ALCOHOL

People drink to socialize, celebrate, and relax. Alcohol often has a strong effect on people—and throughout history, people have struggled to understand and manage alcohol's power. Why does alcohol cause people to act and feel differently? How much is too much? Why do some people become addicted while others do not?

Alcohol's effects vary from person to person, depending on a variety of factors, including: How much you drink; how often you drink; your age; your health status; and your family history.

While drinking alcohol is itself not necessarily a problem—drinking too much can cause a range of consequences and increase your risk for a variety of problems.

Consequences of Drinking Too Much

Alcohol enters your bloodstream as soon as you take your first sip. Alcohol's immediate effects can appear within about 10 minutes. As you drink, you increase your blood alcohol concentration (BAC) level, which is the amount of alcohol present in your bloodstream. The higher your BAC, the more impaired you become by alcohol's effects. These effects can include reduced inhibitions; slurred speech; motor impairment; confusion; memory problems; concentration problems; coma; breathing problems; and death.

Other risks of drinking can include car crashes and other accidents; risky behavior; violent behavior; and suicide and homicide.

People who drink too much over a long period of time may experience alcohol's longer-term effects, which can include Alcohol use disorder; health problems; and increased risk for certain cancers.

In addition, long-term alcohol use disorder may result in Wernicke-Korsakoff syndrome, a brain disorder due to thiamine (vitamin B1) deficiency. Lack of vitamin B1 is common in people with alcohol use disorder.

Alcohol's Effects on the Body

Drinking too much–on a single occasion or over time–can take a serious toll on your health. Here's how alcohol can affect your body:

Brain: Alcohol interferes with the brain's communication pathways and can affect the way the brain looks and works. These disruptions can change mood and behavior and make it harder to think clearly and move with coordination.

Heart: Drinking a lot over a long time or too much on a single occasion can damage the heart, causing problems including: Cardiomyopathy–stretching and drooping of heart muscle; Arrhythmias–irregular heartbeat; stroke; and high blood pressure.

Liver: Heavy drinking takes a toll on the liver and can lead to a variety of problems and liver inflammations including: Steatosis or fatty liver; alcoholic hepatitis; fibrosis; and cirrhosis.

Pancreas: Alcohol causes the pancreas to produce toxic substances that can eventually lead to pancreatitis, a dangerous inflammation and swelling of the blood vessels in the pancreas that prevents proper digestion.

Cancer: Based on extensive reviews of research studies, there is a strong scientific consensus of an association between alcohol drinking and several types of cancer. In its Report on Carcinogens, the National Toxicology Program of the US Department of Health and Human Services lists consumption of alcoholic beverages as a known human carcinogen. The research evidence indicates that the more alcohol a person drinks—particularly the more alcohol a person drinks regularly over time—the higher his or her risk of developing an alcohol-associated cancer. Based on data from 2009, an estimated 3.5 percent of all cancer deaths in the United States (about 19,500 deaths) were alcohol related.
Clear patterns have emerged between alcohol consumption and the development of the following types of cancer: Head and neck cancer; esophageal cancer; liver cancer; breast cancer; and colorectal cancer.

Immune System: Drinking too much can weaken your immune system, making your body a much easier target for disease. Chronic drinkers are more liable to contract diseases like pneumonia and tuberculosis than people who do not drink too much. Drinking a lot on a single occasion slows your body's ability to ward off infections–even up to 24 hours after getting drunk.

When is it time for treatment? When asked how alcohol problems are treated, people commonly think of 12-step programs or 28-day inpatient rehab but may have difficulty naming other options. In fact, there are a variety of treatment methods currently available, thanks to significant advances in the field over the past 60 years. Ultimately, there is no one-size-fits-all solution, and what may work for one person may not be a good fit for someone else. Simply understanding the different options can be an important first step.

ALCOHOL

Types of Treatment

Behavioral treatments are aimed at changing drinking behavior through counseling. They are led by health professionals and supported by studies showing they can be beneficial.

Three medications are currently approved in the United States to help people stop or reduce their drinking and prevent relapse. They are prescribed by a primary care physician or other health professional and may be used alone or in combination with counseling.

Alcoholics Anonymous (AA) and other 12-step programs provide peer support for people quitting or cutting back on their drinking. Combined with treatment led by health professionals, mutual-support groups can offer a valuable added layer of support.

Due to the anonymous nature of mutual-support groups, it is difficult for researchers to determine their success rates compared with those led by health professionals.

For anyone thinking about treatment, talking to a primary care physician is an important first step—he or she can be a good source for treatment referrals and medications. A primary care physician can also evaluate whether a patient's drinking pattern is risky; help craft a treatment plan; evaluate overall health; and assess if medications for alcohol may be appropriate.

References:

www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption
https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/treatment-alcohol-problems-finding-and-getting-help#1
http://www.narconon.org/drug-abuse/signs-symptoms-alcohol-use.html

Alcohol Abuse

- Alcohol consumption interferes with work, school, or other activities because of being hung over or sick.
- The person will drink despite knowing he or she will be driving, boating, or doing something else that would be risky when impaired.
- There are memory losses or blackouts.
- There are accidents or injuries after drinking.
- The person drinks even though there are physical conditions that would be worsened by drinking.
- The person can't control how much or when he or she drinks.
- The person needs to take in more alcohol to get the same buzz as before.
- Withdrawal symptoms set in when alcohol consumption is stopped, and the person may feel sick, sweaty, shaky, and anxious.
- The person gives up other activities they used to enjoy, so he or she can drink.
- A lot of time is spent either drinking or recovering from drinking.
- Even though there is harm to career, education, family, or other relationships, the person still drinks.
- The person drinks early in the day, stays drunk for a long time, or drinks alone.
- They try to conceal their drinking and make excuses.
- They consistently rely on alcohol to relieve stress or solve problems.
- The drinker would like to quit drinking but despite repeated attempts, still drinks.
- Alcohol becomes a focal point in life. The drinker must always make sure there is enough on hand, and social activities nearly always include drinking.

CANNABIS--MARIJUANA

What is marijuana? Marijuana refers to the dried leaves, flowers, stems, and seeds from the *Cannabis sativa* or *Cannabis indica* plant. The plant contains the mind-altering chemical THC and other similar compounds. Extracts can also be made from the cannabis plant.

Marijuana Extracts

Smoking THC-rich resins extracted from the marijuana plant is on the rise. People call this practice dabbing. These extracts come in various forms such as: Hash oil or honey oil—a gooey liquid; wax or budder—a soft solid with a texture like lip balm; and shatter—a hard, amber-colored solid. These extracts can deliver extremely large amounts of THC to the body, and their use has sent some people to the emergency room. Another danger is in preparing these extracts, which usually involves butane (lighter fluid). A number of people have caused fires and explosions and have been seriously burned from using butane to make extracts at home.

Marijuana is the most commonly used psychotropic drug in the United States, after alcohol. Its use is widespread among young people. According to the *Monitoring the Future* survey, rates of past year marijuana use among middle and high school students have remained steady, but the number of teens in 8th and 10th grades who say they use it daily has increased. With the growing popularity of vaping devices, teens have started vaping THC (the ingredient in marijuana that produces the high), with nearly 4% of 12th graders saying they vape THC daily. In addition, the number of young people who believe regular marijuana use is risky is decreasing.

Legalization of marijuana for medical use or adult recreational use in a growing number of states may affect these views.

How do people use marijuana? People smoke marijuana in hand-rolled cigarettes (*joints*) or in pipes or water pipes (*bongs*). They also smoke it in *blunts*—emptied cigars that have been partly or completely refilled with marijuana. To avoid inhaling smoke, some people are using vaporizers. These devices pull the active ingredients (including THC) from the marijuana and collect their vapor in a storage unit. A person then inhales the vapor, not the smoke. Some vaporizes use a liquid marijuana extract. People can mix marijuana in food (*edibles*), such as brownies, cookies, or candy, or brew it as a tea. A newly popular method of use is smoking or eating different forms of THC-rich resins.

How does marijuana affect the brain? Marijuana has both short- and long-term effects on the brain. THC acts on numerous areas in the brain.

Short-Term Effects

When a person smokes marijuana, THC quickly passes from the lungs into the bloodstream. The blood carries the chemical to the brain and other organs throughout the body. The body absorbs THC more slowly when the person eats or drinks it. In that case, the user generally feels the effects after 30 minutes to 1 hour. THC acts on specific brain cell receptors that ordinarily react to natural THC-like chemicals in the brain. These natural chemicals play a role in normal brain development and function. Marijuana over-activates parts of the brain that contain the highest number of these receptors. This causes the "high" that users feel. Other effects include altered senses (for example, seeing brighter colors); altered sense of time; changes in mood; impaired body movement; difficulty with thinking and problem-solving; impaired memory; hallucinations and delusions (when taken in high doses) and psychosis (risk is highest with regular use of high potency marijuana).

A Rise in Marijuana's THC Levels

The amount of THC in marijuana has been increasing steadily over the past few decades. For a person who's new to marijuana use, this may mean exposure to higher THC levels with a greater chance of a harmful reaction. Higher THC levels may explain the rise in emergency room visits involving marijuana use.

The popularity of edibles also increases the chance of users having harmful reactions. Edibles take longer to digest and produce a high. Therefore, people may consume more to feel the effects faster, leading to dangerous results.

Higher THC levels may mean a greater risk for addiction if people are regularly exposing themselves to high doses.

Long-Term Effects

Marijuana also affects brain development. When people begin using as teenagers, the drug may impair thinking, memory, and learning functions and affect how the brain builds connections between the areas necessary for these functions.

What are the other health effects of marijuana? Marijuana use may have a wide range of effects, both physical and mental.

Physical Effects

Breathing problems: Marijuana smoke irritates the lungs, and people who smoke marijuana frequently can have the same breathing problems as those who smoke tobacco. These problems include daily cough and phlegm, more frequent lung illness, and a higher risk of lung infections. Researchers so far haven't found a higher risk for lung cancer in people who smoke marijuana.

CANNABIS--MARIJUANA

Increased heart rate: Marijuana raises the heart rate for up to 3 hours after smoking. This effect may increase the chance of heart attack. Older people and those with heart problems may be at higher risk.

Problems with child development during and after pregnancy: One study found that about 20% of pregnant women 24-years-old and younger screened positive for marijuana. However, this study also found that women were about twice as likely to screen positive for marijuana use via a drug test than they state in self-reported measures. This suggests that self-reported rates of marijuana use in pregnant females is not an accurate measure of marijuana use and may be underreporting their use. Additionally, in one study of dispensaries, nonmedical personnel at marijuana dispensaries were recommending marijuana to pregnant women for nausea, but medical experts warn against it. This concerns medical experts because marijuana use during pregnancy is linked to lower birth weight and increased risk of both brain and behavioral problems in babies. If a pregnant woman uses marijuana, the drug may affect certain developing parts of the fetus's brain. Children exposed to marijuana in the womb have an increased risk of problems with attention, memory, and problem-solving compared to unexposed children. Some research also suggests that moderate amounts of THC are excreted into the breast milk of nursing mothers. With regular use, THC can reach amounts in breast milk that could affect the baby's developing brain. Other recent research suggests an increased risk of preterm births.

Intense nausea and vomiting: Regular, long-term marijuana use can lead to some people to develop Cannabinoid Hyperemesis Syndrome. This causes users to experience regular cycles of severe nausea, vomiting, and dehydration, sometimes requiring emergency medical attention.

Mental Effects

Long-term marijuana use has been linked to mental illness in some users, such as temporary *hallucinations*; temporary *paranoia*; and worsening symptoms in patients with *schizophrenia* (a severe mental disorder with symptoms such as hallucinations, paranoia, and disorganized thinking). Marijuana use has also been linked to other mental health problems such as depression; anxiety; and suicidal thoughts among teens. However, study findings have been mixed.

Is marijuana addictive? Marijuana use can lead to the development of a substance use disorder, a medical illness in which the person is unable to stop using even though it's causing health and social problems in their life. Severe substance use disorders are also known as addiction. Research suggests that between 9 and 30 percent of those who use marijuana may develop some degree of marijuana use disorder. People who begin using marijuana before age 18 are four to seven times more likely than adults to develop a marijuana use disorder. Many people who use marijuana long term and are trying to quit report mild withdrawal symptoms that make quitting difficult. These include grouchiness, sleeplessness, decreased appetite, anxiety, and cravings.

Signs of Marijuana Use

Physical Changes:

- Bloodshot eyes
- Fast heart rate
- Sleepy, lethargic
- Lack of coordination
- Increase cravings for snacks

Change in Actions:

- Confusion and lack of focus
- Unusually talkative
- Dropping studies or usual activities
- Misjudging time
- Secretiveness

How does marijuana affect a user's life? Compared to those who don't use marijuana, those who frequently use large amounts report the following: lower life satisfaction; poorer mental health; poorer physical health; and more relationship problems. People also report less academic and career success. For example, marijuana use is linked to a higher likelihood of dropping out of school. It's also linked to more job absences, accidents, and injuries.

What treatments are available for marijuana use disorder? No medications are currently available to treat marijuana use disorder, but behavioral support has been shown to be effective. Examples include therapy and motivational incentives (providing rewards to patients who remain drug-free). Continuing research may lead to new medications that help ease withdrawal symptoms, block the effects of marijuana, and prevent relapse.

References:

https://www.drugabuse.gov/publications/drugfacts/marijuana
http://www.narconon.org/drug-abuse/signs-symptoms-marijuana-use.html

HALLUCINOGENS: PHENCYCLIDINE (PCP)

What are hallucinogens? Hallucinogens are a diverse group of drugs that alter perception a person's awareness of their surroundings as well as their own thoughts and feelings. They are commonly split into two categories: classic hallucinogens (such as LSD) and dissociative drugs (such as PCP). Both types of hallucinogens can cause *hallucinations*, or sensations and images that seem real though they are not. Additionally, dissociative drugs can cause users to feel out of control or disconnected from their body and environment.

Some hallucinogens are extracted from plants or mushrooms, and some are synthetic (human-made). Historically, people have used hallucinogens for religious or healing rituals. More recently, people report using these drugs for social or recreational purposes, including to have fun, deal with stress, have spiritual experiences, or just to feel different.

Common classic hallucinogens include the following:

LSD (D-lysergic acid diethylamide) is one of the most powerful mind-altering chemicals. It is a clear or white odorless material made from lysergic acid, which is found in a fungus that grows on rye and other grains. LSD has many other street names, including acid, blotter acid, dots, and mellow yellow.

Psilocybin (4-phosphoryloxy-N,N-dimethyltryptamine) comes from certain types of mushrooms found in tropical and subtropical regions of South America, Mexico, and the United States. Some common names for psilocybin include little smoke, magic mushrooms, and shrooms.

Peyote (mescaline) *is* a small, spineless cactus with mescaline as its main ingredient. Peyote can also be synthetic. Common names for peyote are buttons, cactus, and mesc.

DMT (N,N-dimethyltryptamine) is a powerful chemical found naturally in some Amazonian plants. Ayahuasca is a tea made from such plants, and when taken in this form it is also known as hoasca, aya, and yagé. People can also make DMT in a lab. Synthetic DMT usually takes the form of a white crystalline powder that is smoked. A popular name for synthetic DMT is Dimitri.

251-NBOMe is a synthetic hallucinogen with similarities both to LSD and MDMA but that is much more potent. Developed for use in brain research, when sold on the street it is sometimes called N Bomb or 251.

Common examples of dissociative drugs include the following:

- **PCP (Phencyclidine)** was developed in the 1950s as a general anesthetic for surgery, but it is no longer used for this purpose due to serious side effects. PCP can be found in a variety of forms, including tablets or capsules; however, liquid and white crystal powder are the most common. PCP has various slang names, such as Angel Dust, Hog, Love Boat, and Peace Pill.

- **Ketamine** is used as a surgery anesthetic for humans and animals. Much of the ketamine sold on the streets comes from veterinary offices. It mostly sells as a powder or as pills, but it also available as an injectable liquid. Ketamine is snorted or sometimes added to drinks as a date-rape drug. Slang names for ketamine include Special K and Cat Valium.

- **Dextromethorphan (DXM)** is a cough suppressant and mucus-clearing ingredient in some over-the-counter cold and cough medicines (syrups, tablets, and gel capsules). Robo is a common slang name for DXM.

- **Salvia (Salvia divinorum)** is a plant common to southern Mexico and Central and South America. Salvia is typically ingested by chewing fresh leaves or by drinking their extracted juices. The dried leaves of salvia can also be smoked or vaporized and inhaled. Popular names for salvia are Diviner's Sage, Maria Pastora, Sally-D, and Magic Mint.

How do people use hallucinogens? People use hallucinogens in a wide variety of ways. Some are swallowed as pills or tablets, and others are swallowed as a liquid. Other uses include consuming raw or dried; brewing into a tea; snorting; injecting; inhaling, vaporizing, or smoking; and absorbing through the lining of the mouth using drug-soaked paper pieces.

How do hallucinogens affect the brain? Research suggests that hallucinogens work at least partially by temporarily disrupting communication between brain chemical systems throughout the brain and spinal cord. Some hallucinogens interfere with the action of the brain chemical serotonin, which regulates mood; sensory perception; sleep; hunger; body temperature; sexual behavior; and intestinal muscle control.

Dissociative hallucinogenic drugs interfere with the action of the brain chemical glutamate, which regulates pain perception, responses to the environment, emotion, and learning and memory.

HALLUCINOGENS: PHENCYCLIDINE (PCP)

Classic Hallucinogens Health Effects

Short-Term

Classic hallucinogens can cause users to see images, hear sounds, and feel sensations that seem real but do not exist. The effects generally begin within 20 to 90 minutes and can last as long as 12 hours in some cases (LSD) or as short as 15 minutes in others (synthetic DMT). Hallucinogen users refer to the experiences brought on by these drugs as "trips." If the experience is unpleasant, users sometimes call it a "bad trip."

Along with hallucinations, other short-term general effects include increased heart rate, nausea, intensified feelings and sensory experiences (such as seeing brighter colors), and changes in sense of time (for example, the feeling that time is passing by slowly).

Specific short-term effects of some hallucinogens include increased blood pressure, breathing rate, or body temperature, loss of appetite, dry mouth, sleep problems, spiritual experiences, feelings of relaxation, uncoordinated movements, excessive sweating, panic, *paranoia*—extreme and unreasonable distrust of others, *psychosis*—disordered thinking detached from reality, and bizarre behaviors.

Long-Term

Two long-term effects have been associated with use of classic hallucinogens, although these effects are rare.

- **Persistent psychosis**—a series of continuing mental problems, including visual disturbances, disorganized thinking, paranoia, and mood changes.
- **Hallucinogen Persisting Perception Disorder (HPDD)—** recurrences of certain drug experiences, such as hallucinations or other visual disturbances. These flashbacks often happen without warning and may occur within a few days or more than a year after drug use. These symptoms are sometimes mistaken for other disorders, such as stroke or a brain tumor. Symptoms that are sometimes mistaken for other disorders, such as stroke or a brain tumor.

Both conditions are seen more often in people who have a history of mental illness, but they can happen to anyone, even after using hallucinogens one time. For HPDD, some antidepressant and antipsychotic medications can be used to improve mood and treat psychosis. Behavioral therapies can be used to help people cope with fear or confusion associated with visual disturbances.

Dissociative Drugs Health Effects

Short-Term

Dissociative drug effects can appear within a few minutes and can last several hours in some cases; some users report experiencing drug effects for days.

Effects depend on how much is used. In low and moderate doses, dissociative drugs can cause numbness; disorientation and loss of coordination; hallucinations; and an increase in blood pressure, heart rate, and body temperature.

In high doses, dissociative drugs can cause memory loss, panic and anxiety, seizures, psychotic symptoms, amnesia, inability to move, mood swings, and trouble breathing.

Long-Term

More research is needed on the long-term effects of dissociative drugs. Researchers do know repeated use of PCP can result in addiction. Other long-term effects may continue for a year or more after use stops, including speech problems, memory loss, weight loss, anxiety, and depression and suicidal thoughts.

Are hallucinogens addictive? Evidence suggests that certain hallucinogens can be addictive, and that people can develop a tolerance to them.

For example, LSD is not considered an addictive drug because it doesn't cause uncontrollable drug-seeking behavior. However, LSD does produce tolerance, so some users who take the drug repeatedly must take higher doses to achieve the same effect. This is an extremely dangerous practice, given the unpredictability of the drug. In addition, LSD produces tolerance to other hallucinogens, including psilocybin.

On the other hand, PCP is a hallucinogen that can be addictive. People who stop repeated use of PCP experience drug cravings, headaches, and sweating as common withdrawal symptoms.

More research is needed on the tolerance or addiction potential of a variety of hallucinogens.

How can people get treatment for addiction to hallucinogens? There are no FDA-approved medications to treat addiction to hallucinogens. While behavioral treatments can be helpful for patients with a variety of addictions, scientists need more research to find out if behavioral therapies are effective for addiction to hallucinogens.

Reference:
https://www.drugabuse.gov/publications/drugfacts/hallucinogens

09/01/2020

OPIOIDS: HEROIN

What is heroin? Heroin is an opioid drug made from morphine, a natural substance taken from the seed pod of the various opium poppy plants grown in Southeast and Southwest Asia, Mexico, and Colombia. Heroin can be a white or brown powder, or a black sticky substance known as black tar heroin. Other common names for heroin include *big H*, *horse*, *hell dust,* and *smack*.

How is heroin used? People inject, sniff, snort, or smoke heroin. Some people mix heroin with crack cocaine, a practice called *speedballing*.

What are the effects of heroin? Heroin enters the brain rapidly and binds to opioid receptors on cells located in many areas, especially those involved in feelings of pain and pleasure and in controlling heart rate, sleeping, and breathing.

Short-Term

People who use heroin report feeling a "rush" (a surge of pleasure, or euphoria). However, there are other common effects, including dry mouth; warm flushing of the skin; heavy feeling in the arms and legs; nausea and vomiting; severe itching; clouded mental functioning; and going "on the nod," a back-and-forth state of being conscious and semiconscious.

Long-Term

People who use heroin over the long term may develop insomnia; collapsed veins for people who inject the drug; damaged tissue inside the nose for people who sniff or snort it; infection of the heart lining and valves; abscesses (swollen tissue filled with pus); constipation and stomach cramping; liver and kidney disease; lung complications, including pneumonia; mental disorders such as depression and antisocial personality disorder; sexual dysfunction for men; and irregular menstrual cycles for women.

Other Effects

Heroin often contains additives, such as sugar, starch, or powdered milk, that can clog blood vessels leading to the lungs, liver, kidneys, or brain, causing permanent damage. Also, sharing drug injection equipment and having impaired judgment from drug use can increase the risk of contracting infectious diseases such as HIV and hepatitis.

People who inject drugs such as heroin are at high risk of contracting the HIV and hepatitis C (HCV) virus. These diseases are transmitted through contact with blood or other bodily fluids, which can occur when sharing needles or other injection drug use equipment. HCV is the most common bloodborne infection in the Unites States. HIV (and less often HCV) can also be contracted during unprotected sex, which drug use makes more likely.

Heroin Addiction Signs

- Inexplicable weight loss
- Wearing long-sleeved attire, even in warmer weather
- Extended periods of sleeping
- Needles
- Changes in behavior
- Roller-coastering moods
- A chronic runny nose
- Dry mouth
- Abscesses and skin infections
- Spoons with bent handles or burn marks

How is heroin addiction treated? A range of treatments including medicines and behavioral therapies are effective in helping people stop heroin use. It's important to match the best treatment approach to meet the particular needs of each individual patient.

There are medicines being developed to help with the withdrawal process. The FDA approved lofexidine, a non-opioid medicine designed to reduce opioid withdrawal symptoms.

Medicines to help people stop using heroin include buprenorphine and methadone. They work by binding to the same opioid receptors in the brain as heroin, but more weakly, reducing cravings and withdrawal symptoms. Another treatment is naltrexone, which blocks opioid receptors and prevents opioid drugs from having an effect. A NIDA study found that once treatment is initiated, both a buprenorphine/naloxone combination and an extended release naltrexone formulation are similarly effective in addiction. Because full detoxification is necessary for treatment with naloxone, initiating treatment among active users was difficult, but once detoxification was complete, both medications had similar effectiveness.

Behavioral therapies for heroin addiction include methods called cognitive-behavioral therapy and contingency management. Cognitive-behavioral therapy helps modify the patient's drug-use expectations and behaviors, and helps effectively manage triggers and stress. Contingency management provides motivational incentives, such as vouchers or small cash rewards for positive behaviors such as staying drug-free. These behavioral treatment approaches are especially effective when used along with medicines.

References:
https://www.drugabuse.gov/publications/drugfacts/heroin
https://www.narconon.org/blog/heroin-addiction/10-signs-of-hidden-heroin-addiction/

STIMULANTS: COCAINE

What is cocaine? Cocaine is a powerfully addictive stimulant drug made from the leaves of the coca plant native to South America. Although health care providers can use it for valid medical purposes, such as local anesthesia for some surgeries, recreational cocaine use is illegal. As a street drug, cocaine looks like a fine, white, crystal powder. Street dealers often mix it with things like cornstarch, talcum powder, or flour to increase profits. They may also mix it with other drugs such as the stimulant amphetamine, or synthetic opioids, including fentanyl. Adding synthetic opioids to cocaine is especially risky when people using cocaine don't realize it contains this dangerous additive. Increasing numbers of overdose deaths among cocaine users might be related to this tampered cocaine. Popular nicknames for cocaine include: Blow, Coke, Crack, Rock, and Snow.

How do people cocaine used? People snort cocaine powder through the nose, or they rub it into their gums. Others dissolve the powder and inject it into the bloodstream. Some people inject a combination of cocaine and heroin, called a Speedball.

Another popular method of use is to smoke cocaine that has been processed to make a rock crystal (also called "freebase cocaine"). The crystal is heated to produce vapors that are inhaled into the lungs. This form of cocaine is called Crack, which refers to the crackling sound of the rock as it's heated. Some people also smoke Crack by sprinkling it on marijuana or tobacco, and smoke it like a cigarette.

People who use cocaine often take it in binges—taking the drug repeatedly within a short time, at increasingly higher doses—to maintain their high.

How does cocaine affect the brain? Cocaine increases levels of the natural chemical messenger *dopamine* in brain circuits related to the control of movement and reward.

Normally, dopamine recycles back into the cell that released it, shutting off the signal between nerve cells. However, cocaine prevents dopamine from being recycled, causing large amounts to build up in the space between two nerve cells, stopping their normal communication. This flood of dopamine in the brain's reward circuit strongly reinforces drug-taking behaviors, because the reward circuit eventually adapts to the excess of dopamine caused by cocaine, and becomes less sensitive to it. As a result, people take stronger and more frequent doses in an attempt to feel the same high, and to obtain relief from withdrawal.

Short-Term Effects

Short-term health effects of cocaine include extreme happiness and energy; mental alertness; hypersensitivity to sight, sound, and touch; irritability; and paranoia—extreme and unreasonable distrust of others.

Some people find that cocaine helps them perform simple physical and mental tasks more quickly, although others experience the opposite effect. Large amounts of cocaine can lead to bizarre, unpredictable, and violent behavior.

Cocaine's effects appear almost immediately and disappear within a few minutes to an hour. How long the effects last and how intense they are depend on the method of use. Injecting or smoking cocaine produces a quicker and stronger but shorter-lasting high than snorting. The high from snorting cocaine may last 15 to 30 minutes. The high from smoking may last 5 to 10 minutes.

Long-Term Effects

Some long-term health effects of cocaine depend on the method of use and include the following: *snorting:* loss of smell, nosebleeds, frequent runny nose, and problems with swallowing; *smoking:* cough, asthma, respiratory distress, and higher risk of infections like pneumonia; *consuming by mouth:* severe bowel decay from reduced blood flow; *needle injection:* higher risk for contracting HIV, hepatitis C, and other bloodborne diseases, skin or soft tissue infections, as well as scarring or collapsed veins.

However, even people involved with non-needle cocaine use place themselves at a risk for HIV because cocaine impairs judgment, which can lead to risky sexual behavior with infected partners.

Other long-term effects of cocaine use include being malnourished, because cocaine decreases appetite, and movement disorders, including Parkinson's disease, which may occur after many years of use. In addition, people report irritability and restlessness from cocaine binges, and some also experience severe paranoia, in which they lose touch with reality and have *auditory hallucinations*—hearing noises that aren't real.

What are the other health effects of cocaine? Other health effects of cocaine use include constricted blood vessels; dilated pupils; nausea; raised body temperature and blood pressure; fast or irregular heartbeat; tremors and muscle twitches; and restlessness.

STIMULANTS: COCAINE

Can a person overdose on cocaine? A person can overdose on cocaine. An overdose occurs when a person uses enough of a drug to produce serious adverse effects, life-threatening symptoms, or death. An overdose can be intentional or unintentional.

Death from overdose can occur on the first use of cocaine or unexpectedly thereafter. Many people who use cocaine also drink alcohol at the same time, which is particularly risky and can lead to overdose. Others mix cocaine with heroin, another dangerous—and deadly—combination.

Some of the most frequent and severe health consequences of overdose are irregular heart rhythm, heart attacks, seizures, and strokes. Other symptoms of cocaine overdose include difficulty breathing, high blood pressure, high body temperature, hallucinations, and extreme agitation or anxiety.

How can people get treatment for cocaine addiction? Behavioral therapy may be used to treat cocaine addiction. Examples include: cognitive-behavioral therapy; contingency management or motivational incentives—providing rewards to patients who remain substance free; therapeutic communities—drug-free residences in which people in recovery from substance use disorders help each other to understand and change their behaviors; and community based recovery groups, such as 12-step programs.

While no government-approved medicines are currently available to treat cocaine addiction, researchers are testing some treatments that have been used to treat other disorders, including: disulfiram (used to treat alcoholism); modanifil (used to treat *narcolepsy*—a disorder characterized by uncontrollable episodes of deep sleep); lorcaserin (used to treat obesity); and buprenorphine (used to treat opioid addiction).

References:

https://www.drugabuse.gov/drugs-abuse/cocaine
http://www.narconon.org/drug-abuse/signs-symptoms-cocaine-use.html

Physical Signs

Appearance:

- Dilated pupils
- Runny nose (snorting)
- Nosebleeds (snorting)
- Track marks (injecting)
- Burned lips or fingers (smoking)

Heart:

- Fast heart rate
- Constricted blood vessels
- Enlarged heart
- Heart attacks
- Cardiac arrest

Mental State:

- Euphoria
- Overconfidence
- Unusual excitement
- Aggressiveness
- Paranoia
- Poor judgment
- Delusions
- Hallucinations

After Long Use or a Binge:

- Depression
- Agitation
- Intense cravings
- Need for higher doses
- Apathy
- Exhaustion
- Long periods of sleep

STIMULANTS: METHAMPHETAMINES

What is methamphetamine? Methamphetamine is a powerful, highly addictive stimulant that affects the central nervous system. Crystal methamphetamine is a form of the drug that looks like glass fragments or shiny, bluish-white rocks. It is chemically similar to amphetamine, a drug used to treat attention-deficit hyperactivity disorder (ADHD) and narcolepsy, a sleep disorder. Other common names for methamphetamine include *blue, crystal, ice, meth,* and *speed*.

How is methamphetamine abused? Methamphetamine is taken by smoking, swallowing (pill), snorting, or injecting the powder that has been dissolved in water/alcohol. Because the "high" from the drug both starts and fades quickly, people often take repeated doses in a "binge and crash" pattern. In some cases, people take methamphetamine in a form of binging known as a "run," giving up food and sleep while continuing to take the drug every few hours for up to several days.

Health Effects

Methamphetamine increases the amount of the natural chemical dopamine in the brain. Dopamine is involved in body movement, motivation, and reinforcement of rewarding behaviors. The drug's ability to rapidly release high levels of dopamine in reward areas of the brain strongly reinforces drug-taking behavior, making the user want to repeat the experience.

Short-Term

Taking even small amounts of methamphetamine can result in many of the same health effects as those of other stimulants, such as cocaine or amphetamines. These include increased wakefulness and physical activity, decreased appetite, faster breathing, rapid and/or irregular heartbeat, and increased blood pressure and body temperature.

How do Manufacturers Make Methamphetamine?

Currently, most methamphetamine in the United States is produced by transactional criminal organizations (TCOs) in Mexico. This methamphetamine is highly pure, potent, and low in price. The drug can be easily made in small clandestine laboratories, with relatively inexpensive over-the-counter ingredients such as pseudoephedrine, a common ingredient in cold medications. To curb this kind of production, the law requires pharmacies and other retail stores to keep a purchase record of products containing pseudoephedrine and take steps to limit sales.

Methamphetamine production also involves a number of other very dangerous chemicals. Toxic effects from these chemicals can remain in the environment long after the lab has been shut down, causing a wide range of health problems for people living in the area. These chemicals can also result in deadly lab explosions and house fires.

Long-Term

People who inject methamphetamine are at increased risk of contracting infectious diseases such as HIV and Hepatitis B and C. These diseases are transmitted through contact with blood or other bodily fluids that can remain on drug equipment. Methamphetamine use can also alter judgment and decision-making leading to risky behaviors, such as unprotected sex, which also increases risk for infection.

Methamphetamine use may worsen the progression of HIV/AIDS and its consequences. Studies indicate that HIV causes more injury to nerve cells and more cognitive problems in people who use methamphetamine than it does in people who have HIV and don't use the drug. Cognitive problems are those involved with thinking, understanding, learning, and remembering.

Long-term methamphetamine use has many other negative consequences, including extreme weight loss; addiction; severe dental problems ("meth mouth"); intense itching, leading to skin sores from scratching; anxiety; changes in brain structure and function; confusion; memory loss; sleeping problems; violent behavior; *paranoia*—extreme and unreasonable distrust of others; and *hallucinations*—sensations and images that seem real though they aren't.

In addition, continued methamphetamine use causes changes in the brain's dopamine system that are associated with reduced coordination and impaired verbal learning. In studies of people who used methamphetamine over the long term, severe changes also affected areas of the brain involved with emotion and memory. This may explain many of the emotional and cognitive problems seen in those who use methamphetamine.

Although some of these brain changes may reverse after being off the drug for a year or more, other changes may not recover even after a long period of time. A recent study even suggests that people who once used methamphetamine have an increased the risk of developing Parkinson's disease, a disorder of the nerves that affects movement.

Is methamphetamine addictive? Methamphetamine is highly addictive. When people stop taking it, withdrawal symptoms can include anxiety; fatigue; severe depression; psychosis; and intense drug cravings.

STIMULANTS: METHAMPHETAMINES

How is methamphetamine addiction treated? While research is underway, there are currently no government-approved medications to treat methamphetamine addiction. The good news is that methamphetamine misuse can be prevented and addiction to the drug can be treated with behavioral therapies. The most effective treatments for methamphetamine addiction so far are behavioral therapies, such as cognitive-behavioral therapy, which helps patients recognize, avoid, and cope with the situations likely to trigger drug use and motivational incentives, which uses vouchers or small cash rewards to encourage patients to remain drug-free.

Research also continues toward development of medicines and other new treatments for methamphetamine use, including vaccines, and noninvasive stimulation of the brain using magnetic fields. People can and do recover from methamphetamine addiction if they have ready access to effective treatments that address the multitude of medical and personal problems resulting from long-term use.

References:

https://www.drugabuse.gov/publications/drugfacts/methamphetamine
https://www.narconon.org/drug-abuse/signs-symptoms-meth-use.html

Signs of Methamphetamine Abuse

- Do not sleep for long periods
- Loses his or her appetite
- Loses large amounts of weight
- May appear unusually active
- Can seem nervous and anxious