering information, multiple instructions, or routine?
Behavioral or Conduct Disorders	☐ Do you blame others for your mistakes or misbehaviors? ☐ Are you often offended by what others say or do? ☐ Do you seek out revenge? ☐ Do you pick fights or do things to annoy people purposely? ☐ Do you argue excessively with people in authority? ☐ Are you satisfied with your eating patterns? ☐ Does your weight affect the way you feel about yourself?

Adapted from: American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Pub.

If you feel that you need help/resources for any mental health signs and symptoms, talk with your counselor/provider. You can also take some time to look online at services and resources available in the county from the Department of Mental Health—see the resource table to the right for reference.

MENTAL HEALTH RESOURCE TABLE

Resource Name	Phone Number	Website
211	Dial "2-1-1"	http://www.211.org/
Los Angeles County Department of Mental Health	N/A	https://dmh.lacounty.gov/
LAC Department of Mental Health Access 24/7 Hotline	1 (800) 854-7771	https://dmh.lacounty.gov/our-services/disaster-services/access-hotline/
LAC Youth Suicide Prevention Project	N/A	https://preventsuicide.lacoe.edu/
Trevor Project Lifeline - LGBTQ	1 (866) 488-7386	https://www.thetrevorproject.org/
National Suicide Prevention Lifeline	1 (800) 273-8255	https://suicidepreventionlifeline.org/
Substance Abuse Service Helpline (SASH)	1 (844) 804-7500	N/A

COMMONLY ABUSED DRUGS

ALCOHOL
LIQUOR
BEER
WINE
JUICE

EFFECTS: In lowdoses: euphoria, mild stimulation, relaxation, lowered inhibitions
In higher doses: Drowsiness, slurred speech, nausea, emotional volatility, loss of coordination, visual distortions, impaired memory, sexual dysfunction, loss of consciousness/increased risk of injuries, violence, fetal damage (in pregnant women), depression, neurologic deficits, hyper tension, liver and heart disease, addiction, fatal overdose

MARIJUANA
BLUNT
DOPE
WEED
POT

EFFECTS: Euphoria, relaxation, slowed reaction time, distorted sensory perception, impaired balance and coordination, increased heart rate and appetite, impaired learning, memory, anxiety, panic attacks, psychosis, cough, frequent respiratory infections, possible mental health decline, addiction

HEROIN
SMACK
HORSE
BROWN SUGAR
CHINA WHITE

EFFECTS: Euphoria, drowsiness, impaired coordination, dizziness, confusion, nausea, sedation, feeling of heaviness in the body, slowed or arrested breathing/constipation, endocarditis, HIV, addiction, fatal overdose

COCAINE
BLOW
BUMP
CRACK
ROCK

EFFECTS: Increased heart rate, blood pressure, body temperature, metabolism, feelings of exhilaration, increased energy, mental alertness, tremors, reduced appetite, irritability, anxiety, panic paranoia, violent behavior, psychosis/weight loss, insomnia, cardiac or cardiovascular complications, stroke, seizures, addiction

*Also - Nasal damage from snorting

METH
ICE
SPEED
CHALK
CRYSTAL

EFFECTS: Increased heart rate, blood pressure, body temperature, metabolism, feelings of exhilaration, increased energy, mental alertness, tremors, reduced appetite, irritability, anxiety, panic paranoia, violent behavior, psychosis/weight loss, insomnia, cardiac or cardiovascular complications, stroke, seizures, addiction

*Also - Severe dental problems

NICOTINE
VAPES
ZYN
HOOKAH
CIGS

EFFECTS: Increased heart rate and blood pressure, alertness, suppressed appetite, coughing, dizziness, bad breath, stomach cramps, confusion, seizures, addiction
*Long term- increased risk of cancers, heart problems, and poor immune health

INHALANTS
NITROUS OXIDE
WHIPPETS
OZ
POPPERS
SNAPPERS

EFFECTS: Rapid high, drowsiness, disinhibition, lightheadedness, agitation, loss of sensation, unconsciousness, nausea and vomiting, slurred speech, lethargy, muscle weakness, headache, low reflexes, loss of coordination

MDMA
ECSTASY
MOLLY
CANDY
ROLLING

EFFECTS: Increased extroversion, emotional warmth, enhanced sensory perception, high blood pressure, faintness, panic attacks, loss of consciousness, seizure, hyperthermia, swelling of the brain, electrolyte imbalance and kidney problems, restlessness, involuntary jaw clenching and stiffness

STEROIDS
ROIDS
JUICE
PUMP

EFFECTS: Stunted growth, hormonal effects, extreme mood shifts, aggression, hair loss, acne, risk of blood clot/stroke, low sperm count, shrunken testes, enlarged heart

COMMONLY ABUSED PRESCRIPTION DRUGS

DEPRESSANTS

BARBITURATES
BARBS
REDS
RED BIRDS

BENZODIAZEPINES
CANDY
DOWNERS
SLEEPING PILLS

EFFECTS: Sedation/drowsiness, reduced anxiety, feelings of well-being, lowered inhibitions, slurred speech, poor concentration, confusion, dizziness, impaired coordination and memory/slowed pulse, lowered blood pressure, slowed breathing, tolerance, withdrawal, addiction, increased risk of respiratory distress and death when combined with alcohol

* For barbiturates: Euphoria, unusual excitement, fever, irritability/life-threatening withdrawal in chronic users

OPIOIDS AND MORPHINE DERIVATIVES

FENTANYL
APACHE
CHINA GIRL

OPIOID PAIN RELIEVERS
OXYCODONE
HYDROCODONE
BITRATE
HYDROMORPHONE

EFFECTS: Pain relief, euphoria, drowsiness, sedation, weakness, dizziness, nausea, impaired coordination, confusion, dry mouth, itching, sweating, clammy skin, constipation/slowed or arrested breathing, lowered pulse and blood pressure, tolerance, addiction, unconsciousness, coma, death, risk of death increased when combined with alcohol or other CNS depressants

* OXYCODONE: muscle relaxation/twice as potent analgesic as morphine; high abuse potential

STIMULANTS

AMPHETAMINES
DEXEDRINE
ADDERALL

METHYLPHENIDATE
CONCERTA
RITALIN

EFFECTS: Feelings of exhilaration, increased energy, mental alertness/increased heart rate, blood pressure, and metabolism, reduced appetite, weight loss, nervousness, insomnia, seizures, heart attack, stroke

*Amphetamines: Rapid breathing, tremor, loss of coordination, irritability, anxiousness, restlessness/delirium, panic, paranoia, hallucinations, impulsive behavior, aggressiveness, tolerance, addiction
*Methylphenidate: increase or decrease in blood pressure, digestive problems, loss of appetite, weight loss

PSYCHEDELICS 101

Psychedelics (also known as hallucinogens) are a class of psychoactive substances that produce changes in perception, mood and cognitive processes.

Commonly Used Psychedelics Include:

- Ayahuasca
- Psilocybin (mushrooms)
- DMT (dimethyltryptamine)
- LSD ("Acid")
- Salvia
- Mescaline

What do they look like?

Some psychedelics are naturally made and come in the form of fungi, leaves, or seeds. Others are artificially made and may come in the form of tablets, powders, or papers.

Effects of Psychedelics:

Psychedelics (hallucinogens) often alter users' perceptions, meaning they may see or hear things that are not there. They can cause euphoria, but also panic or paranoia. Physically, psychedelics often cause increased body temperature, rapid breathing, confusion, dizziness, sweating and chills, nausea, and numbness.

According to NIDA (National Institute on Drug Abuse), in 2021:

- **7.4 million people ages 12 and older** reported using psychedelics in the last 12 months.
- **8% of young adults** reported using psychedelics in the last 12 months, including LSD, MDMA, mescaline, peyote, "shrooms", and PCP.
- Psychedelic use has **reached an all-time high** since these trends began being measured in 1988.

Source: https://nida.nih.gov/news-events/news-releases/2022/08/marijuana-and-hallucinogen-use-among-young-adults-reached-all-time-high-in-2021

DID YOU KNOW? THE "3 K's"

Recently, 3 substances have become popular, especially among young people who may not understand what they are. The **"3 K's", or Kava, Kratom, and Khat**, are herbs that can all have damaging effects.

KAVA - A drug made from the root or stump of the Piper methysticum plant. It has depressant effects and can have a calming effect, but can also produce similar effects to alcohol. Long-term use can result in liver damage, mood swings, and shortness of breath.

KRATOM - A psychoactive substance that comes from the Korth plant. At low doses, it has been used as a stimulant, but at high doses it mimics the effects of opioids and can cause damage to the brain, liver, and kidneys. Because of its dangerous effects, Kratom is illegal or highly controlled in several countries.

KHAT - The Catha edulis (Khat) plant is one of the most widely used psychoactive plants in the world and is illegal in many western countries, including the US. It leads to high blood pressure and has been associated with liver toxicity, mouth cancers, paranoia, and digestive problems.

Though Khat is illegal in the US, Kava and Kratom are **unregulated** in and can be **sold online.**

Recently, Kava and Kratom have been inaccurately **marketed as a "healthier alternative to alcohol".**

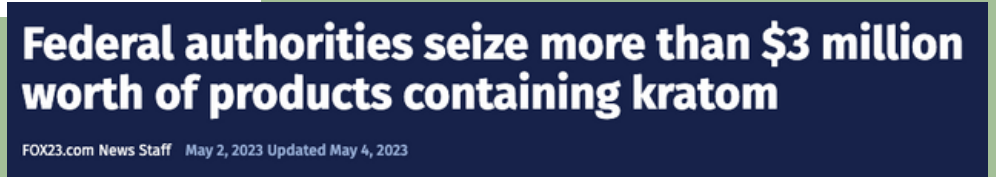
KNOW THE FACTS

- In 2009, nine people in Sweden died from using "Krypton", a party drug consisting of a mixture of Kratom, caffeine, and O-desmethyltramadol.
- Kava and Kratom have made the news recently because of their inclusion in beverages marketed as "calming tonics". Individuals often purchase the drinks without understanding their contents.


Industries | Health

An Opioid-Like Drink Is Masquerading As a Wholesome Alcohol Alternative

Kratom is growing in popularity in the US, despite its addictive potential.


Federal authorities seize more than $3 million worth of products containing kratom

FOX23.com News Staff May 2, 2023 Updated May 4, 2023

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4849036/

EFFECTS OF COMMONLY USED SUBSTANCES AMONG YOUTH

Think about the substances commonly used by youth your age. Write some in the space below.

The graph below shows common trends when it comes to substances used by youth. The colors represent trends for different age groups—see the legend on the right.

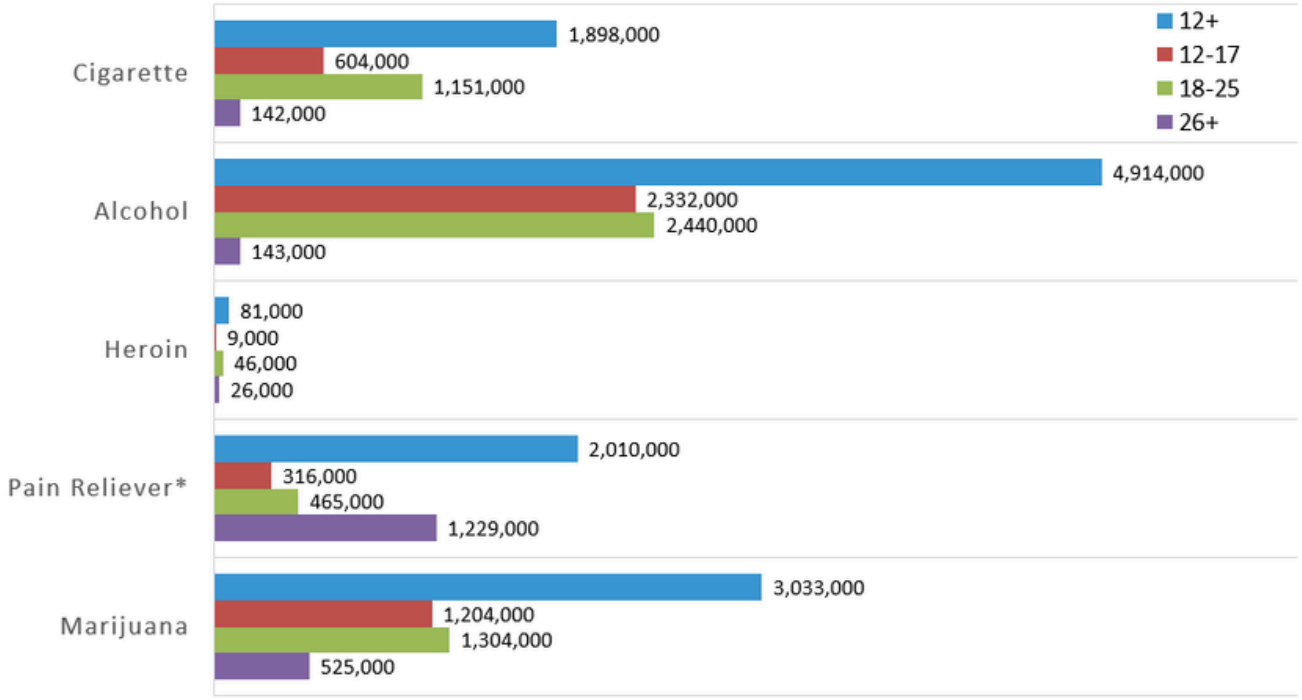


Image source: Substance Abuse and Mental Health Services Administration. (2019). Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health (HHS Publication No. PEP19-5068, NSDUH Series H-54). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from https://www.samhsa.gov/data/

Below, write your thoughts about why you think these drugs are commonly used:

You guessed it! Substances commonly used by youth tend to be readily available and accessible to youth, highly advertised, and depicted in the media (music,TV/movies, and social media).

The following section reviews details on commonly used substances:

- Alcohol
- Marijuana
- Prescription Drugs
- MDMA
- Inhalants

ALCOHOL: PUBLIC HEALTH INDICATORS

Alcohol is legal for people over age 21. However, there are many reasons that those who are not of drinking age may choose to drink.

What are some of the events or environments where someone who is not of legal drinking age might choose to drink?

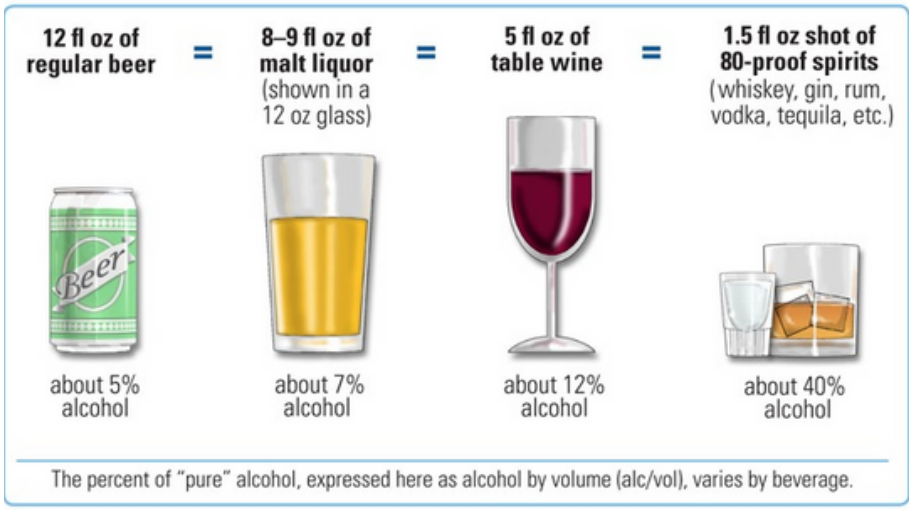
What are the messages you have received from friends, family, or the media about drinking? Are they positive, negative, or both?

What is "**one drink**" anyway?

A "standard drink" is any drink that contains about 14 grams of pure alcohol (about 0.6 fluid ounces or 1.2 tablespoons). But that can be a lot of different things!

Different types of alcohol have different concentrations of alcohol by volume, meaning some are much stronger than others. A drink can also come in many forms. It can be a shot of hard liquor, a mixed drink, wine, a wine cooler, beer, etc.

Check out the image below that demonstrates a "standard" serving of different beverages.



Why is this important to know?

ALCOHOL: PUBLIC HEALTH INDICATORS

Knowing that the effects of alcohol vary by type of drink is important so that people can consume alcohol "responsibly" (as alcohol companies note on their products!). Also, alcohol can impact people differently depending on a lot of factors. Below, note how you think these risk factors might influence the effects of alcohol:

How much you drink (serving size)

How often you drink (frequency)

Your health status (weight, size, health conditions)

Your age

Family history (genetic factors)

Alcohol, when ingested, is rapidly absorbed in the body to slow down the central nervous system [called a depressant] to make the body feel relaxed. Alcohol also impacts multiple parts of the body:

Brain

- decreased coordination
- impaired judgment
- poor memory
- hangover

Heart

Over time, chronic drinking can cause

- irregular heartbeat
- stroke
- high blood pressure

Liver and Pancreas

Long-term drinking can lead to inflammation of the liver and pancreas, causing many serious health problems.

Immune System

Heavy drinking can weaken the immune system, both immediately (up to 24 hrs after drinking) and long term. Chronic drinkers are at higher risk of pneumonia and tuberculosis.

ALCOHOL: PUBLIC HEALTH INDICATORS

Heavy drinking can have other effects outside of physical. What are some other consequences? (Think: social, financial, etc.)

One of the concerns about irresponsible drinking is alcohol's **impact on judgment.** Alcohol is a depressant that stimulates four major neurotransmitters (chemicals) in the brain:

- Endogenous opioids: released to numb pain and sedation
- Glutamate: released to make you feel excited
- Dopamine: released to make you feel pleasure
- GABA: released to slow you down

Drinking too much (having high volumes of alcohol content in your system) over-stimulates these brain systems, leading to cognitive and emotional impairment—meaning poor decisions in various situations. Some of the consequences are irreversible. With a partner, read the following scenarios. What are the possible consequences of drinking in these situations?

Michael is at a party with friends and has had 3 beers and 2 shots of vodka to celebrate the end of the semester with friends. His friend Tre texts him saying he wants to join the fun but needs a ride. Michael responds with "No worries—I'll swing by and pick you up! What's a party without you?"

Maria has had a few wine coolers with friends after an argument with her significant other. She gets the urge to text some hateful words.

Sources: https://www.cdc.gov/transportationsafety/teen_drivers/teendrivers_factsheet.html
https://www.drugabuse.gov/publications/drugfacts/drugged-driving

ALCOHOL: PUBLIC HEALTH INDICATORS

The truth is that alcohol is dangerous when consumed in large quantities - this is called **binge drinking**, which typically means *consuming five or more drinks at one time for a man, or four or more drinks at one time for a woman.* ***Most youth (90%) who use alcohol under the age of 21 in the United States do so in the form of binge drinking***.

Why is this concerning? Because alcohol is a primary factor in each of the leading causes of death among young people:

- Accidents (car crashes, falls, drownings, poisoning)
- Assaults and homicides (violence and injury)
- Suicide

Alcohol is a major cause of *risky* sexual behavior, including

- Unwanted, unintended pregnancy
- Unprotected sexual activity
- Sexually transmitted infections

Alcohol Poisoning

A night out drinking with friends can turn into a scary situation when alcohol is over-consumed. According to the National Institute on Drug Abuse, "**Alcohol poisoning** occurs when there is so much alcohol in the bloodstream that areas of the brain controlling basic life support functions—such as breathing, heart rate, and temperature control—begin to shut down" (NIDA, 2020).

Life-threatening signs of alcohol poisoning include

- Inability to wake up
- Vomiting
- Slow breathing (fewer than eight breaths per minute)
- Irregular breathing (10 seconds or more between breaths)
- Seizures
- Hypothermia (low body temperature—signs are bluish skin color and paleness)

IF YOU THINK SOMEONE MAY BE SUFFERING FROM ALCOHOL POISONING, GET HELP IMMEDIATELY AND CALL 911.

FACT CHECK: Did you know that alcohol is a drug? According to the Governors Highway Safety Association, "43.6 percent of fatally injured drivers in 2016 tested positive for drugs and over half of those drivers were positive for two or more drugs." Motor vehicle crashes are the leading cause of death for U.S. teens, so one way of preventing them is by avoiding drugs (including alcohol) before operating a vehicle.

Source: https://www.drugabuse.gov/publications/drugfacts/drugged-driving

Sources: https://www.drugfreeworld.org/drugfacts/alcohol/what-is-binge-drinking.html
https://www.cdc.gov/transportationsafety/teen_drivers/teendrivers_factsheet.html
NIDA (2020). Alcohol Overdose: The Dangers of Drinking Too Much. https://www.niaaa.nih.gov/sites/default/files/publications/overdoseFact.pdf

Marijuana: Public Health Indicators

Cannabis (marijuana) is actually one of the most abused drugs in the world. Using marijuana is not permitted for anyone under the age of 21.

You've heard of marijuana, and you have probably heard a lot about it! Take a moment to reflect on the questions below.

- What do you know about marijuana?
- Do you think marijuana is harmful?
- Why do you think marijuana is one of the most abused drugs in the world?

FAKE NEWS?

There is a lot of information about marijuana spread throughout the media. Read the statements below and circle what you think is a fact or a myth.

1. The use of marijuana promotes mental health. MYTH FACT

2. Secondhand marijuana smoke is safe. MYTH FACT

3. Marijuana leads to harder drugs. MYTH FACT

4. All marijuana is natural. MYTH FACT

5. Marijuana does not affect your performance in school and athletics. MYTH FACT

6. Marijuana is not addictive. MYTH FACT

7. Driving under the influence of marijuana is safe. MYTH FACT

8. The levels of THC (the psychoactive component of marijuana) have changed over time. MYTH FACT

Marijuana: Public Health Indicators

Review the statements about marijuana below. Circle the ones that surprised you the most.

1. **MYTH: The use of marijuana promotes mental health.**
FACT: Marijuana and products that contain THC are intoxicants and can contribute to impaired judgment and increased susceptibility to mental health problems, which can include depression, insomnia, and paranoid delusions.

Sonoma County Department of Health Services (2016, February). Myths & Facts about Marijuana Use. https://sonomacounty.ca.gov/Health/Marijuana-Health-and-Safety/Myths-and-Facts-About-Marijuana-Use/

2. **MYTH: Secondhand marijuana smoke is safe.**
FACT: Secondhand smoke from marijuana has been shown to contain similar toxins, irritants, and carcinogens as tobacco and wood-burning smoke, all of which pose serious dangers to health.

Sonoma County Department of Health Services (2016, February). Myths & Facts about Marijuana Use. https://sonomacounty.ca.gov/Health/Marijuana-Health-and-Safety/Myths-and-Facts-About-Marijuana-Use/

3. **MYTH: Marijuana leads to harder drugs.**
FACT: Researchers have found that the majority of people who use marijuana don't actually go on to using other "harder" drugs. However, the psychoactive ingredient in marijuana has the ability to heighten responses to other drugs. This is called "cross-sensitization." This is why some refer to marijuana as a "gateway drug."

NIDA (2020, April 8). Is marijuana a gateway drug?. Retrieved from https://www.drugabuse.gov/publications/research-reports/marijuana/marijuana-gateway-drug

4. **MYTH: All marijuana is natural.**
FACT: Synthetic marijuana can be mistaken for the marijuana that is commonly known. Synthetic marijuana is composed of herbs and spices that are sprayed with toxic chemicals intended to mimic THC. Some of the chemicals that are used have unknown effects on the body, so users have no idea what to expect when they take it, and they may not even know that they are taking the synthetic version of marijuana.

Foundation for a Drug-Free World (2015). The Truth about Synthetic Drugs. https://www.drugfreeworld.org/download/#synthetic

5. **MYTH: Marijuana does not affect your performance in school and athletics.**
FACT: Marijuana may impact your educational goals. Research shows that weed actually harms your memory, learning, and attention. In school, these effects put users at higher risk for skipping classes, dropping out of school, and getting lower grades. Not only does it affect your ability to play sports, but students and athletes who use marijuana may also be prohibited from participating in sports teams or extracurricular activities altogether.

Let's Talk Cannabis LA County (2018). What You Need to Know About Weed [Video]. YouTube. http://publichealth.lacounty.gov/sapc/teens/index.htmhttps://youtu.be/kHM6Gray_MA
County of Los Angeles, Department of Public Health,, Substance Abuse Prevention and Control (n.d.). Let's Talk About What is Legal. http://publichealth.lacounty.gov/sapc/teens/Consequences.htm

6. **MYTH: Marijuana isn't addictive.**
FACT: Using marijuana can turn into an addiction. More specifically, research tells us the following: "Those who use marijuana before the age of 18 are 4-7 times more likely to develop marijuana use disorder. Marijuana use disorders are often associated with dependence—in which a person feels withdrawal symptoms when not taking the drug. Marijuana use disorder becomes an addiction when the person cannot stop using the drug even though it interferes with many aspects of his or her life."

County of Los Angeles, Department of Public Health, Substance Abuse Prevention and Control (n.d.). Health Effects. http://publichealth.lacounty.gov/sapc/teens/Health.htm

7. **MYTH: Driving under the influence of marijuana is safe.**
FACT: Marijuana affects skills essential to safe driving, such as judgment, concentration, coordination, and reaction time, significantly. Studies have shown a direct relationship between the concentration of THC in the blood and the ability to drive. The risk of being involved in an accident can almost double after the use of marijuana.

Let's Talk Cannabis LA County (2018). What You Need to Know About Weed [Video]. YouTube. http://publichealth.lacounty.gov/sapc/teens/index.htmhttps://youtu.be/kHM6Gray_MA
Sonoma County Department of Health Services (2016, February). Myths & Facts about Marijuana Use. https://sonomacounty.ca.gov/Health/Marijuana-Health-and-Safety/Myths-and-Facts-About-Marijuana-Use/

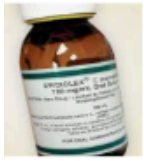
8. **FACT: The levels of THC (the psychoactive component of marijuana) have changed over time.**
The way marijuana has grown has changed over time, and so have the levels of THC in it. When marijuana is used, you don't always know what you are going to get.

Let's Talk Cannabis LA County (2018). What You Need to Know About Weed [Video]. YouTube. http://publichealth.lacounty.gov/sapc/teens/index.htmhttps://youtu.be/kHM6Gray_MA

Cannabis Medications for Health Issues

Often, people think of cannabis as being like medicine. To date, the FDA has not approved cannabis as a safe or effective drug for any disease or condition.

The FDA *has* approved "specific cannabis medications" that contain synthetic cannabis-derived drug products for the treatment of certain symptoms delivered through a reproducible route of delivery (that is, using synthetic cannabis):

	Dronabinol Marinol®	Oral capsule of a synthetic cannabinoids	FDA Approved to treat **nausea and vomiting in cancer chemotherapy patients**; Anorexia/weight loss in patients with AIDS
	Nabilone Cesamet®	Oral capsule of synthetic cannabinoid analogues	FDA Approved for **nausea/vomiting and neuropathy in cancer chemotherapy patients**
	Epidiolex®	Oil therapy made of synthetic cannabinoid extracts	FDA Approved for Tx of **epileptic seizures** associated with two rare and severe forms - Lennox-Gastaut syndrome & Dravet syndrome
	Nabiximols Sativex ®	Oromucosal Spray using synthetic cannabinoid extracts	Approved in other Countries for **pain relief, muscle spasms and other Multiple sclerosis symptoms** (under FDA investigation in US); intended for use in *pain management*

What is different about these medications than recreational marijuana?

_____

_____

What are some other cases where substances can be used in beneficial ways?

_____

_____

When does usage go from beneficial to risky or disordered?

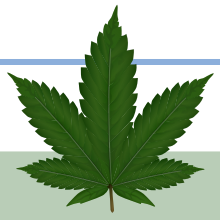
_____

CANNABIS & METH INDUCED PSYCHOSIS

WHAT IS DRUG INDUCED PSYCHOSIS?

Psychosis is a mental health condition where a person loses touch with reality, experiencing hallucinations, delusions, or extreme paranoia.

- Drug-induced psychosis can occur after heavy or chronic use of substances like cannabis or methamphetamine.
- Some individuals may only experience it once, while others are at risk for developing long-term psychotic disorders.



CANNABIS INDUCED PSYCHOSIS

Key points:

- Often **triggered by high-THC content** products (e.g., concentrates, wax, dabs).
- **Symptoms**: paranoia, hallucinations, racing thoughts, panic, disprganized behavior

***Risk is higher in teens, those with family history of schizophrenia, OR frequent users.**

METH INDUCED PSYCHOSIS

Key points:

- Common in chronic meth users, but can occur even after a short- term binge use.
- **Symptoms**: Violent outbursts, severe paranoia, visual/ auditory hallucinations delusional thinking.

***Psychosis may persist even after the person stops using.**

WHEN TO SEEK FOR HELP

Signs you might need help:

- Hearing/seeing things that aren't real
- Paranoia so strong you isolate from others
- Fear or confusion that doesn't go away after the drug wears off

Sources:
https://pmc.ncbi.nlm.nih.gov/articles/PMC6312155/
https://www.samhsa.gov

PRESCRIPTION DRUG MISUSE:
PUBLIC HEALTH INDICATORS

There are three common prescription drug classes: opioids, depressants, and stimulants. What do you think they are each intended to treat? Write your ideas next to their names below.

Opioids: _____

_____

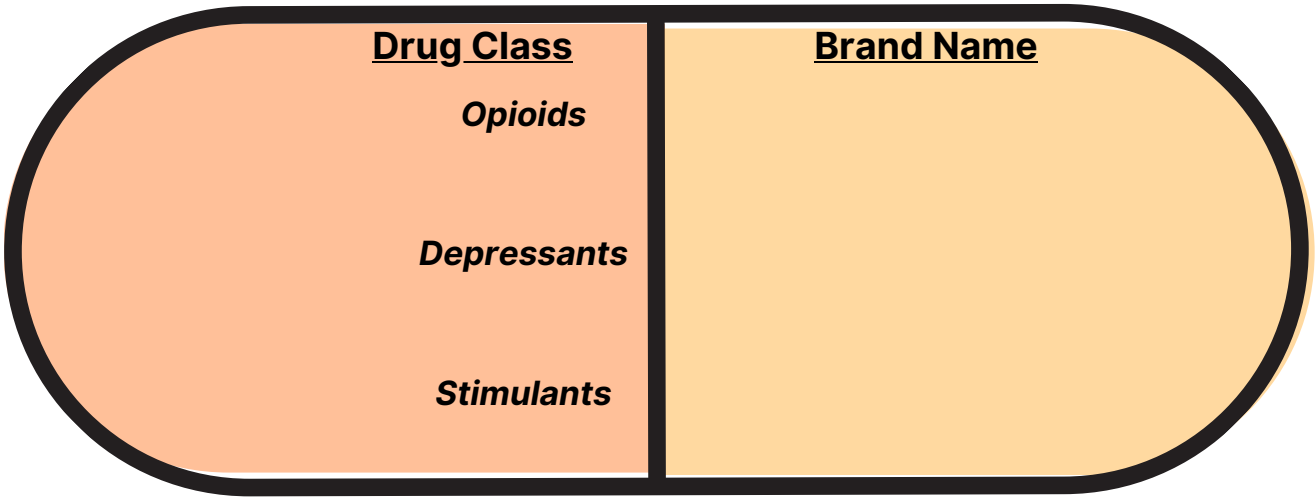
Depressants: _____

_____

Stimulants: _____

_____

Review the list of commonly misused brand names for medications, then arrange each drug in the drug class you think it falls under.



Adderall®	Codeine	Valium®	Ritalin®
Xanax®	OxyContin	Vicodin®	Fentanyl

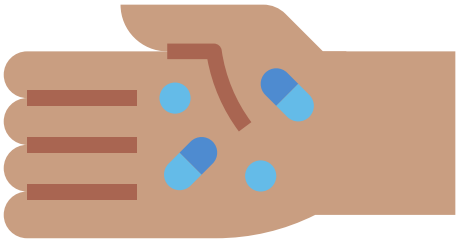
PRESCRIPTION DRUG MISUSE:
PUBLIC HEALTH INDICATORS

The chart below describes in greater detail the three prescription drugs classes that are commonly misused.

Drug Class	Use	Drugs in This Class	If Misused...
Stimulants	Used for treating attention deficit hyperactivity disorder (ADHD)	• Adderall® • Ritalin®	Side effects in common with cocaine, and may include paranoia, dangerously high body temperatures, and an irregular heartbeat, especially if stimulants are taken in large doses or in ways other than swallowing a pill
Depressants	Relieve anxiety or help a person sleep	• Valium® • Xanax®	Slurred speech, shallow breathing, fatigue, disorientation, lack of coordination, and seizures upon withdrawal from chronic use.
Opioids	Relieve pain	• Vicodin® • OxyContin® • Codeine • Fentanyl	Act on the same parts of the brain as heroin, can cause drowsiness, nausea, constipation, and, depending on the amount taken, slowed breathing.

Sources: https://teens.drugabuse.gov/drug-facts/prescription-drugs
https://www.samhsa.gov/homelessness-programs-resources/hpr-resources/rise-prescription-drug-misuse-abuse-impacting-teens

Knowing the risks and the different kinds, how can you avoid misusing prescription drugs?



MDMA:
PUBLIC HEALTH INDICATORS

MDMA (also known as **Ecstasy, Molly, and X**) is short for "3,4-methylenedioxymethamphetamine." MDMA was originally developed by a pharmaceutical company as part of a medication used to control bleeding. However, it was found to "lower inhibitions," though it was never FDA approved for that purpose. MDMA became known as a "party drug" in the early 1980s, becoming more available on the streets.

Why do you think people use ecstasy/molly today? What makes it popular among young people?

What do you think are some of the dangers of using or being addicted to a drug like MDMA? List a few below:

The ecstasy that is used at raves and parties today often is taken in pill form but can also be injected. Did you know that, as a drug, ecstasy can contain a range of other chemicals and substances, like the ones listed in the circle below?

Circle which of these substances that can be found in ecstasy is the most surprising to you!

You might think, why are people taking substances like rat poison? That's because people don't know they are taking it. When people take MDMA, they don't actually know what's in it. Here are some dangers they pose:

- Less than 10% of ecstasy pills on the market are pure MDMA. Today, they usually contain a mix of a wide variety of drugs, and often toxic substances.
- Over time, it takes more of the drug for someone to feel the same effects. Because of this, people often then try other dangerous drugs hoping to get the same effect.
- Some users feel a need to use other drugs like heroin or cocaine to deal with the mental and physical pain that results after one "comes down" from ecstasy; 92% of those who take ecstasy also abuse other drugs.
- The false idea that a person only feels good with ecstasy leads them to want to take it more often than just at raves or parties, despite negative effects.

Source: https://www.drugfreeworld.org/FURL/data/www.drugfreeworld.org/files/truth-about-ecstasy-booklet-en.pdf

Inhalants: Public Health Indicators

Inhalants are vapors from chemicals that are inhaled to get high. They can be household products or the fumes from open containers. Often, these include *shoe polish, glue, gasoline, lighter fluid, nitrous oxide or "whippets," spray paint, cleaning fluid, amyl nitrite or "poppers," locker room deodorizers or "rush," and lacquer thinner or other paint solvents.*

Source: https://www.drugfreeworld.org/FURL/data/www.drugfreeworld.org/files/truth-about-inhalants-booklet-en.pdf

Because these products can be found around the house, they may not seem harmful. But the reality is that these can immediately kill you the first time you use them. That's because, when you use inhalants, the chemicals are quickly absorbed through your lungs, into your bloodstream, and then by your organs, causing permanent physical and mental damage.

Imagine this:

You go to your friend's house and walk into their living room—no one else is home. You see your friend inhaling chemicals through a cloth towel. You have never seen anyone do this before, so you ask what they are doing. They look at you, their nose is bleeding (that's a side effect of inhalants), and they say, "Oh, nothing." The next thing you know, they look like they're starting to lose consciousness. You're shocked because they didn't look like they were inhaling that long! "What do I do?" you think. "No one is here!"

Reflect: What feelings come up when reading this scenario?

What would you do next?

Review and Reflection

Let's Review

Here are some key take-aways from what we learned in this session:

- Drugs are chemicals that significantly affect young people's brains and bodies.
- The decision to use substances, legal or illegal, can be risky for our physical and mental health.
- Alcohol and drugs pose major issues to the lives of young people both in the short term and long term.

Reflect on things that stood out to you from this section, things you never knew about, and things you will be sharing with others. Also, include any other reflections or questions you have about the information that was covered.

Make note of the following:

- Why do you think young people are attracted to substances?
- What subgroups of youth are especially vulnerable to use substances? That is, are there any cultural groups at higher risk, and why?
- What is the legal status of the substance and how do access and availability affect use?

DRUG CLASSIFICATIONS

Match the drug with the classification you think it falls into.
(HINT: there may be multiple drugs per classification)

CLASSIFICATION

This type of drug increases immediate energy and alertness but is accompanied by increases in blood pressure, heart rate, and breathing (also called stimulants).

This type of drug distorts a person's perceptions of reality, causing people to go on "trips" during which they may lose touch with reality and be unaware of their surroundings. These are also called hallucinogens.

This type of drug decreases alertness and is accompanied by decreased blood pressure, heart rate, and breathing. These are also called depressants.

This type of drug is prescribed for pain. It is referred to as an opioid and is referenced as synthetic and semisynthetic narcotics.

This type of drug includes common household items that produce intoxicating effects similar to alcohol.

This type of drug is chemically and pharmacologically related to testosterone and promotes muscle growth.

DRUG

ECSTASY

ALCOHOL

ANABOLIC STEROIDS

MARIJUANA (THC)

COCAINE

HEROIN

CAFFEINE

FENTANYL

METHAMPHETAMINE

NICOTINE

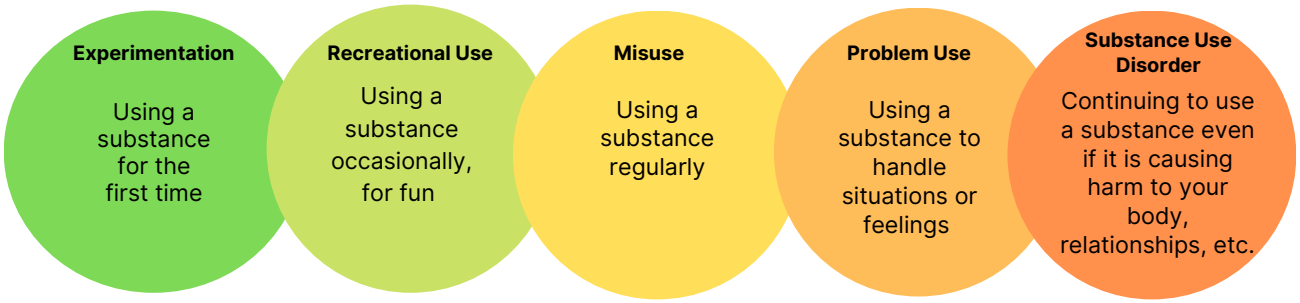
INHALANTS (GLUE, CLEANING FLUIDS)

LSD (ACID)

Source: http://www.exploring.org/wp-content/uploads/2015/12/Drug-Abuse-Prevention-4-Teens.pdf

STAGES OF SUBSTANCE USE DISORDER

Substance use behaviors fall along a risk continuum. What this means is that substance use behaviors start off with experimentation but often change into different types of use (e.g., recreational, misuse) that can turn into problem use and even become a **substance use disorder**. It is important to understand this process and recognize the risks. The bubbles below define the different types of substance use patterns.



Reviewing the risk continuum above, which type of substance use pattern is shown in the scenarios below?

Julia goes to a party where people are smoking marijuana and decides to try it for the first time.

_____

When David gets in fights with his parents, he drinks alcohol to numb his anger.

_____

Before going to sporting events, Juan and his friends take a shot of alcohol for fun.

_____

Al smokes marijuana every day with his friends. But when he doesn't, he still feels ok.

_____

Lisa needs to hit her vape pen first thing in the morning and sometimes between classes in order to help her focus at school.

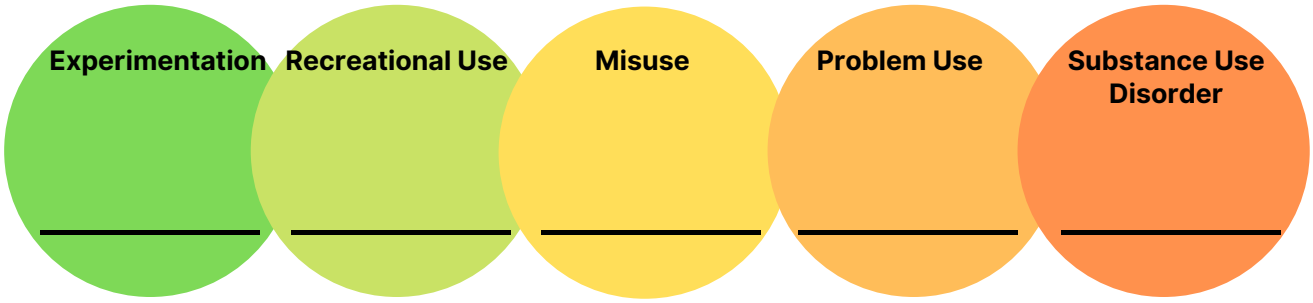
_____

Adapted from: https://www.bjcschooloutreach.org/Portals/0/Printables/Documents/2016-02-29-Stages%20of%20Addiction_Revised.pdf

STAGES OF SUBSTANCE USE DISORDER

In the space below, FILL IN a substance commonly used by others around you. Under each of the risk continuum category bubbles, write in a statement about how the pattern of use might look like for someone using the substance.

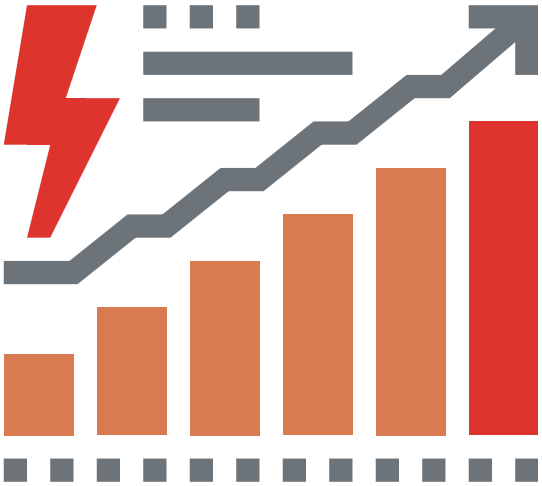
Substance: _____



What category do you think you are in, and why?

What do you think causes people to move across the continuum?

CONSUMPTION
PATTERN RISKS



Research shows that a major predictor that increases one's chances of developing a substance use disorder is substance use "**consumption patterns**." This includes

- **How often you use**: using regularly and repeatedly (weekly/daily).
- **How much you use:** using high doses or increasing your use over time.
- **How long you use:** using over a long period of time.
- **How you use:** route of use (especially smoking, vaping, and injection use).
- **What you use:** type of substance (or using multiple different substances, over time or at once).

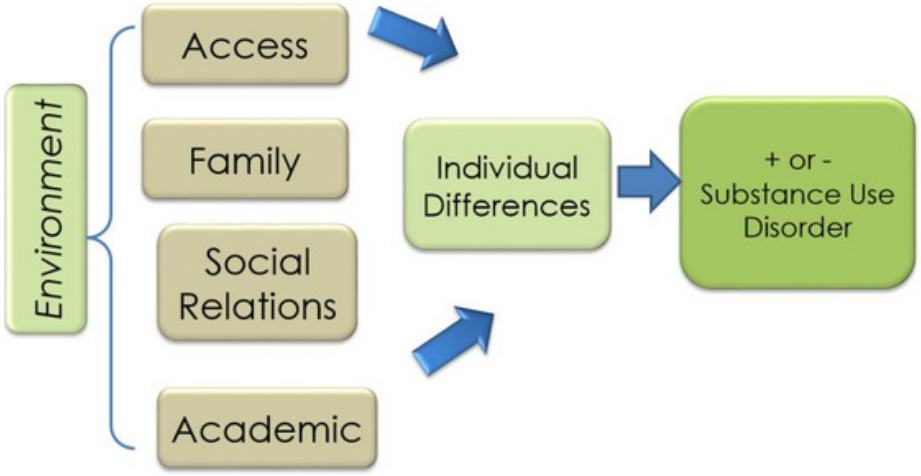
Why do you think these indicators in particular matter so much?

THE SUBSTANCE USE CONTINUUM:
RISK & PROTECTIVE FACTORS

There are multiple factors that can cause someone to move along the risk continuum from substance use experimentation to misuse and eventually substance use disorders.

Below, you can see the interaction between elements of life (your environment) that can make someone more or less susceptible to developing a substance use disorder. First, let's define what these factors mean:

- **Access**: Having access to substances—how easy it is to get drugs or alcohol.
- **Family**: Family support or conflict and whether substance use is common in your family.
- **Social Relations**: How the people around you use substances.
- **Academic**: Knowledge about substance use and its effects.
- **Individual Differences**: Unique differences that are specific to you and your brain/body.



Which elements do you think contribute the most risk to progressing to substance use disorders? How so? (For example, social relations, because of peer pressure.)

Which elements do you think can serve as “protective factors” to slow or protect against the progression toward substance use disorders? How so? (For example, family, because having their support can help avoid substance use.)

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4924064/

Understanding Substance Use Effects on the Brain and Body

Substances can enter and affect the body's main control center called the **Central Nervous System (CNS)**. The chart below details how substances are classified depending on how they affect the brain and body.

DEPRESSANTS	STIMULANTS	HALLUCINOGENS
"Slow it Down" *These substances slow the CNS, leading to symptoms like reduced breathing, lowered body temperature, and slowed heart rate. They can also impact things like impulse control and reaction time.*	"Speed It Up" These substances speed up the CNS, making the body feel excited. Symptoms include rapid breathing, higher body temperature, and faster heart rate.	"Trip It Up" These substances impact the CNS by influencing perception. They lead to distorted perceptions of reality (seeing/hearing things differently) or paranoia and hallucinations (seeing/hearing things that don't exist)
Depressant examples: Alcohol Benzodiazepines Opioids (painkillers like Oxycodone or Morphine) Solvents Barbiturates Cannabis (in low doses)	Stimulant examples: Nicotine (smoking or vaping) Amphetamines Methamphetamines Cocaine MDMA (Ecstasy) Caffeine Prescription stimulants are often prescribed for ADHD under names like Ritalin, Adderall, Concerta, or Vyvanse	Hallucinogen Examples: Cannabis (in high doses) Ketamine Mushrooms PCP LSD, DMT Mescaline MDMA (Ecstasy)

SUBSTANCE USE DISORDERS: MANIFESTED AS A BRAIN DISEASE

Did you know you can see the effects of using drugs on the brain? In the photo below, the red means more "healthy brain." Notice the image on the right has less red, meaning changes in the brain. This is showing how people who use drugs over time have changes in their brain structure and function.

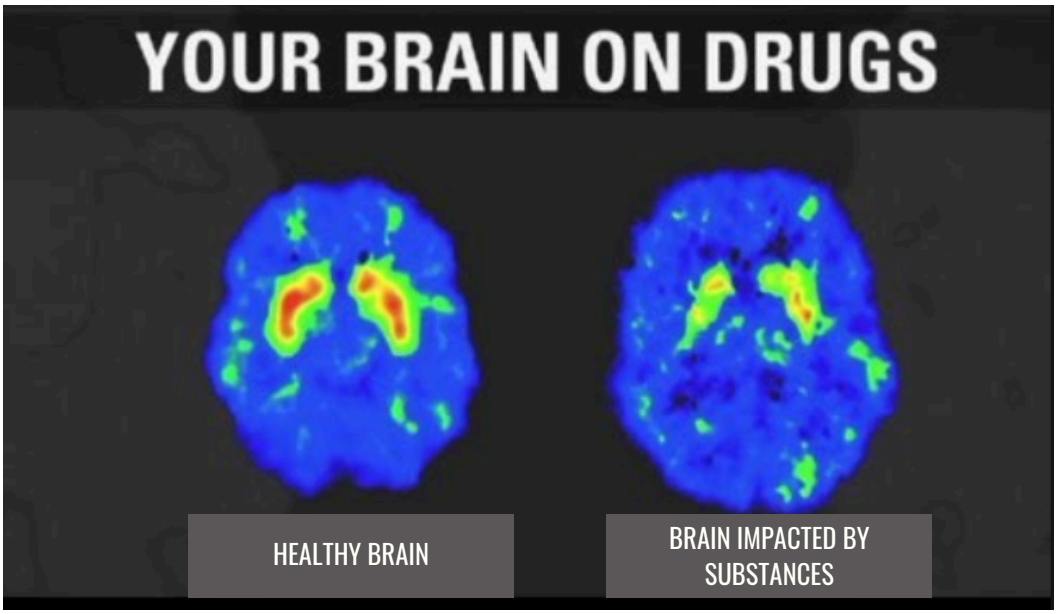


Image source: https://www.cnn.com/videos/bestoftv/2012/02/21/nr-gupta-brain-addicted.cnn

Here are some of the short- and long-term ways the brain on the right is affected by substances:

- Reduced sensitivity of brain systems involved in the experience of reward (pleasure)—needing more than the last time to feel the same pleasure.

- Impaired functioning of areas of the brain in charge of making decisions and regulating one's emotions, impulses, and actions. This makes it harder to stop using substances or quitting without difficulty.

- Constant desire for use (craving) that is triggered by feelings or the environment around you.

All of these brain disruptions lead to the brain being in a diseased state. The table on page 76 lists the clinical symptoms (criteria) that experts use to determine if someone has developed a substance use disorder (i.e., addiction) to a substance.

HEALTH BEHAVIORS AND THE BRAIN'S MOTIVATIONAL SYSTEM

Consumption patterns (like those listed on page 66 of this workbook) greatly affect the brain. A critical region of the brain that is involved in the addiction pathway (progression from use to disorder) is the brain's reward system. The brain's reward system is also known as the "**motivational system,**" which drives people to seek out pleasure and reward. During youth years, this system is very active.

Write down common health behaviors that youth engage in on the lines below.
[Hint: screen time, gaming, eating, sleeping, exercising]

Health behaviors like the ones you listed all affect the brain's reward system. **But how?** In the space below, write your thoughts on how you think the various health behaviors affect (trigger or activate) the brain's reward system.

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3722417/

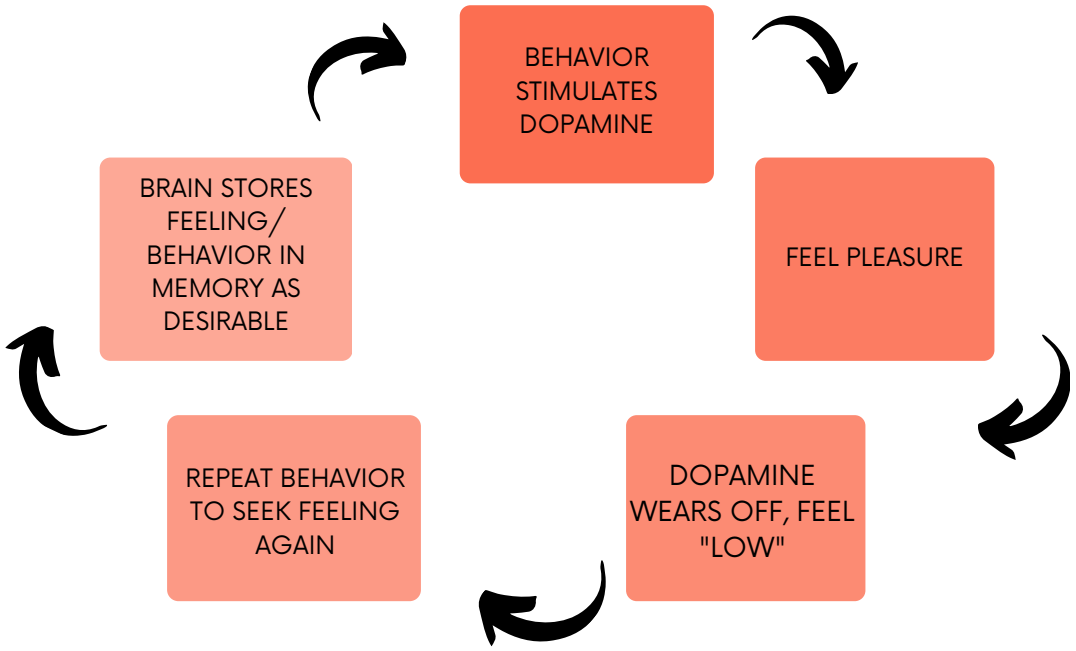
UNDERSTANDING THE SCIENCE OF SUBSTANCE USE DISORDERS:

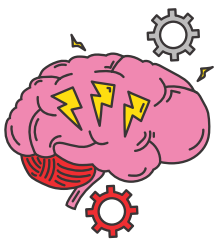
REWARD SYSTEM

Engaging in the various health behaviors you just listed activates chemical messengers in the brain to release **dopamine**. Dopamine is called the "pleasure chemical" of the brain and is released when we engage in things that make us feel good.

Substance use activates this system in a similar way; however, the activation is called “unnatural.” This means that the system is triggered by the ingesting of drugs that are chemically made to have similar effects on the brain and body but, substance use causes the brain to release dopamine in **HIGHER** and more **INTENSE ways** than the typical behaviors that activate the reward system naturally.

Below is the cycle of reward that occurs. What do you notice?





As you can see, the reward system likes and remembers the “pleasure” it experiences. This leads people to repeat consumption patterns over and over again. But with repeated behaviors over time, the brain adapts and adjusts to being over-loaded with dopamine, no longer experiencing the same pleasure. Now, it takes more and more of a substance to feel the same effects. This results in a diseased brain that can lead you to engage in very unhealthy behaviors while seeking that same "reward."

Source: https://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction/drugs-brain

SUBSTANCE USE IMPACTS ON THE DEVELOPING BRAIN

It is interesting to know that gaming and screen time (health risk behaviors that produce instant rewards) have similar effects on the brain as substance use risk behaviors!

It's important to remember that young people are especially vulnerable to the negative effects health behaviors have on the brain because the brain is still developing. Let's consider two examples using alcohol and marijuana—two substances used by youth.

Write down the ways you have seen the effects of marijuana and alcohol on the brain below—consequences at home, school, personally, etc.

Marijuana

Alcohol

MARIJUANA EFFECTS ON
THE DEVELOPING BRAIN

Below are the effects of marijuana use. Research points out that effects are greater when consumption patterns are outside of public health standards: frequent use, vaping, longer duration, higher amount (dose), and when mixed with other substances.

Marijuana use has been linked to serious effects on the developing brain as shown in the boxes below. Marijuana use significantly interrupts an already under-developed brain system—the prefrontal cortex—which has lasting consequences on decision making, judgment, self-control, impulsivity, and learning (IQ) later on in life.

Cognitive Ability

- ↓ IQ
- ↓ Attention
- ↓ Visual Search
- ↓ Executive Functioning
- ↑ Impulsivity

Brain Structure

- ↓ Prefrontal Cortex Volume
- ↓ White Matter in Prefrontal Cortex
- ↓ Prefrontal Cortex Thickness
- ↓ Total Gray Matter
- ↓ Total White Matter

Brain Function

Changes in blood oxygen levels in areas responsible for

- Working Memory
- Inhibition

Marijuana Concentrations:

Did you know that from 1995-2015 there was a **212% increase** in the THC (psychoactive chemical found in marijuana) content in marijuana flower? Prior to the 1990s, the typical concentration of most strains was **2% or less**. Now, many strains have close to **30% concentration**, while other products like oil, dab, and edibles can have **up to a 95% THC concentration!**

"Synthetic Cannabinoids"

Synthetic (lab-made) cannabinoids are NOT the same thing as regular cannabis/marijuana. These substances, including K2 or "spice", have other dangerous chemicals that can cause psychosis/hallucinations, anxiety, memory loss, seizures, and other negative side effects.

Delta-8 THC:

Delta-8 is THC product that has not been approved by the FDA for safe use in any context.

- The FDA reports that hospitalizations and poison control calls related to Delta-8 included complaints of hallucinations, dizziness, tremors, vomiting, and loss of consciousness.
- Manufacturers may supplement Delta-8 with other harmful chemicals.

Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7027431/
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6312155/

ALCOHOL EFFECTS ON THE DEVELOPING BRAIN

When drinking, do people typically just have one beverage? No— usually when drinking socially (with friends), more than one drink is consumed.

The **figure on the right** shows a brain comparison of a 15-year-old heavy drinker vs. a 15-year-old non-drinker. The pink color on the brain scan represents brain activities during a cognitive task. The scan shows that heavy drinking causes major harm to the youth brain, shown by lack of pink coloring during a cognitive task in a brain scanner. *Note: Heavy drinking is defined as binge drinking (five+ drinks for males; four+ drinks for females on the same occasion for five+ days in the past month).*

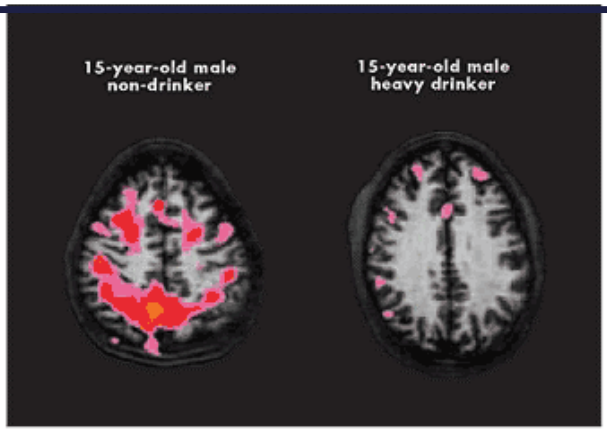


Image from Susan Tapert, PhD, University of California, San Diego.

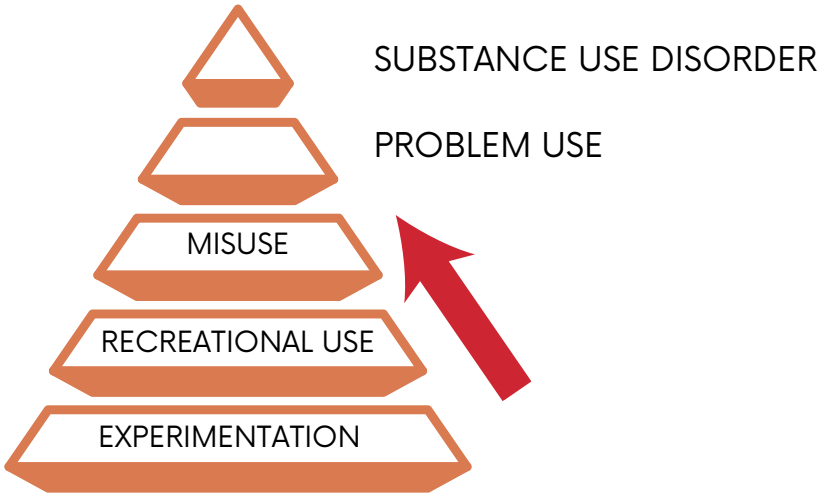
Review the blood alcohol content (BAC) levels in this chart. Reflecting on these rates (linked to consumption pattern risks), what stands out to you in terms of impacts on the developing brain that you have witnessed or observed among people who drink alcohol?

.01-.02	Clearing of head
.02-.05	Mild throbbing rear of head, slightly dizzy, talkative, euphoria, confidence, clumsy, flippant remarks
.06-.10	↓inhibitions, ↑talkativeness, ↓motor coordination, ↑pulse, stagger, loud singing!
0.2-0.3	Poor judgment, nausea, vomiting
0.3-0.4	Blackout, memory loss, emotionally labile
0.4+	Stupor, breathing reflex threatened, deep anaesthesia, death

Source: https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/moderate-binge-drinking

SUBSTANCE USE DISORDERS:
ADOLESCENT ONSET DISORDERS

Research shows that the majority of adults with a substance use disorder started using before the age of 18. This means that the substance use risk behavior that starts early on (ages 12 to 24) has a higher likelihood to turn into a substance use disorder.



To help understand how this risk continuum for substance use behaviors progresses over time, let's compare it to other chronic health conditions.

Think about health problems like heart disease or diabetes. What are some health behaviors in youth that can lead to those issues later in life?

You guessed it. Major chronic illnesses, like heart disease and diabetes, are linked to risky health behavior patterns such as poor diet and lack of physical activity that start during the youth developmental age period. Starting healthy habits in youth can help prevent diseases like these.

Sources: https://www.drugabuse.gov/publications/principles-adolescent-substance-use-disorder-treatment-research-based-guide/introduction
https://health.gov/sites/default/files/2019-09/paguide.pdf

Now, what behaviors do you think you could engage in now to prevent or lessen your risk of problematic substance use long term?

SUBSTANCE USE DISORDERS: CLINICAL CRITERIA IQ

Look over the table below that lists the symptoms of substance use disorder. These are grouped into "criteria" or clinical symptoms that are used to identify if someone has a diagnosable substance use disorder. Put a STAR next to the criteria you think are linked to the effects of consumption patterns on the brain.

Symptom Criteria	Substance Use Disorder
1. Substance is taken in larger amounts or for a longer period of time than was intended 2. Unsuccessful attempts to cut down/control use 3. A lot of time spent to obtain, use, or recover from effects 4. Craving—strong desire or urge to use	Criteria 1-4: Impaired Self-Control
5. Failure to fulfill work, school, or home obligations due to use 6. Continued use despite social or interpersonal problems 7. Reducing important social, work, or recreational activities due to use	Criteria 5-7: Impaired Role Functioning
8. Use in physically hazardous situations 9. Continued use despite knowledge of problems	Criteria 8-9: Impaired Judgment
10. Tolerance (defined by either): needing more for effects or diminished effect with the same amount 11. Withdrawal (manifested by either): withdrawal symptoms or medications/substances taken to relieve symptoms	Criteria 10-11: Impaired Physiology

When someone has at least two of these symptom criteria, it is a sign that they may have a substance use disorder. As a young person, it is important to know your risk, and the risk of those close to you, for developing substance use disorders, like addiction.

Source: American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (DSM-5®). American Psychiatric Pub.

SUBSTANCE USE DISORDERS: IMPAIRMENT AREAS

For this activity, match the impairment area to each symptom of substance use disorder. The impairment areas can be used more than once.

Impairment Areas			
Loss of Control	Social or Personal Problems	Risky Use	Physical Effects

Experiencing negative effects when you try to stop (e.g., irritability, sweating)	You spend a lot of energy trying to get more
You have strong cravings for more	Getting hurt or having emotional difficulties due to use
Relationship problems caused by use	Using drugs or alcohol in dangerous situations (e.g., driving)
You use more than you want to	Not finishing school or work responsibilities
Needing more of the substance to get the same effects	Giving up on other social activities

SUBSTANCE USE DISORDERS: WARNING SIGNS

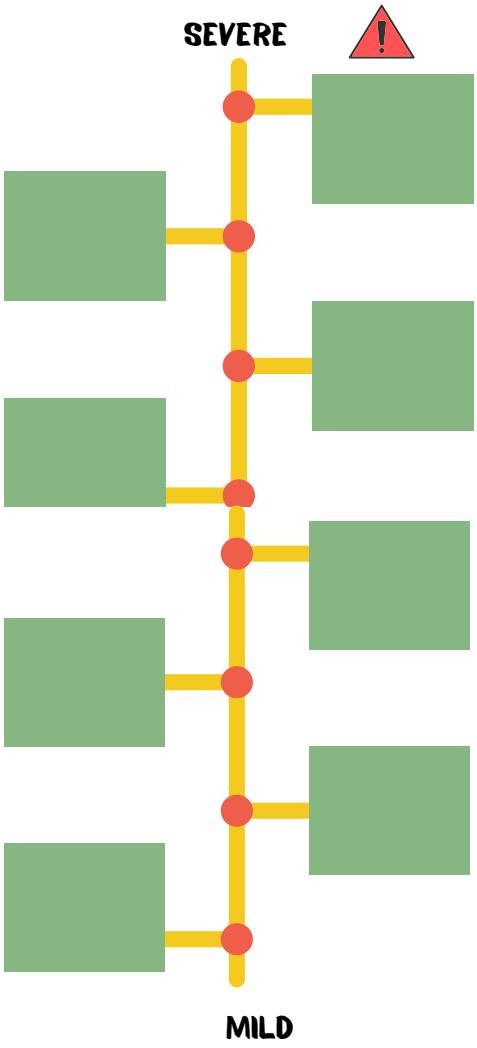
As substance use continues or increases, sometimes we don't pay attention to the warning signs that use is becoming severe and problematic.

What are the warning or danger signs of developing a substance use disorder (addiction)?

As the substances change key brain systems, they can also begin to change your physical appearance and mental health. Knowing the signs and being educated on the changes that can take place will help you be prepared to watch out for yourself and for others!

Below are some of the physical and mental health effects that are common among someone with a substance use disorder. Place them in the order of least to most severe on the right.

- Memory loss
- Anger/Rage
- Loss of consciousness
- Changes in grooming (appearance)
- Inability to focus
- Sudden changes in weight
- Slurred speech
- Intense desire to have it
- Changes in sleep habits



Remember that these effects can also depend on the dose (how much of the substance is used).

Continuing to engage in unhealthy risk behaviors affects your brain in a way that leads to addiction. By that time, it's much harder to make a change! You can play an active role in reducing your risks right now.

SUBSTANCE USE DISORDERS: SIDE EFFECTS

Here is a list of some common side effects that are caused by using drugs and alcohol. Read through this list and check off any that you might have experienced.

- [ ] Forgot what happened
- [ ] Fell or got into an accident where you or someone else got hurt
- [ ] Did something that was unsafe or illegal (e.g., driving under the influence)
- [ ] Got into arguments with your friends and family because of your use
- [ ] Did something that went against your own personal values
- [ ] Had trouble completing or remembering important responsibilities (e.g., doctors appointments, school)
- [ ] Experienced negative health effects due to substance use (e.g., lung issues, sexually transmitted infections, skin issues)
- [ ] Felt badly about yourself and experienced unpleasant feelings like anxiety, anger, or depression

Substance Use Disorder Impacts

Taking drugs not only increases your chance of moving toward a substance use disorder, but can also **exacerbate underlying mental health issues** (e.g., anxiety, paranoia, and depression).

Reflect individually. What are some ways substance use can

- Be harmful versus beneficial to your mental health?
- Pose benefits versus risk for physical illness?
- Help with or hinder you from performing other health behaviors associated with wellness, like getting adequate sleep, eating healthy meals, and exercising consistently?

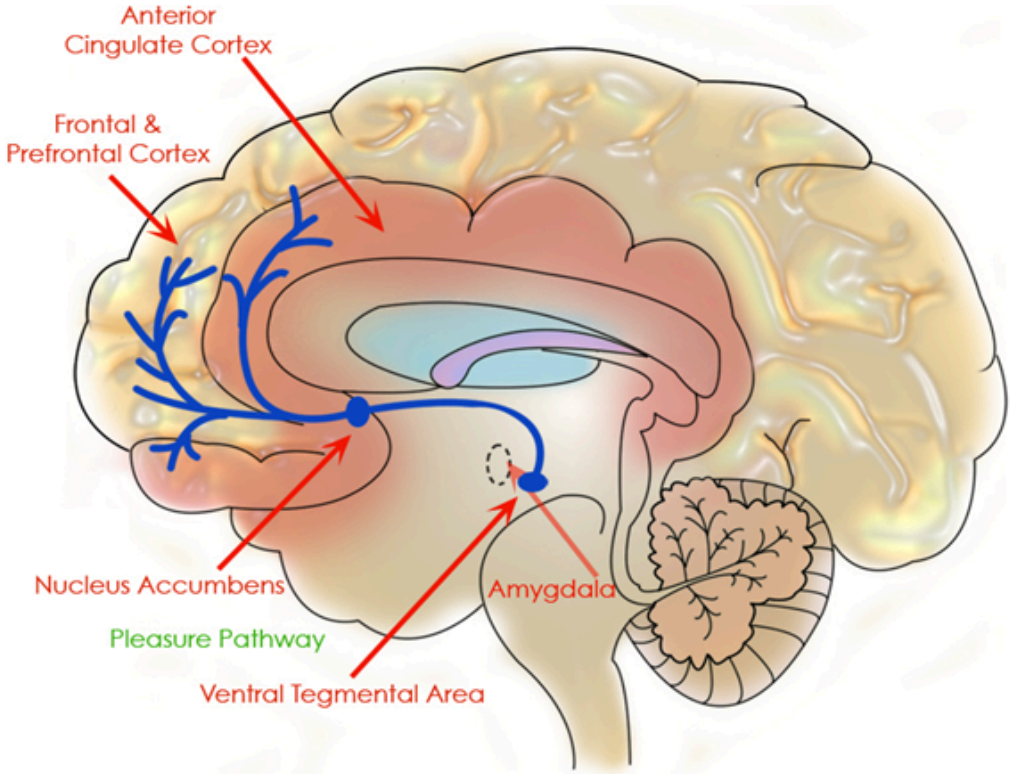
Using the scale below, weigh out the "benefits" and risks of substance use. Do the benefits outweigh the risks?

"Benefits" of Substance Use		Risks of Substance Use (including overdose)

Source: https://www.drugabuse.gov/drug-topics/health-consequences-drug-misuse/mental-health-effects

MENTAL HEALTH AND SUBSTANCE USE

You may be wondering, *"What is the connection between mental health and substance use?"* Did you know that substance use disorders often go hand-in-hand with mental health disorders? This is because a lot of the same areas of the brain are involved in both!



Take some time to look up each of the areas listed below and find out what they are responsible for.

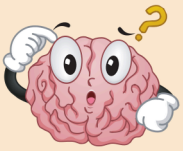
PRE-FRONTAL CORTEX: _____

AMYGDALA: _____

ANTERIOR CINGULATE CORTEX: _____

VENTRAL TEGMENTAL AREA: _____

NUCLEUS ACCUMBENS: _____



THINK:

What emotions and experiences are similar between substance use and mental health conditions?

Substance use can exacerbate existing mental health concerns by increasing mood swings, anxiety, confusion, and even hallucinations or paranoia.

FENTANYL

Fentanyl is an extremely potent synthetic opioid. It has medical purposes like treating severe pain, but fentanyl is **100x more potent than morphine.** Even when used for medical purposes, patients require close monitoring.

Illicit drug manifacturers often mix non-medical grade fentanyl into other substances to make them stronger. However, there is no way to know how much is used, and it **only takes 2 mg** to be a potentially **lethal dose.**

The DEA reports that:

- 42% of pills tested for fentanyl contained a **lethal dose.**
- Synthetic opioids like fentanyl are the **leading cause of overdose.**
- From 2020-2021, overdoses due to synthetic opioids (primarily fentanyl) **rose 55.8%**.

Did you know?

2 mg of fentanyl (a lethal dose) is only about the size of **5 grains of rice.**

Fentanyl Harm Reduction

The only way to know if an illicit substance includes fentanyl is to test it. Fentanyl test strips can alert users that drugs may be contaminated with fentanyl.

Source: https://www.dea.gov/resources/facts-about-fentanyl

Recognizing Risks:
Drug Overdose

Unfortunately, one ultimate risk of drug misuse is death by overdose.
The chart below shows the number of deaths that occurred as a result of drug overdose between 1999 and 2015, as a whole and by male and female groups. Answer the questions below the chart based on your observations.

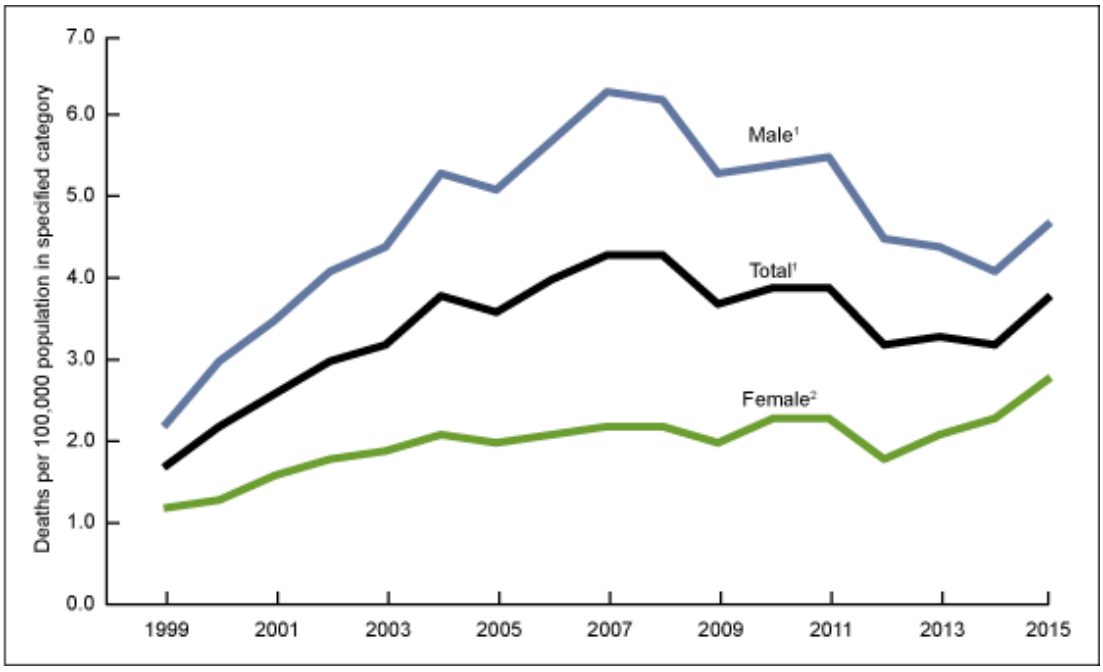


Image: Curtin SC, Tejada-Vera B, Warner M. Drug overdose deaths among adolescents aged 15–19 in the United States: 1999–2015. NCHS data brief, no 282. Hyattsville, MD: National Center for Health Statistics. 2017.

What trends (patterns) did you notice among males according to this graph?

What trends (patterns) did you notice among females according to this graph?

What are possible reasons for higher rates of drug overdose among males than females?

Recognizing Risks
Drug Overdose

While overdosing on any drug is a risk, overdose on opioids (heroin, prescription medications, fentanyl) has increasingly become a problem. In fact, **thousands of lives are lost every year from opioid overdose.** Remember, it is possible to overdose on opioids the very first time you use them.

How do you know when someone has overdosed?

Overdosing on a substance is a scary thing, not only for the person who is experiencing the overdose, but also for those who see it happen. Here are the signs that someone you know may have overdosed:

- limp body
- pale, clammy face
- blue fingernails or lips
- vomiting or gurgling sounds
- inability to speak or be awakened
- slow breathing or heartbeat

Treating Overdose

When someone stops or slows breathing from an opioid overdose, a medication called **Naloxone** can be used to quickly reverse an opioid overdose. Emergency medical workers use this as soon as someone has stopped or slowed breathing from an opioid overdose. The good news is the easy-to-use nasal spray version can also administer this medication in times of need.

It is important to know that, even if Naloxone is administered, 1) emergency responders still need to transport the person to the hospital; and 2) the person who overdoses needs to seek professional treatment for their substance use.

What to do?

Here are the things you can do to try and save the life of someone whom you suspect has overdosed on opioids:

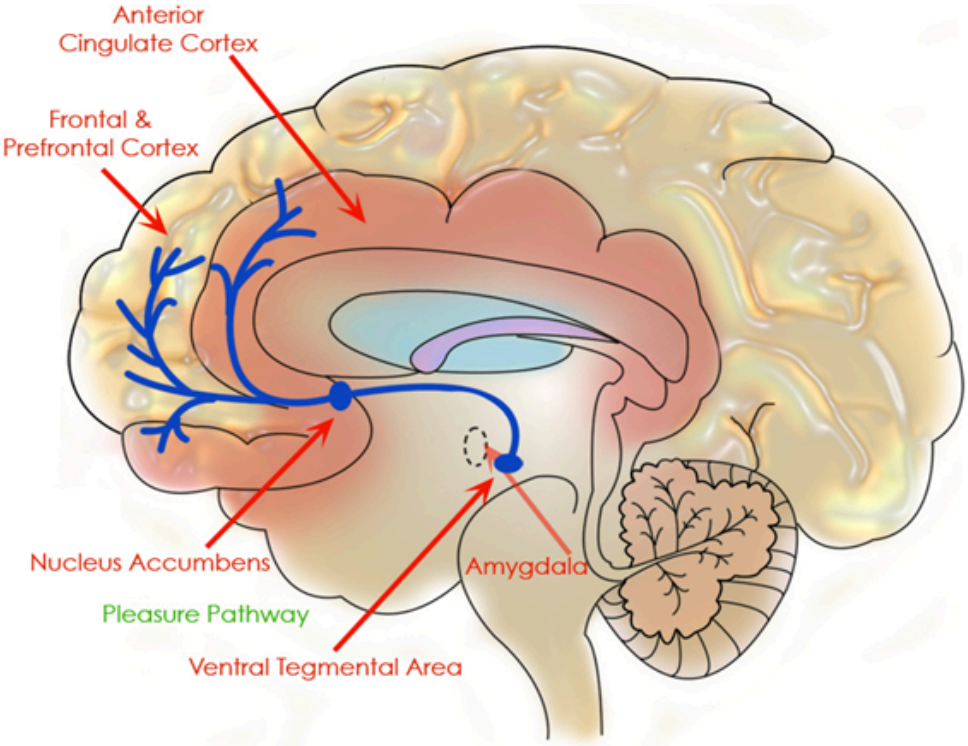
- Call 911.
- Administer Naloxone, if it is available.
- Find a trusted adult.

Source: https://www.drugabuse.gov/videos/how-naloxone-saves-lives-in-opioid-overdose

MENTAL HEALTH AND SUBSTANCE USE

Did you know that substance use disorders often go hand-in-hand with mental health disorders? This is because a lot of the same areas of the brain are involved in both!

NOTE: Substance use can exacerbate existing mental health concerns by increasing mood swings, anxiety, confusion, and even hallucinations or paranoia.



Take some time to look up each of the areas listed below and find out what they are responsible for.

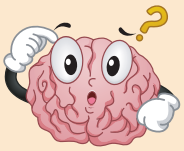
PRE-FRONTAL CORTEX: _____

AMYGDALA: _____

ANTERIOR CINGULATE CORTEX: _____

VENTRAL TEGMENTAL AREA: _____

NUCLEUS ACCUMBENS: _____

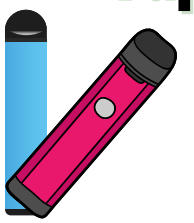


THINK:

What emotions and experiences are similar between substance use and mental health conditions?

Key: Pre-frontal cortex - decision making; Amygdala - processing emotions; Anterior cingulate cortex - emotional responses, attention; Ventral tegmental area - reward processing; Nucleus accumbens - pleasure, reward, pain response

Vaping Harms: Test Your Knowledge



Instructions: Read each statement. Circle if you think the statement is a MYTH (false) or a FACT (true).

1. **The "cloud" from an e-cigarette is water vapor and harmless.** MYTH FACT

2. **e-cigarettes are to help people quit smoking.** MYTH FACT

3. **e-cigarettes contain nicotine.** MYTH FACT

4. **You have to be 18 years old to buy or use vaping products.** MYTH FACT

5. **Nicotine is an addictive chemical.** MYTH FACT

6. **Vaping (the use of electronic devices) affects brain development.** MYTH FACT

7. **Flavored e-liquids, like fruit, mint and candy are not dangerous.** MYTH FACT

8. **You won't get addicted to nicotine unless you use it every day.** MYTH FACT

9. **Secondhand exposure to vapor released from e-cigs is harmful.** MYTH FACT

10. **When using e-cigs, there is a risk of explosions of electronics and batteries.** MYTH FACT

11. **The FDA currently regulates the chemical ingredients in vaping.** MYTH FACT

12. **Vaping devices are safe.** MYTH FACT

Pair up. Review your responses with others.

Circle which statements (numbers) you answered the same: 1 2 3 4 5 6 7 8 9 10 11 12 13

Circle which statements (numbers) you answered different: 1 2 3 4 5 6 7 8 9 10 11 12 13

Talk about which of these statements confused you and why?

_____

_____

_____

Review the statements about vaping below. Circle the ones that surprised you the most.

1. MYTH: **The "cloud" from an e-cigarette is water vapor and harmless.**
   SCIENCE: Many people incorrectly believe that these devices produce a water vapor when in fact they create aerosols that contain harmful chemicals. The aerosol inhaled from e-cigarettes and JUULs is often a mixture of harmful chemicals like nicotine, formaldehyde—which is known to cause cancer—and acrolein—which is used as a weed killer and can cause irreversible lung damage.
   American Lung Association, E-cigarettes & Vaping What Teens Should Know. https://www.lung.org/getmedia/5eccc29b-b181-48b3-97eb-ad402a7957d6/e-cigarettes-teens.pdf.pdf?ext=.pdf

2. MYTH: **e-cigarettes are to help people quit smoking.**
   SCIENCE: The World Health Organization (WHO) does not consider electronic cigarettes to be a legitimate smoking cessation aid. No e-cigarette has been found to be safe and effective to help people quit smoking.
   American Lung Association, E-cigarettes & Vaping What Teens Should Know. https://www.lung.org/getmedia/5eccc29b-b181-48b3-97eb-ad402a7957d6/e-cigarettes-teens.pdf.pdf?ext=.pdf

3. FACT: **e-cigarettes contain nicotine.**
   SCIENCE: Nicotine is a toxic, colorless or yellowish liquid that is the chief active component of tobacco. Nicotine is addictive and can harm adolescent brain development, which continues into the early to mid-20s. Nicotine content in e-cigs are highly variable as labeling is not always a reliable indicator.
   CDC, Quick Facts on the Risks of E-cigarettes for Kids, Teens, and Young Adults, https://shorturl.at/dlFY4

4. MYTH: **You have to be 18 years old to buy or use vaping products.**
   SCIENCE: In December 2019, a federal Tobacco 21 law was passed to raising the national purchase age for all tobacco products, including e-cigarettes, to 21 years old.
   FDA, Tobacco 21, https://www.fda.gov/tobacco-products/retail-sales-tobacco-products/tobacco-21

5. FACT**: Nicotine is an addictive chemical.**
   SCIENCE: Nicotine is highly addictive. Nicotine releases dopamine in the same regions of the brain as other addictive drugs (like heroin and methamphetamine). It causes mood-altering changes that make a person temporarily feel good.
   CAMH, Nicotine Dependence, https://shorturl.at/grl47

6. FACT**: Vaping (the use of electronic devices) affects brain develo pment.**
   SCIENCE: Exposure to nicotine during adolescence can harm a young person's developing brain and affect memory, concentration, learning, self-control, attention and mood.
   American Lung Association, E-cigarettes & Vaping What Teens Should Know https://www.lung.org/getmedia/5eccc29b-b181-48b3-97eb-ad402a7957d6/e-cigarettes-teens.pdf.pdf?ext=.pd

7. **MYTH: Flavored e-liquids, like fruit, mint and candy are not dangerous.**
SCIENCE: The liquid used in e-cigarettes often contains nicotine and flavorings. This liquid is sometimes called “vape juice,” or “vape liquid.” E-juice and JUUL pods flavored like fruit, mint or other treats carry the same health risks as the unflavored products. Flavors are a great way to attract young consumers.

American Lung Association, E-cigarettes & Vaping What Teens Should Know https://www.lung.org/getmedia/5eccc29b-b181-48b3-97eb-ad402a7957d6/e-cigarettes-teens.pdf.pdf?ext=.pd

8. **FACT: You won’t get addicted to nicotine unless you use it every day.**
SCIENCE: Nicotine is highly addictive — some say it's as addictive as cocaine, heroin and alcohol. Using nicotine just one time puts you at risk of becoming dependent on the drug because of its immediate effect on a young person’s brain.

Cleveland Clinic, Nicotine Dependence (Tobacco Use Disorder), https://my.clevelandclinic.org/health/diseases/24482-nicotine-dependence

9. **FACT: Secondhand exposure to vapor released from e-cigs is harmful.**
SCIENCE: Aerosols from vaping contain heavy metals, such as lead, nickel and zinc, cancer-causing substances such as benzene, and diacetyl, which has been linked with a condition nicknamed "popcorn lung." Research has found that exposure to secondhand aerosols is associated with increased risk of bronchitis symptoms and shortness of breath among young people, especially among those who don't smoke or vape themselves.

American Heart Association, In secondhand vape, scientists smell risk, May 31, 2022, https://www.heart.org/en/news/2022/05/31/in-secondhand-vape-scientists-smell-risk

10. **FACT: When using e-cigs, there is a risk of explosions of electronics and batteries.**
SCIENCE: Throughout the past few years, the medical community encountered increasing episodes of burn injuries secondary to e-cigarette battery explosion. These explosions occur through "thermal runaway.” This process occurs when the battery overheats and the internal battery temperature increases dangerously high, to the point of inner fire and explosion.

NIH, E-Cigarette Battery Explosions: Review of the Acute Management of the Burns and the Impact on Our Population, 2019 Aug 11, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6783228/

11. **MYTH: The FDA currently regulates the chemical ingredients in vaping.**
SCIENCE: The FDA does not currently regulate chemical ingredients and labels of vapes. The FDA does not regulate the cleanliness of facilities that produce chemical ingredients used to make e-juice.

Stanford University, Tobacco Prevention Toolkit, www.tobaccopreventiontoolkit.stanford.edu

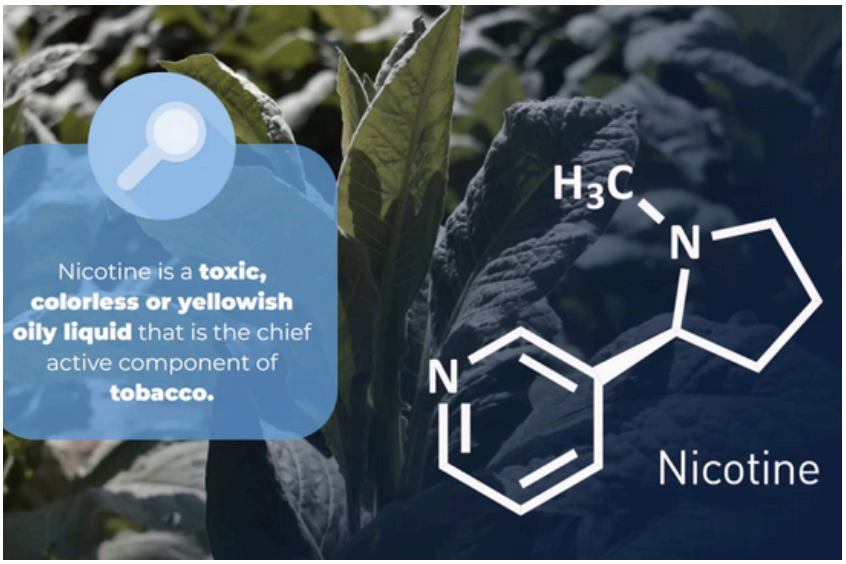
12. **MYTH: Vaping devices are safe.**
SCIENCE: Electronic vaping devices are still very new. Long-term health consequences of vapes are still not known. However, there is growing evidence showing that these devices are not harmless.

Stanford University, Tobacco Prevention Toolkit, www.tobaccopreventiontoolkit.stanford.ed

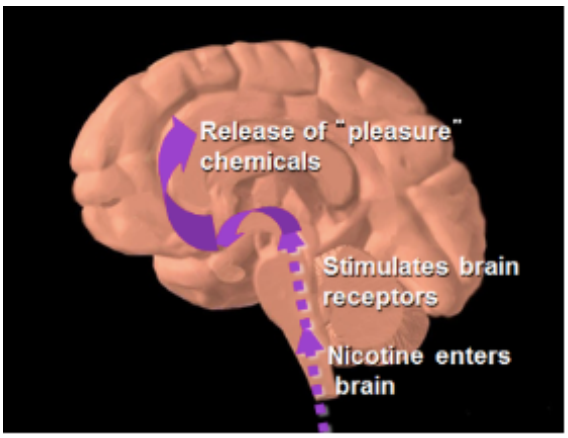
WHAT IS NICOTINE?

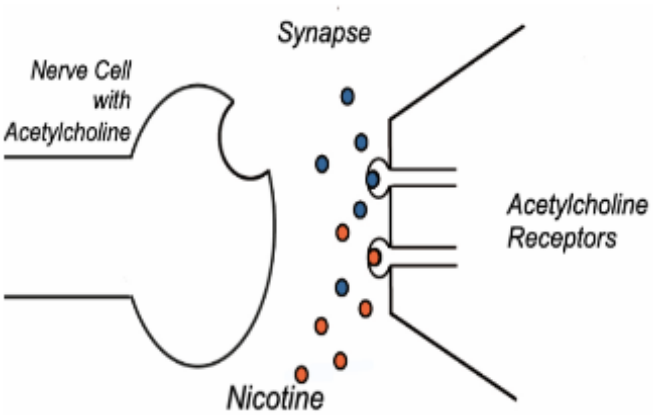
Nicotine is made up of different chemical compounds (2 nitrogen-containing heterocycles, pyridine and pyrrolidine). This chemical compound acts as a "psychoactive stimulant." This means that when smoked, nicotine enters the bloodstream and crosses the blood-brain barrier to affect the brain and body. As a stimulant, it binds to Acetylcholine receptors in the brain's reward pathway that release dopamine - causing the person feel more alert, awake, and pleasure.

See the Figure below.

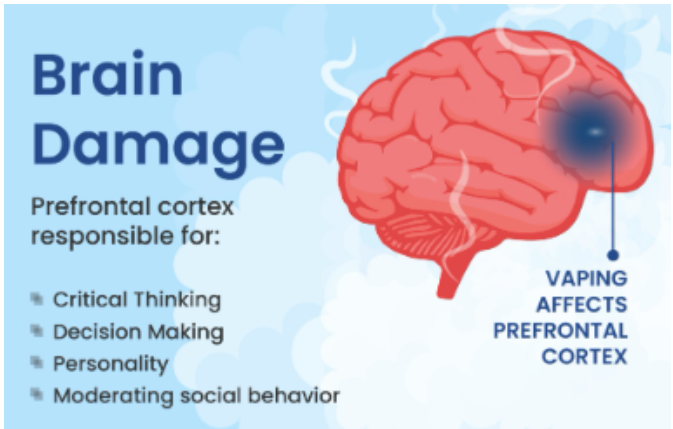


THE REWARD PATHWAY





When repeatedly smoked, nicotine "hijacks" and takes control of the brain's reward pathway so you no longer have control over it. Nicotine (red dots) mimics the structure of Acetylcholine and readily binds to wherever there are acetylcholine receptors in the brain. This is the "hijack" process because nitocine blocks normal use of the brain's natural chemical Acetylcholine, thereby "changing the brain" and making it susceptible to "addiction."



DID YOU KNOW?

In prefrontal networks, nicotine activates and desensitizes parts of your brain that affect cognition. The adolescent brain is sensitive to the effects of nicotine - studies show smoking during adolescence increases the risk of developing psychiatric disorders and cognitive impairment.

VAPING AND THE DEVELOPING BRAIN

The brain is a mystery to a lot of people! Did you know that your brain weighs 3 pounds? This is amazing given that it is very complex. It is called the command center for your entire body, as it controls everything, from the things we see and feel to the actions we engage in.

TEST YOUR KNOWLEDGE

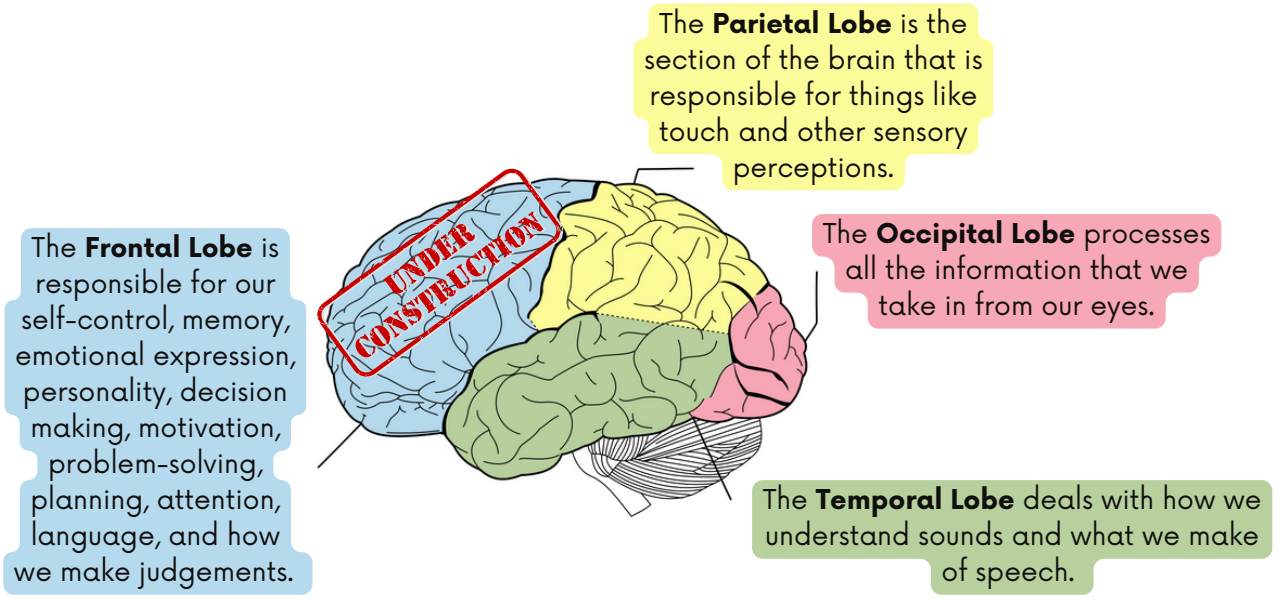
Up to what age is your brain still in development?

◯ 18 ◯ 21 ◯ 25 ◯ 27 ◯ 30

Which area of the brain is still in development into adulthood?

◯ Frontal Lobe ◯ Parietal Lobe ◯ Occipital Lobe
◯ Temporal Lobe

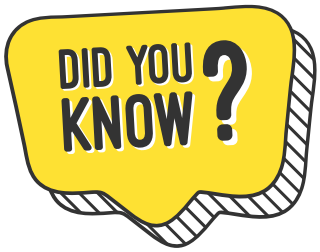
The diagram below shows the four lobes of the brain. As you can imagine, each area of the brain has a different function and purpose it serves. Take some time to study the image of some of the key areas of your brain below.

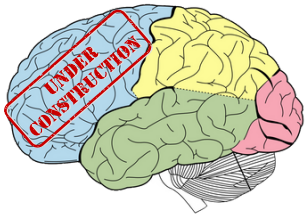


Did you know that the **right frontal lobe** of the brain is where pleasure seeking starts and that it shrinks for young people who smoke regularly? This impacts the way one seeks pleasure and can lead to addiction.

VAPING AND THE DEVELOPING BRAIN

The **frontal lobe** is the front-most part of the brain. It is involved in our higher cognitive functioning. It is no surprise that the frontal lobe is the last area of the brain to mature. Adolescents and young adults do have frontal lobe capabilities, but they are not yet fully developed. This poses a challenge in making the right decision not to vape.





Did you guess that the brain is in development until the age of 25?

Research shows that the youth years (between the ages of 12 to 24) are the most significant years for brain development, especially since the developing brain has **plasticity**, which means it can change, adapt, and respond to its environment. The brain reaches full maturation at the age of 25. This means that, at your age, your brain has a long way to go in its phases of growing! This is why it is critical to protect your brain from the chemicals released from vapes, especially nicotine and aerosols.

Now you know...

Using the image of the brain parts on the previous page, can you list some ways vaping might negatively affect **brain health**, especially the functions of the frontal parts of the brain that are under construction (Hint: self control and choice)?

Electronic Vaping Devices: How Much Do You Really Know?

Instructions: Check your knowledge of where vape devices come from and what the parts of a vape device are.

Why/how do you think e-cigarretes have become so popular?

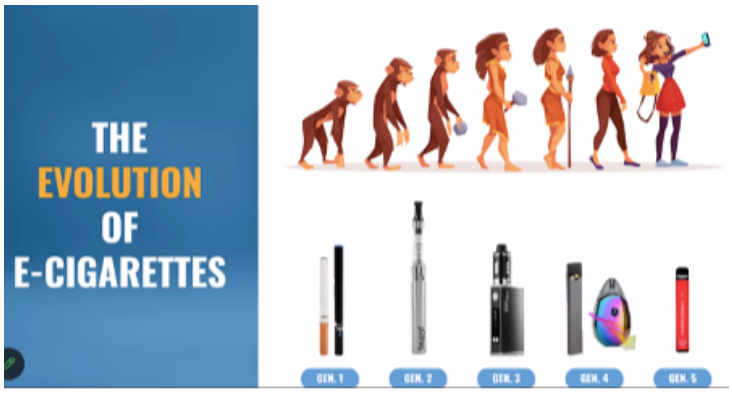
_____

_____

_____

How has vaping evolved?

According to the U.S. Customs and Border Protection Agency, electronic cigarettes were introduced to the U.S. in 2006 (first import ruling dated August 22, 2006. NY M85579) and have evolved many times since then. The most recent generation of e-cigarettes on the market contain refillable cartridges and use nicotine salts in the e-liquids. The nicotine salt formulas allow for much higher levels of nicotine compared to earlier generations of e-cigarettes.



Source: Catch My Breath, Train the Trainer , August 2023

Source: CASAA, Historical Timeline of Vaping Cigarettes, https://casaa.org/education/vaping/historical-timeline-of-electronic-cigarettes/

LET'S GUESS: How many cigarettes do you think are in each of the following?

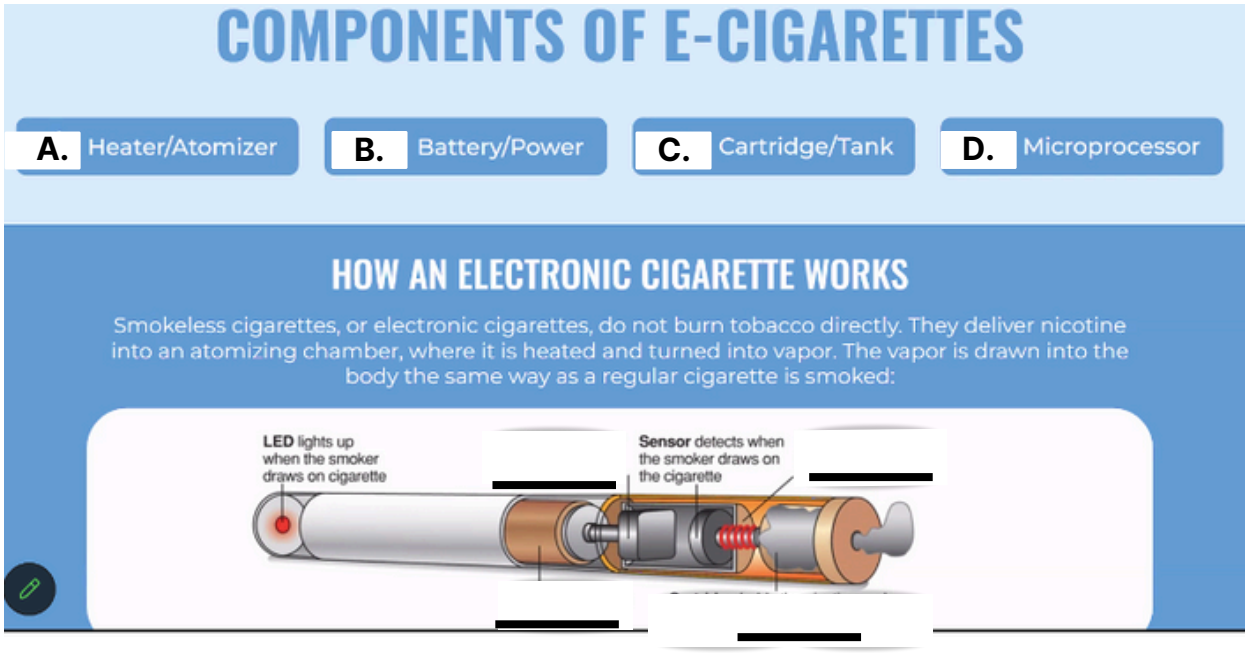
KEY:

- One standard pack of cigarettes contains 20 cigarettes. There is about 1 to 1.2 mg of nicotine absorption per cigarette, about 22 milligrams of nicotine delivered to the body from a whole pack.
- One JUUL pod is equal to 2 packs of cigarettes.
- One Flum Float is equal to 18 packs of cigarettes.
- One Elf Bar is equal to about 30 packs of cigarettes.
- The amount of nicotine in these e-cig products is **high** and can be intense for first-time smokers.
- A major concern is that young people are being introduced to high amounts of nicotine in e-cig products, which increases their risk to developing tolerance and addiction issues.

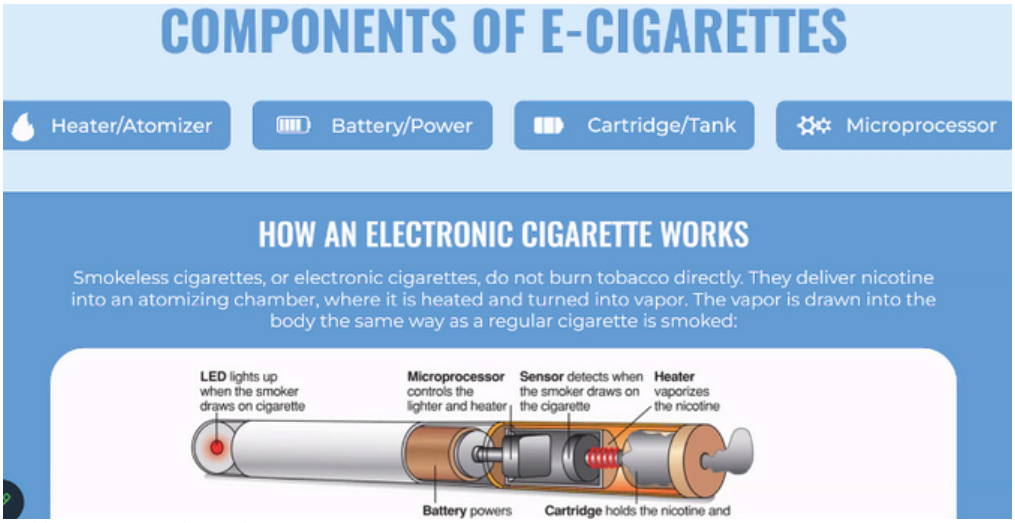
Source: Stanford Medicine, Tobacco Prevention Toolkit, https://med.stanford.edu/tobaccopreventiontoolkit/take-and-teach/toolkit-factsheets.html

Test your IQ: Electronic Vaping Devices

Instructions: Match the correct letter with the correct part of the e-cigarette.



E-cigarettes have many parts. They have an <u>electronic battery</u> to operate it. A <u>cartridge or tank</u> to absorb liquid material, including nicotine, e-liquids, e-juices (flavors), and other chemicals.
The battery allows the <u>atomizer</u> to heat the liquid, which creates an <u>aerosol</u> that is breathed into the lungs and breathed out into the air repeatedly.
Some of these devices are pre-loaded with e-juice and some require it to be added.



Source: Stanford Medicine, Tobacco Prevention Toolkit, https://med.stanford.edu/tobaccopreventiontoolkit/take-and-teach/toolkit-factsheets.html

Source: Catch My Breath, Train the Trainer , August 2023

VAPING: PUBLIC HEALTH INDICATORS

What are the benefits?

What do you think vape juice is?

_____

_____

What are some flavors you have seen or heard of?

_____

How do you think different e-liquid flavors affect vaping experiences and health?

_____

_____

81%

of kids who ever used tobacco products **started** with a **flavored product**.

99%

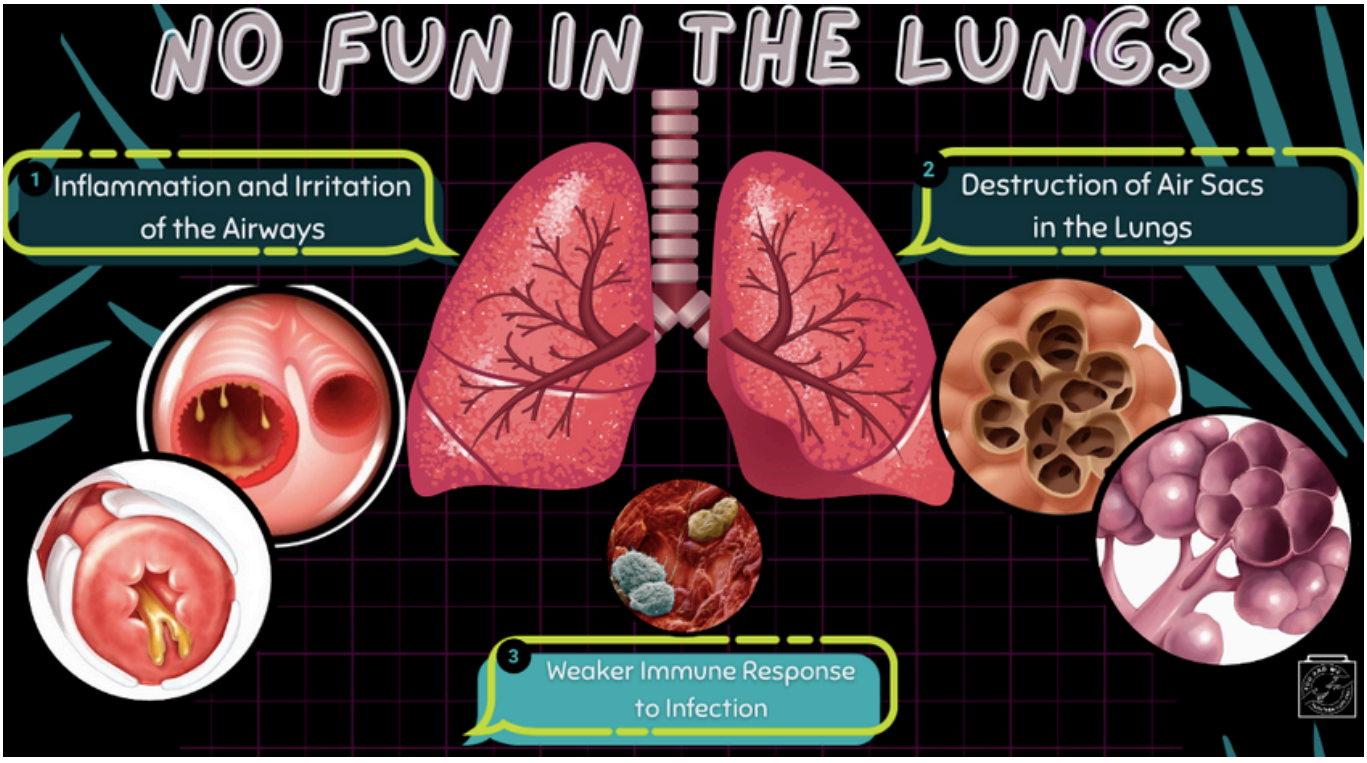
of E-Cigarettes sold in 2015 **contained nicotine**.

Source: Catch My Breath, Train the Trainer , August 2023

Did You Know?

- **The most common vape juices are flavored with appealing tastes that young people like, such as: menthol, mint, all types of fruits, sweet desserts, and candy.**
- The e-liquid contained in e-cigarettes can be harmful when heated (aerosolized) and inhaled. Examples include: cinnamaldehyde (cinnamon), vanillan (vanilla). These flavors are harmful when aerosolized.

The picture below shows how the heated and smoked aerosols from flavored e-juices negatively affect the body.



LET'S THINK!

What is something that you learned about the impacts of e-liquid flavors on the body that you will share with others?

_____

_____

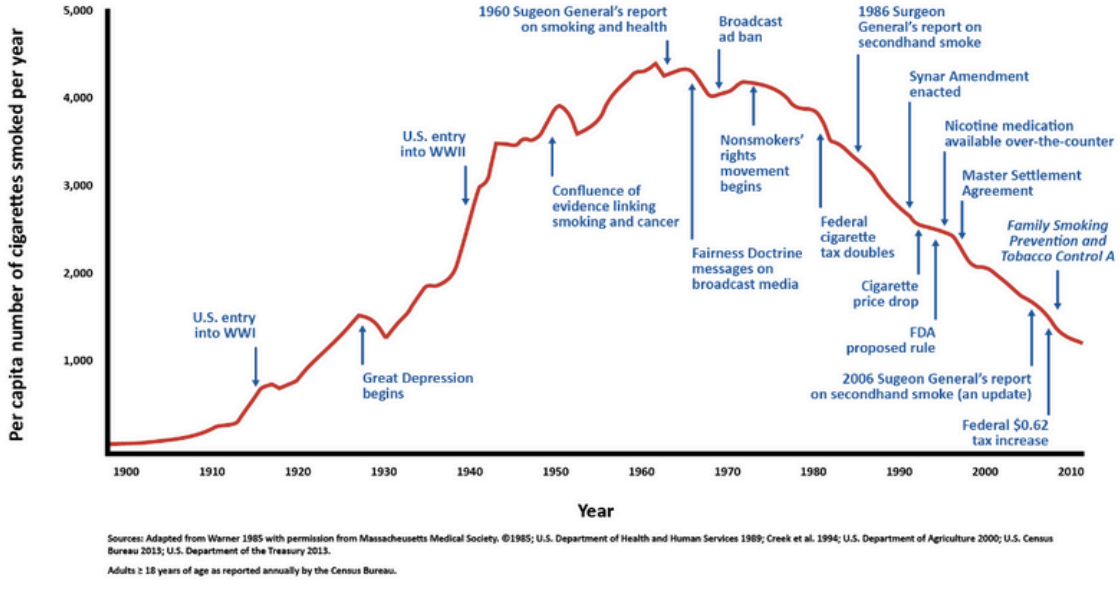
RAISING AWARENESS: PUBLIC HEALTH POLICY AND SMOKING TRENDS

Reflect and write in the space provided the different types of tobacco laws and policies that are instituted in society.

Instructions: Review the **Figure** below on public health smoking legislation implemented in the U.S. and how they are related to smoking behaviors over the years (trends).

CATCH MY BREATH

Public Health Legislation and Smoking Trends



Sources: Adapted from Warner 1985 with permission from Massachusetts Medical Society. ©1985; U.S. Department of Health and Human Services 1989; Creek et al. 1994; U.S. Department of Agriculture 2000; U.S. Census Bureau 2013; U.S. Department of the Treasury 2013.

Adults ≥ 18 years of age as reported annually by the Census Bureau.

What do you notice? How do the public health policies affect smoking trends? (Hint: is there an increase, decrease, or no impact)?

Substance Use Warning Signs

There are many different behavioral signs and symptoms to look out for that may signal substance use in your youth. The box below lists common ones to look out for among youth. Check off the ones you have observed among your youth and add others you may notice in the "Fill in" section.

Home • Change in attitude/behavior • Withdrawing, not communicating • Fighting/Arguing • Coming home late or not at all • Being secretive or sneaky • Money or items missing • Fill in: _____ _____	**School** • Skipping school • Grades dropping/poor performance • Chronic lateness • Getting in trouble • Getting caught with substances • Fill in: _____ _____	**Physical** • Looking lethargic, extremely tired • Sudden weight loss/gain • Red eyes/using eye drops • Sleeping a lot • Frequent illness (upper-respiratory, headaches) • Fill in: _____ _____
Social • Abrupt changes in social circle • Change in values - "I don't care" attitude • Lack of motivation • Dropping usual recreational or extracurricular activities/commitments • Sneaking out or secretive about friends • Fill in: _____ _____	**Mental/Emotional** • Poor concentration/distraction • Memory loss • Mood swings • Feelings of hopelessness, despair • Irritability, anger outbursts • Talk of suicide or self-harm • Fill in: _____ _____	**Legal** • Arrested or fined with substance possession or consumption • Caught shoplifting/stealing • Vandalism • Violence • Fill in: _____ _____

Signs of Substance Use Disorders

"Substance Use Disorder" is a clinical term that is used to classify someone who has been diagnosed with an addiction. It is when the individual has a pattern of substance use behavior that leads to significant impairment or dysfunction in one or more of the following areas:

- **Loss of Control:** This may look like using more of a substance than intended or saying you will stop but not being able to. Youth may say something like “I’m only going to have one beer,” or “I’m going to stop smoking on school nights,” but end up not being able to stick to their plan.

- **Social Impact:** This is when youth start to neglect things that are normally important to them, like quitting a club or sport, stopping hanging out with friends, missing school or work, or withdrawing from their relationships.

- **Risky Use:** This entails using substances in risky settings or getting into dangerous situations because of substance use. For example, going to unknown locations while on substances, entering risky situations to purchase or obtain drugs, driving under the influence, having risky sex, etc. This also includes continuing to use even after realizing the risks or experiencing negative consequences. For example, repeatedly not completing school work because of substance use.

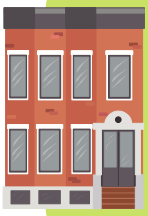
- **Physical Dependence:** This is when a person needs to take more and more of a substance to feel the same results (often referred to as developing a tolerance) or feeling physical symptoms of withdrawal when not using.

Additional Resources

Youth may have other service needs to support their wellbeing, health and safety.
Below are common areas of need and available resources.

MENTAL HEALTH RESOURCES

- **211:** Call 211 or visit http://211la.org/resources to be connected with housing, food, mental or physical health, legal, and employment resources throughout LA county.
- **The 988 Suicide & Crises Lifeline:** Call 988 or 988lifeline.org. The 988 Suicide & Crises Lifeline provides free and confidential emotional support for people in suicidal crisis or emotional distress.
- **LA County Department of Public Social Services** directory of resources: http://dpss.lacounty.gov.
- **California Youth Crisis Line:** 1-800-843-5200 or www.calyouth.org.
- **DMH Helpline:** Call (800) 854-7771 for information on available mental health services, to receive emotional support, and veteran mental health services.
- **Helping Children Cope After a Traumatic Event:** https://childmind.org/guide/helping-children-cope-after-a-traumatic-event/.
- **National Sexual Assault Hotline:** 1-800-656-HOPE (4673) or www.rainn.org.
- **National Domestic Violence Hotline:** 1-800-799-SAFE (7233) or chat at thehotline.org.
- **National Dating Abuse Helpline:** 1-800-331-9474, chat online at loveisrespect.org, or text LOVEIS to 22522.
- **National Crisis Text Line:** Text HOME to 741-741.
- **National Human Trafficking Hotline:** 1-888-373-7888 or www.nationalhumantraffickinghotline.org.
- **School Counseling Offices or Local Community Counseling Centers**
- **The Trevor Project** (Suicide Hotline for LGBTQ+ young people): 1-866-488-7386, chat online at www.thetrevorproject.org/get-help/, or text START to 678-678.



HOUSING

The LA County Homeless Services Authority site has contact information for Crisis Housing Centers, Youth Drop-In Centers, and Domestic Violence Shelters at **www.lahsa.org**.

Additional Resources

PHYSICAL & MENTAL HEALTH

- **Los Angeles LGBT Center:** Assistance with STD/STI testing, mental health and housing support: https://lalgbtcenter.org/
- **Los Angeles Food Bank:** Locate your nearest food pantry at https://www.lafoodbank.org/find-food/pantry-locator/
- **Planned Parenthood:** Free sexual health resources and healthcare for all genders. Make an appointment at plannedparenthood.org, call 1-800-230-PLAN, or text PPNOW to 774636.
- **LA County Department of Mental Health**: For mental health resources and support. please call the 24/7 DMH help line at (800) 854-7771

WORK/FINANCIAL

- **America's Job Center of California:** Workforce development and education services for out-of-school youth ages 16-21. https://211la.org/resources/site/city-los-angeles-economic-and-workforce-development-department-pico-union or call 213-797-4858.
- **Homeboy Industries:** Formerly gang-affiliated and previously incarcerated individuals can get help in many areas including finishing their GED, finding work, and more: https://homeboyindustries.org/get-help/

SPANISH LANGUAGE RESOURCES

- Vea un directorio de recursos disponibles del Departamento de Servicios Sociales Públicos del Condado de Los Ángeles en https://dpss.lacounty.gov/es.html
- “¿Que es la metanfetamina?”: https://nida.nih.gov/es/publicaciones/drugfacts/la-metanfetamina
- "Sustancias de abuso habitual” : https://nida.nih.gov/es/informacion-sobre-drogas/sustancias-de-abuso-habitual

LA COUNTY SUBSTANCE USE

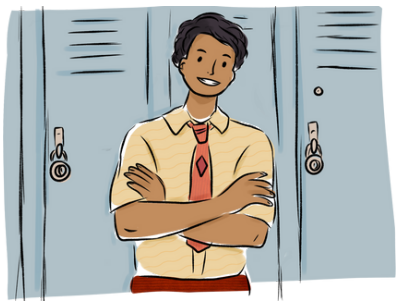
RESOURCE LIST

SUBSTANCE ABUSE PREVENTION AND CONTROL (SAPC) OVERDOSE PREVENTION

http://publichealth.lacounty.gov/sapc/cares

RECOVER LA

https://www.recoverla.org



SERVICE AND BED AVAILABILITY TOOL (SBAT)

https://sapccis.ph.lacounty.gov/sbat/

SUBSTANCE ABUSE SERVICE HELPLINE (SASH)

1-844-804-7500 (toll free)