

STUDENT WORKBOOK

The New Leaf Curriculum: THE NEUROSCIENCE OF ADDICTION | CIM

PREVENTION EDUCATION &
CRAVING IDENTIFICATION AND MANAGEMENT

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New Leaf
Treatment Center 
EVIDENCE-BASED ADDICTION MEDICINE

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In 1990, after three years as Medical Director, Drug Detoxification, Treatment & Aftercare Project, Haight Ashbury Free Clinics in San Francisco, Dr. Stalcup opened a private practice in addiction medicine. Since 1996, he has served as the Medical Director of the New Leaf Treatment Center in Lafayette, California.

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Why Teach the Neuroscience of Addiction?

In America, 96 out of 100 of us will try something once, and one out of five of us will become addicted to it. Until recently, little was really known about addiction as a disease and even less about how to adequately treat this heartbreaking illness. That is changing, as should our approaches to how we teach drug prevention and approach intervention.

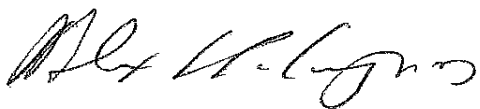
As parents and educators we have told young people for decades that drugs are bad for them, but we haven't really been able to tell them why in a fundamental way. We have made it clear that the consequences can be bad for them, but that approach has clearly failed us, as well as other well-meaning prevention efforts.

Regardless of how sophisticated they are these days, young people have seriously underestimated how powerful addiction is, and how fast it can develop. Thanks to new fMRI technology, neuroscience has not only revealed addiction as a disease of the pre-frontal cortex, but is also confirming that today's marijuana can, in fact, be addictive. So, we have a whole lot of great information that not only challenges the way teens think about drugs, but actually seems to interest them in an authentic way. The New Leaf Curriculum tells the truth about drugs from start to finish, the good, the bad, and the ugly. And, because we present it here in an honest, matter-of-fact, non-judgmental way, kids feel they are respected. They are truly part of this hands-on curriculum, and they should be because they are ultimately the only ones who can make the call about whether to experiment with drugs, and if so, how much.

But beyond the curiosity, and the desire to "have fun" that are such typical motivations for experimentation, teens are increasingly using drugs to deal with anxiety and depression. This complicates the issue even further, and is addressed through our medical model approach. One of the unique aspects of our methodology is educating teens about the loss of control that happens when addiction develops, which creates serious conflict with their archetypal yearning for independence. The challenge in adolescence is moving from an internal locus of control to an external locus of control, whereby they begin to make their own decisions. Addiction is in direct conflict with this maturational process because its most troublesome symptom is loss of control. If there is one thing that teens loathe, it is being told what to do... and that is exactly what happens when addiction starts controlling their behavior. They are no longer in charge; their drug is.

At the conclusion of this curriculum, students should have a solid foundation of how drugs affect the brain, and the tools they need to recognize, assess, and prevent addiction for themselves as well as their friends and loved ones. The neurobiology of addiction and how it affects the brain's "Pleasure Center" is both fascinating and terrifying at the same time, and an incredibly interesting way to teach a health or science class.

Our thanks to you, teachers everywhere who recognize that this curriculum has the potential to help thousands of young people who will never look at drug use the same way again, or take their precious brain for granted.



Alex Stalcup, M.D.
Founder and Medical Director

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Chapter 3 Overview

In this chapter, you will learn what a drug is, and what all addictive drugs have in common. You will also learn how the brain functions when addictive drugs are used, especially how a drug interacts with the pleasure centers of the brain. You will also be introduced to the actual process, step by step, of how a brain becomes addicted.

What is a Drug?

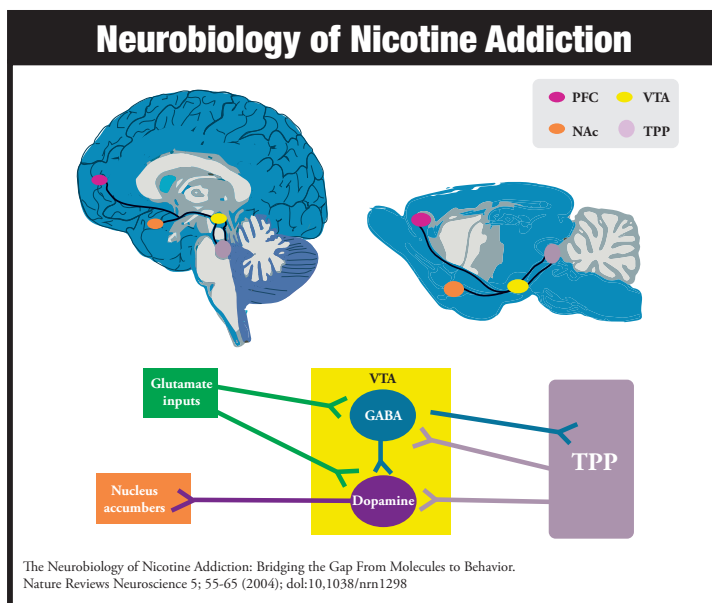
An addicting drug is a pleasure producing chemical. To qualify as “drugs”, they must make you feel good in some way.

All addicting drugs make you feel good because they get to the pleasure centers in your brain and turn them on. That is the drugs job: to stimulate the pleasure centers. So instead of good food or good sex or a walk in the forest, you just take a hit off a drug, it goes into your blood, gets to your brain, gets to the pleasure centers, and makes you feel good without having to do anything except use. Some drugs activate the pleasure system a little bit, like tobacco, and some maximally like methamphetamine and OxyContin. But they all do the same thing in terms of activating the pleasure system. That is what makes them a drug.

This is not just a theory; science has found where the pleasure centers in the brain are located.

In the figure to the right, the human brain is on the left, and the rat brain is on the right. They are both divided down the center of the brain, so it can be seen from the side. Deep in the middle

of the brain is a structure that constantly monitors what’s going on in the body and in the environment, called the VTA. When there is something that is pleasurable (or could become pleasurable), the middle section of the brain picks it up and sends a signal to the pleasure centers.



There are two pleasure centers within the brain: one is in the middle of the brain and if this becomes active the sensations of pleasure are experienced. The other pleasure center is in the most forward portion of the brain, the prefrontal cortex. The prefrontal cortex is the part of the brain that makes decisions about whether you will or won't do something. When that part of the pleasure system becomes activated, you pay attention and increase your interest.

Key Concept

What is an 'addictive' drug? An addictive drug is a pleasure producing chemical. Drugs activate or imitate chemical pathways in the brain associated with feelings of well-being, pleasure and euphoria. For a more in-depth description of drugs and their effects, please see the section at the end of this chapter entitled "Classes of Drugs." This list elaborates on the drugs that typically lead to addiction.

One of the questions that we need to consider is: why is there a pleasure center right in the middle of the brain that is also responsible for making decisions? The pleasure system in the pre-frontal cortex (front part of the brain) is like the light bulb that goes off in your head.

Discussion Question

1. Why do you think there is a pleasure center in the part of the brain that makes decisions?
2. How good would your decision making be if the part of the brain that became activated when you're interested became a "dim bulb"?

There are three terms that are very important in understanding addiction and drugs. The first term is neuroadaptation, the second term is tolerance and the third term is withdrawal. Those three words define the problem with drugs. If someone comes up to you and asks "why are drugs bad for you", the answers are neuroadaptation, tolerance and withdrawal.

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Key Concept

Brain functions and how the brain adapts to drug use.

- **Neuroadaptation:** The brain's response to over stimulation from drugs. In direct response to overstimulation, the brain regions decrease in sensitivity and become unresponsive (deaf) to normal levels of stimulation.
- **Tolerance:** The process by which the reward and pleasure centers of the brain adapt to high concentrations of pleasure neurotransmitters (chemicals released by the brain); a tolerant user needs more to get high than they did when they first used.
- **Withdrawal Symptoms:** The mirror image of the drug effects will always appear when a tolerant user tries to stop use. Stopping drug use leads to 'inversion of the high'.

There is a common experience that many people have had that illustrates the damage that drugs do to the pleasure centers. Have you ever been to a really loud music concert? Have you stood near the speakers? If you do this what happens to your hearing?

In this example, a person went to a loud place, heard really loud noises and then realized afterwards that it was hard to hear normal sounds. After spending time in a quiet environment the ability to hear returns to normal. If you are continuously exposed to loud sound over a period of time, you can become temporarily hard of hearing.

This is a very common observation and here's what it means: built into your brain is a really important **protective** mechanism: **neuroadaptation**. In this example, loud sound could destroy hearing. Before injury occurs, the brain is protected from going deaf by becoming insensitive to sound. If you are exposed to too loud of a sound, your brain sends a signal to protect your ears by shutting down temporarily and making you deaf. After leaving the loud sound environment, normal hearing will return after a few hours.

Although the brain can protect itself by becoming temporarily insensitive, the situation changes if you go to a concert more than three out of seven days a week.

The temporary protection provided by decreased hearing would begin to affect normal hearing and you would begin to notice actual hearing loss. Initially, the loss would be detected in a hearing test; over lengthy exposure to very loud (deafening) noise you would develop a disease of hearing called **deafness**.

Now imagine a friend going to a loud environment and exposing herself to loud sounds. Her brain protects her hearing by basically putting mufflers on. After the loud sound goes away, normal hearing will come back. She has been protected from the loud noise by becoming insensitive to sound. But, if she **overstimulates** her hearing over and over, the temporary protection becomes permanent. She can no longer hear normal sound levels, she can only hear loud sounds.

Helpful Hints

Hearing analogy: Inner ear structures protect themselves by becoming insensitive to sound. If the system is overloaded with too much sound the protection/insensitivity becomes permanent leading to deafness. Loud drugs: Drug abuse causes an insensitivity that decreases the normal ability to feel pleasure, so users “can’t hear pleasure” as well. This leads to inability to feel pleasure creating a dependence on drugs to feel good.

Instead of using loud sounds as an example, let’s look at how drugs work in the same way. Instead of loud sounds, we are talking about loud drugs. Imagine that you had a weekend with lots of drinking; Friday, Saturday and Sunday you were very drunk. On Monday and Tuesday, you would have difficulty experiencing pleasure, having interest, or enjoying yourself like you usually do. You would have difficulty paying attention, and experience boredom and negativity. You overdid it, and your brain protected you by becoming deaf to the pleasure of the drug and to normal pleasures. This would persist for a few days after you stopped drinking. In other words, you would have become **deaf** to normal pleasure. It would take a few days before you could begin having interest, pleasure, and the ability to enjoy yourself.

The decrease in pleasure after a weekend of heavy drinking results from a protective mechanism. Although it doesn’t feel like protection because you just feel bad, your brain is making an effort to keep the pleasure centers safe by making them less sensitive to overstimulation with alcohol. Refraining from drugs or alcohol, much like taking a break from loud concerts, will allow you to regain sensitivity to normal degrees of pleasure. However, with heavy drinking for four or more days per week for two weeks or more, the temporary protective decrease in pleasure would become semi-permanent. You wouldn’t be able to “hear” normal pleasure. You would be “deaf” to normal pleasure.

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Imagine all the things that you enjoy, all the things you love to do, the things that are fun, the activities that you can't wait to do. Now, wipe them out. Imagine you could have none of them, they were all gone. Welcome to the first day of addiction because once you become deaf to pleasure, you are not normal anymore. From that point forward, you are at the very least going to be bored. And worse than that, you may be very negative. You might feel no pleasure at all, or worse, feel dysphoria.

The problem with overusing drugs is that they generate a lot of pleasure when you use them but if you overdo them it takes away the ability to have any normal pleasure. The saddest thing about addiction is the loss of the ability to enjoy anything at all. Nothing is pleasurable unless you are using drugs.

Abusing drugs means you use too much, too often, which deafens the pleasure centers. You lose the ability to feel good. The only time you feel good is when you use the drug.

By continuing to overuse, the 'deafness' of the pleasure system becomes worse. Every single time drugs are used, it's another injury to the pleasure system. AND, when you stop using you don't go back to normal levels of pleasure, you go the opposite direction. That opposite direction on the pleasure scale becomes the way you feel most of the time, the opposite of how you felt when you got the pleasurable high

Those of you who smoke tobacco, marijuana or have used a lot of alcohol or pills know what it means to have no pleasure. It really is a difficult thing to go through day in, day out, with nothing enjoyable. Did you know that drugs take away your ability to enjoy yourself and that eventually you could only enjoy yourself when you are high?

Recall the three terms that describe the damage that drugs do: neuroadaptation, tolerance and withdrawal. If you overdo drugs – in other words, overstimulate your pleasure centers – it would induce a change in your brain. The name of that change is **neuroadaptation**. In direct response to loud pleasure, the brain pleasure centers become insensitive and they stop working. That is when you need more of the drug to get the same effect – that is called **tolerance**. Once you have developed tolerance, if you try to stop using the drug, you will experience symptoms of **withdrawal**. That means that the brain has become neuroadapted and it is attempting to try to increase your levels of drug use in order to get the same effect and when you try to stop, you will experience **craving** as well.

If you overstimulate your pleasure centers, they go 'deaf.' And the name of the state that you are in with a deaf pleasure center is called addiction. **Addiction is a disease of the pleasure system**. You get the disease by overdoing it, overdoing it and overdoing it.

Discussion Questions

3. How do you know if your brain is normal or “diseased/addicted”?
4. If someone had damaged their pleasure centers from overuse of drugs, how would they appear in the classroom?
5. If the pleasure centers become damaged, how much enjoyment would you have from the usual pleasures in life?
6. If the pleasure centers became damaged, what would be the effect on the normal functions of the pleasure centers?

The question that reveals a normal brain from a neuroadapted (or “deaf to pleasure”) brain is, “Does the amount that used to make you high still make you high, or do you need a higher dose to get high?”

When you have to keep using more and more to get high, you are said to be “tolerant.” It is the sign that your pleasure centers are not working and that a disease of the pleasure centers has begun. To use the example of sound; what you used to hear you can’t hear anymore and the only way you can hear it is to make it louder. In drug terms, the amount that once made you high doesn’t work anymore. You have to go to a stronger and stronger dose to “hear” the high. When you need a higher dose to get high, you have “tolerance.” Your brain is no longer normal.

If you want to know if you or your friends have normal brains or diseased brains, ask the simple question, “Does the amount that you first used to get high still get you as high?” If the answer is no (meaning it takes more to get high than it used to) you now know with medical certainty that the brain is developing a disease.

Once there is tolerance, people who need more to get high don’t feel normal when they stop. They go as low as they were high. Marijuana makes you get high and

get interested. But once you have to smoke more to get high, you don’t go back to normal when you stop. You go the opposite direction from how you felt when you were high. For marijuana users who have developed tolerance, the main symptom they experience is boredom when they are sober. Marijuana addicts who have

Functions of the Reward/Pleasure System of the Brain

- Rewards pursuit of instinctive drives (food, sex, nurture)
- Attention
- Enjoyment
- Rewards social contact
- Give pleasure to sensations, emotions, thoughts (rewarding)
- Assigns value (interest) to sensations, emotions, thoughts

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become tolerant complain that nothing is interesting. They don't enjoy themselves. They don't want to do anything. Everything is boring. It's like they don't know how to have fun when they're not high. They have damaged their pleasure centers. They can't have fun without it. They depend on it to feel normal, and they feel bad when they stop. The sober state of someone who has developed tolerance to drugs is not normal. It's the opposite of how they felt when they were high.

Discussion Question

7. What would the impact be for you if the things you enjoy were gone?

The name for these abnormal ways of feeling when stopping drug use is called **withdrawal**. Once you are tolerant and stop you will always – 100% of the time – have withdrawal symptoms and they are the exact opposite of what the drug does. So if the drug makes you interested, you can't get interested. If the drug made you enjoy yourself, you can't enjoy yourself. If the drug made you laugh, you can't laugh. If the drug made you sleepy, you can't sleep. If the drug made you high, you can't be high without using more and more. The dilemma for people who have developed tolerance to any drug is tolerating how they feel when they are not high. How do drug users tolerate the feeling when they are not high? Do people who have developed tolerance and withdrawal like being sober?

Drugs are bad for you because initially they make you feel good, but then they take away your ability to feel good by burning out the brain chemistry that makes you feel good. You get pleasure today, you can't have it tomorrow. If you overdo it today, you won't have any pleasure tomorrow. Although the damage can heal, it lasts a long time before you get back to where you can have pleasure without drugs. For the "too loud" drugs it takes a long, long, time.

Student Projects (Choose One)

1. Assess your (or someone else's) use pattern of tobacco (or drugs) to determine whether addiction is already present.
2. Ask a friend or family member to describe to you what life would be like if they could not feel pleasure. What would they do? Can they see that drugs will "work" to produce pleasure when there are no pleasurable activities to do?
3. Ask a drug user to describe any differences they see in their pleasure centers when they stop using drugs.

Classes of Drugs

There are thousands of compounds that, when taken into the body, produce changes in how the body and mind function. “Psychoactive drugs” are those for whom the primary effects are on brain function, especially those that affect thought processes, mood, alertness, perceptions, and behavior. Of psychoactive drugs, some are known to lead to addiction. Not all drugs that work on the brain are addicting; for example, medications such as antidepressants work on several brain functions and don’t produce intoxication or addiction. However, some medications with legitimate and valuable uses in medicine can readily lead to addiction if used improperly.

A property that several drugs have in common is their ability to lead to **“physical dependence.”** This means that the drug has been taken long enough for “tolerance” to develop, and these users will become sick when they stop using. Physical dependence producing serious illness develops with use of tranquilizers and pain medicine if used for a long enough time (as short as within 2 weeks). Physical dependence is shared in common between both pain management and addiction. Other words for “physical dependence” are “habit forming” and “physically addicting.” Both terms reflect these drugs ability to cause illness on cessation of use by tolerant individuals.

In this curriculum, the word “drugs” refers to drugs that interact with the brain’s pleasure chemistry to cause the sensation of being “high.” These are called “addicting drugs.” These drugs are classified into different groups: stimulants, cannabis, tobacco, inhalants, opiates, psychedelics, glutamate blockers, and sedative-hypnotics.

Psychedelic drugs

Psychedelics can produce high degrees of intoxication, based on their ability to reduce the “filtering” properties of the brain, flooding consciousness with heightened sensation, emotion, and intense thought. The quality of the “trip” is dependent on the mindset of the user (good mood or bad mood), and the setting in which the drug is taken (a positive, happy environment increases the chance that a “good trip” will occur). The expectations and previous experiences with the drug strongly influence the quality of psychedelic intoxication. If the user expects a good experience, the chances of a good experience increase. If the user has previously had a bad experience, or has uncertainty and apprehension about what to expect, a very bad experience can result. Invariably, if the mood changes or threat enters the setting, a catastrophic and terrifying “bad trip” can readily occur. Pleasure and euphoria that develop with use is indirectly produced, by magnification of whatever pleasurable experiences are in the environment. Similarly, terror and

Examples of Psychedelics

- Acid
- Mushrooms
- DMT
- 2CB
- Peyote
- MDMA

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frightening hallucinations can appear suddenly if the environment changes drastically. Psychedelic drugs are not “addicting.” However, “ecstasy”, MDMA, is a hybrid drug with properties of both a psychedelic drug and methamphetamine; those who use in a continuous pattern (“rolling e”, “thizzing”), can become addicted to it.

Glutamate Blockers

Similar to psychedelics in their ability to produce a pleasurable “high” only by indirect means is a small group of drugs sometimes found among drug abusers and party goers, including phencyclidine (PCP, Angel Dust), ketamine (a dissociative anesthetic drug used in medicine), and dextromethorphan (DXM, cough syrup, in very high doses). Most users do not find intoxication from these drugs particularly enjoyable, but they can produce terrifying hallucinations and death.

Cannabis

Marijuana is in a unique class of drugs which works through its own unique brain receptors. There is widespread misunderstanding on whether cannabis is “habit forming” or “addicting.” In fact, cessation of marijuana use by someone who is tolerant to it will always produce symptoms that impair both body function and mind function. Prominent symptoms of irritability, impaired concentration, memory impairment, and sleep disorder are commonly seen. Addiction to cannabis

Cannabis Effects

EFFECTS	WITHDRAWAL
<ul style="list-style-type: none"> • Sleep inducing • Appetite stimulation • Induces calm • Induces ‘mellow’ feelings • Elevates mood • Reduces muscle tone • Produces pleasure, interest 	<ul style="list-style-type: none"> • Insomnia / nightmares • Anorexia / weight loss • Restlessness, extreme irritability • Depressed mood, anger outbursts • Shakiness / sweating • Stomach pain / physical discomfort • Boredom

is common (inability to stop using or stay stopped), and causes serious impairment in concentration, memory, mood and sleep. The uncomfortable symptoms of cannabis withdrawal can persist for several months after cessation of use. Appearance of these symptoms increases craving for the drug, and are major barriers to staying sober.

For a written assessment that lets you measure Cannabis withdrawal, see the Withdrawal Assessments Appendix on page 91.

Stimulants

“Upper” drugs that stimulate the parts of the brain that lead to alertness, increased energy, and pleasure. Cocaine and amphetamine are common examples of stimulants and they produce tolerance and severe addiction. In the period immediately after

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cessation of use, physiologic symptoms such as fatigue and low blood pressure can appear. Additionally, psychologic symptoms such as anxiety, depression, confusion, and a strong need to sleep are common. Once a stimulant user has finally caught up on their sleep, serious insomnia appears which can persist for months, as can all of the other psychologic symptoms. Stimulants are sometimes referred to “psychologically addicting.” However, the mechanisms that produce physical dependence are the same as those that produce psychologic dependence; they are on a continuum of changes in the function of both the body and mind.

Methamphetamine is the most powerful in the stimulant class, and produces dangerous levels of intoxication and addiction. A close cousin to it is Adderall, a mixture of amphetamines intended to treat Attention Deficit Hyperactivity Disorder (ADHD). It is easily abused, and some individuals have progressed to using over 10 times the safe recommended dose. Stimulants increase in their psychoactive effects and danger when smoked or injected intravenously.

Sedative-Hypnotics

These are all calming drugs and they include alcohol, tranquilizers, muscle relaxers and some sleeping medicine. There are significant medical uses for sedative-hypnotic drugs, especially for the short term (less than 2 weeks) treatment of anxiety and panic. These drugs produce dangerous withdrawal syndromes in tolerant users.

For a written assessment that lets you measure Sedative-Hypnotic withdrawal, see the Withdrawal Assessments Appendix on page 90.

Examples of Sedative Hypnotics

- Alcohol
- Barbiturates
- Tranquilizers (Xanax, Ativan)
- GHB
- Soma
- Ambien

Sedative-Hypnotic Effects

EFFECTS	WITHDRAWAL
<ul style="list-style-type: none"> • Release of inhibitions • Sleep inducing • Sedation/Sleepiness • Slurred Speech • Unsteady gait (Ataxia) • Confusion • Slows heart rate • Decreases blood pressure 	<ul style="list-style-type: none"> • Dysphoria* • Anxiety* • Insomnia* • Sweating (Diaphoresis) * • Tremor • Tachycardia (increased heart rate) • Hyperventilation • Elevated temperature • Seizures • Hallucinations

*Symptoms can last for months

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Examples of Opiates

- Opium
- Heroin
- OxyContin
- Vicodin
- Fentanyl
- Tramadol (Ultraam)
- Dilaudid
- Percodan
- Percocet
- Methadone

Prescription Opiates

(Generic: Brand Name)

- Codeine with acetaminophen
- Hydrocodone: Vicodin, Lortab, Norco
- Hydromorphone: Dilaudid
- Oxycodone: Percodan, OxyContin
- Morphine sulfate: MS Contin
- Fentanyl: Duragesic (transdermal), Actiq
- Methadone: Methadose
- Buprenorphine: Suboxone, Subutex

Opiates

Pain medications are powerful drugs that have essential medical uses in the treatment of pain. All opiates work on the same brain region, and vary primarily on how strong an effect they produce (potency), and fast or slowly they enter the brain and produce their effects.

Beginning in the early 2000s, an epidemic of opiate drug misuse began, primarily affecting teenagers and young adults. Addiction to opiates develops quickly and once established, up to 20% will die. Many young users, unable to afford the increasing cost of the drugs switch to use of heroin, the most potent and deadly of all the opiates.

Opiate Effects

EFFECTS	WITHDRAWAL
<ul style="list-style-type: none"> • Analgesia • Euphoria • Anxiolytic- calming • Sleep Inducing • Sensation of warmth • Constipation • Dry mucous membranes • Pupils constrict (pinpoint pupils) • Sedation/Sleepiness (nodding) • Depresses respiration 	<ul style="list-style-type: none"> • Pain • Dysphoria • Anxiety • Insomnia • Rhinorrhea (runny nose) • Diarrhea • Increases heart rate • Increases blood pressure • Pupils dilate

Methadone and buprenorphine (Suboxone) were developed to treat opiate addiction, and both are highly successful in reducing fatalities. Buprenorphine does not produce a high in tolerant users, and is difficult to

abuse because it produces withdrawal symptoms if the dose taken is too high. It is safe and effective for long term use, but stopping suboxone suddenly leads to high rates of relapse and death.

For a written assessment that lets you measure Opiate withdrawal, see the Withdrawal Assessments Appendix on page 93.

Inhalants

This is a class of drugs often abused by inhaling fumes or gases that come from a solid, a liquid or are otherwise expelled from a canister or container. There are no known medicinal uses for any substance that is abused in this manner that leads to addiction. It appears that any 'high' that may come from using these substances cannot be separated from the damage they cause the brain and body. The sensation produced by inhalants is similar to the giddiness that is experience after a period of twirling and spinning until falling.

Tobacco

This drug contains nicotine which activates one of the main regulating systems of the body and mind, the acetylcholine receptor in the “parasympathetic nervous system.” This key regulatory system counteracts the “flight or fight” activity of the “sympathetic nervous system.” Nicotine produces slight increases in pleasure, but is used for its calming and alerting effects. Because the dose can be “fine-tuned” to suit the user, it is one of the most addicting substances in the world.

For a written assessment that lets you measure Tobacco withdrawal, see the Withdrawal Assessments Appendix on page 89.

Prescription Drugs

It is important to understand that certain Prescription Drugs are powerfully addictive and therefore tightly controlled by various state and federal agencies. People who are not educated about this topic might believe that Prescription Drugs are somehow “safer” because they are prescribed by a doctor.

Nothing could be further from the truth, as death from Prescription Drug overdose (e.g. opiates, stimulants, and sedatives) now exceeds automobile accidents as the leading cause of accidental death in the U.S (2014).

“Prescription Drugs” are drugs that are used in medical settings for therapeutic goals, (e.g. sedation, sleep, pain relief, mental stimulation) and activation of the pleasure system is a “side effect.”

Many people who have legitimate pain needs (e.g. after surgery, or chronic back pain) develop tolerance (see chapter 4) for their pain medication which can result in “physical dependence.” This means the patient cannot stop using the drug without suffering uncomfortable to severe withdrawal symptoms. This dependency is often inaccurately described as “addiction.”

Users of prescription drugs can be classified in three groups: medical use with tolerance but no loss of control, medical use with abuse leading to loss of control (addiction), and non-medical use with dependency and loss of control (addiction).

Physical dependence is a common complication of drug use whether they are being taken for therapeutic purposes or not. The possibility of suffering from withdrawal leads dependent people to seek drugs. They are not necessarily seeking to get high in this case, but rather to avoid the misery of withdrawal.

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Withdrawal is an injury to the nervous system, and should be medically managed. Sadly, more often than not, people either don't seek out or are denied this critical component of treatment and consequently fail at their attempt to become drug free.

Ironically, abusing Prescription Drugs is one of the fastest ways to develop the disease of addiction. When addiction takes hold, people will do whatever it takes to obtain the drug they need regardless of the potential negative consequences.

Here is a good rule to remember: whatever symptom a prescription drug eliminates (e.g. pain, anxiety, sleeplessness) it will do the opposite when you become addicted and go through withdrawal.

The primary classifications of Prescription Drugs that are tightly controlled due to their high potential for overdose and addiction include Opiates (painkillers), Stimulants and Sedatives. More information on specific drugs can be found in the following pages in this chapter.

Please Note:

It is often difficult to find accurate, unbiased information about drugs. In the Webliography you can find many authoritative sources for finding out about drugs and how they work, and how drug abuse leads to high costs to the individual and the community. "Erowid.org" is a compendium of drugs and their effects, with scientific information and user experiences listed for hundreds of different drugs.

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