



## PROJECT YOUTH WELLNESS

**WEEK 5: SUBSTANCE USE DISORDER RISKS** 

### **WEEK 5 CONTENTS**

| Substance Use Disorders: Manifested as a Brain Disease              | 3  |
|---|----|
| Substance Use Disorders: Clinical Criteria IQ                       | 4  |
| Substance Use Disorders: Impairment Areas                           | 5  |
| Understanding the Science of Substance Use Disorders: Reward System | 6  |
| Health Behaviors and the Brain's Motivational System                | 7  |
| Substance Use Disorder: Warning Signs                               | 8  |
| Substance Use Disorder: Side Effects                                | 9  |
| Review and Reflection   | 10 |

# 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 77 lists the clinical symptoms (criteria) that experts use to determine if someone has developed a substance use disorder (i.e., addiction) to a substance.

### 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.

| <u> </u> |  |  |
|----------|--|--|
| _        | 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<br>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<br>Role Functioning |
|          | 8.Use in physically hazardous situations 9.Continued use despite knowledge of problems   | Criteria 8-9:<br>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:<br>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 Pul

# 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 Persona<br>Problems | l Risky Use                      | Physical<br>Effects |
|      | periencing negative e<br>y to stop (e.g., irritab |                               | You spend a lot of er<br>mor     |                     |
| Yo   | ou have strong cravi                              | ngs for more                  | Getting hurt or ha               | -                   |
| Rel  | ationship problems o                              | caused by use                 | Using drugs or alcosituations (e | _                   |
|      | You use more than y                               | ou want to                    | Not finishing so<br>responsi     |                     |
| Need | ding more of the subs                             | _                             | Giving up on othe                | social activities   |

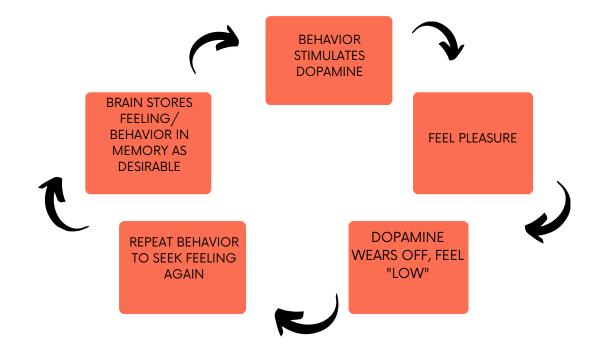
# UNDERSTANDING THE SCIENCE OF SUBSTANCE USE DISORDERS:

### **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

### **HEALTH BEHAVIORS AND THE BRAIN'S**

### **MOTIVATIONAL SYSTEM**

greatly affect the brain. A critical region of the brain that is involved in the Consumption patterns (like those listed on page 66 of this workbook) 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.

| vvrite            | e down commo   | on neaith be | naviors tr<br>below. | iat youth e  | ngage in on   | the lines   |
|-------------------|--|--------------|----------------------|--------------|---------------|-------------|
| [Hint:            | screen time, ç   | gaming, eati |                      | ing, exercis | sing, hugs ar | nd kisses]  |
|                   |  |              |                      |              |               |             |
|                   |  |              |                      |              |               |             |
| system            | alth behaviors<br>n. <b>But how?</b> In<br>arious health b | the space b  | eľow, wri            | te your tho  | ughts on hov  | w you think |
| 70                |  |              |                      |              |               |             |
|                   |  |              |                      |              |               | _           |
|                   |  |              |                      |              |               | <u> </u>    |
|                   |  |              |                      |              |               | See -       |
| Source: https://w | www.ncbi.nlm.nih.gov/pmc/articles                          | /PMC3722417/ |                      |              |               |             |

# 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)?

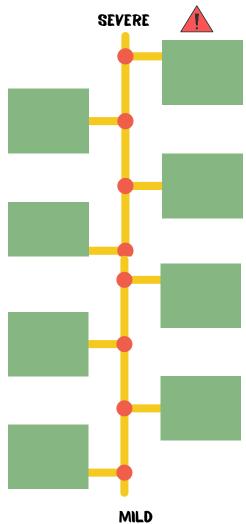
As the substances change key brain systems, they can also begin to change your physical appearance and mental health. Knowing the signs and being educated on the changes that can take place will help you be prepared to watch out for yourself and for others!

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.



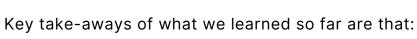
# SUBSTANCE USE DISORDERS: SIDE EFFECTS

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                           |

### **Review and Reflection**

#### **Let's Review**





- The continuum of risk associated with substance use behaviors is similar to other health risk behaviors.
- There are multiple risks associated with moving along the continuum from substance use experimentation toward substance use disorders, especially consumption patterns.
- A major factor underlying the development of substance use disorders is the brain's reward system—our brains respond to the things that make us "feel good" when we do them, and we don't always think about the risk.

| 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. |
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