

HOW CAN I TELL IF MY CHILD HAS BEEN USING MARIJUANA?

CAN A PERSON BECOME ADDICTED TO MARIJUANA?

HOW DOES MARIJUANA AFFECT DRIVING?

HOW LONG DOES MARIJUANA STAY IN THE USER'S BODY?

WHAT ARE THE SHORT-TERM EFFECTS OF MARIJUANA USE?

DOES MARIJUANA LEAD TO THE USE OF OTHER DRUGS?

HOW MANY PEOPLE SMOKE MARIJUANA?

CAN MARIJUANA AFFECT MY CHILD'S GRADES?

CAN A USER HAVE A BAD REACTION?

WHAT ARE THE EFFECTS OF MARIJUANA?

MARIJUANA: FACTS PARENTS NEED TO KNOW

Revised

HOW CAN I PREVENT MY CHILD FROM GETTING INVOLVED WITH MARIJUANA?

WHAT ABOUT EFFECTS ON PREGNANCY?

DO MARIJUANA USERS LOSE THEIR MOTIVATION?

HOW IS MARIJUANA USED?

WHAT ARE THE LONG-TERM EFFECTS OF MARIJUANA USE?

WHAT DOES MARIJUANA DO TO THE BRAIN?

CAN MARIJUANA BE USED AS MEDICINE?

ARE THERE TREATMENTS TO HELP MARIJUANA USERS?

A Letter to Parents

We at the National Institute on Drug Abuse (NIDA) are pleased to offer these two short booklets for parents and children to review the scientific facts about marijuana: (1) *Marijuana: Facts Parents Need to Know* and (2) *Marijuana: Facts for Teens*. Although it is best to talk about drugs when children are young—since that is when drug use often begins—it is never too late to start the conversation.

Marijuana remains the most abused illegal substance among youth. By the time they graduate high school, about 46 percent of U.S. teens will have tried marijuana at least once in their lifetime. Although use among teens dropped dramatically in the previous decade (to a prevalence of about 12.4 percent for past-month use in 2007), adolescent marijuana use is again on the upswing. In 2013, nearly 23 percent of high school seniors were current marijuana users, and 6.5 percent used marijuana daily. The annual Monitoring the Future survey, which has been tracking teen attitudes and drug use since 1975, shows that use of marijuana over time is directly related to how safe teens perceive the drug to be; currently the number of teens who think marijuana users risk harming themselves is declining. This, despite growing scientific evidence that marijuana use during the teen years can permanently lower a person's IQ and interfere with other aspects of functioning and well-being.

Survey results show that we still have a long way to go in our efforts to prevent marijuana use and avoid the toll it can take on a young person's life. NIDA recognizes that parents have an important role in this effort and can strongly influence their children's attitudes and behaviors. However, the subject of marijuana use has become increasingly difficult to talk about—in part, because of the mixed messages being conveyed by the passage of medical marijuana laws and legalization of marijuana in some States. In addition, many parents of today's teens may have used marijuana when they were younger, which could make talking openly and setting definitive rules about its use more difficult.

Talking to our children about drug use is not always easy, but it is crucial. You can also get involved in your community and seek out drug abuse prevention programs that you and your child can participate in together. Sometimes, just beginning the conversation is the hardest part. I hope these booklets can help.

A handwritten signature in black ink, appearing to read 'Nora D. Volkow', with a long horizontal line extending to the left.

Nora D. Volkow, M.D.

Director

National Institute on Drug Abuse

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A young woman with long dark hair is looking towards a man on the left. She has a surprised or concerned expression. The man is partially visible, wearing a white shirt. The background is blurred, suggesting an indoor setting. A green banner with white text is overlaid on the bottom half of the image.

I. Talking to Your Kids Communicating the Risks

Why do young people use marijuana? Children and teens start using marijuana for many reasons. Curiosity and the desire to fit into a social group are common ones. Some teens have a network of friends who use drugs and urge them to do the same (peer pressure). Those who have already begun to smoke cigarettes or use alcohol—or both—are at heightened risk for marijuana use as well. And children and teens who have untreated mental disorders (such as ADHD, conduct disorder, or anxiety) or who were physically or sexually abused are at heightened risk of using marijuana and other drugs at an early age.

For some, drug use begins as a means of coping—to deal with anxiety, anger, depression, boredom, and other unpleasant feelings. But in fact, being high can be a way of simply avoiding the problems and challenges of growing up. Research also suggests that family members' use of alcohol and drugs plays a strong role in whether children/teens start using drugs. Parents, grandparents, and older brothers and sisters are models that children follow.

So indeed, all aspects of a teen's environment—home, school, and neighborhood—can influence whether they will try drugs.

How can I prevent my child from using marijuana? There is no magic bullet for preventing teen drug use. But research shows parents have a big influence on their teens, even when it doesn't seem that way! So talk openly with your children and stay actively engaged in their lives. To help you get started, below are some brief summaries of marijuana research findings that you can share

with your kids to help them sort out fact from myth, and help them make the soundest decisions they can. These facts were chosen because they reflect the questions and comments that we receive from teens every day on our teen Web site and blog—what teens care about. Following this brief summary of research evidence, FAQs and additional resources are provided to equip you with even more information.

Did you know...

Marijuana can be addictive. Repeated marijuana use can lead to addiction—which means that people often cannot stop when they want to, even though it undermines many aspects of their lives. Marijuana is estimated to produce addiction in approximately 9 percent, or about 1 in 11, of those who use it at least once. This rate increases to about 1 in 6, or 17 percent, for users who start in their teens, and 25–50 percent among daily users. Moreover, 4.3 million of the more than 7.3 million people who abused or were addicted to any illegal drug in 2012 were dependent on marijuana. And among youth receiving substance abuse treatment, marijuana accounts for the largest percentage of admissions: 74 percent among those 12–14, and 76 percent among those 15–17.

Marijuana is unsafe if you are behind the wheel.

Marijuana compromises judgment and affects many other skills required for safe driving: alertness, concentration, coordination, and reaction time. Marijuana use makes it difficult to judge distances and react to signals and sounds on the road. Marijuana is the most commonly identified illegal drug in fatal accidents (showing up in the bloodstream of about 14 percent of drivers),

sometimes in combination with alcohol or other drugs. By itself, marijuana is believed to roughly double a driver's chances of being in an accident, and the combination of marijuana and even small amounts of alcohol is even more dangerous—more so than either substance by itself.

Marijuana is associated with school failure.

Marijuana has negative effects on attention, motivation, memory, and learning that can persist after the drug's immediate effects wear off—especially in regular users. Someone who smokes marijuana daily may be functioning at a reduced intellectual level most or all of the time. Recent research even suggests that people who begin using marijuana heavily as teens may permanently lose an average of 8 points in IQ by mid-adulthood. Compared with their nonsmoking peers, students who smoke marijuana tend to get lower grades and are more likely to drop out of high school. Long-term marijuana users report decreased overall life satisfaction, including diminished mental and physical health, memory and relationship problems, lower salaries, and less career success.

High doses of marijuana can cause psychosis or panic during intoxication. Although scientists do not yet know whether the use of marijuana causes mental illness, high doses can induce an acute psychosis (disturbed perceptions and thoughts, including paranoia) or panic attacks. In people who already have schizophrenia, marijuana use can worsen psychotic symptoms, and evidence so far suggests there is a link between early marijuana use and an increased risk of psychosis among those with a preexisting vulnerability for the disease.



**II. Want to know more?
Some FAQs about
Marijuana**

What is marijuana? Are there different kinds?

Marijuana is a green, brown, or gray mixture of dried, shredded leaves, stems, seeds, and flowers of the hemp plant (*Cannabis sativa*). Cannabis is a term that refers to marijuana and other drugs made from the same plant. Strong forms of cannabis include sinsemilla (sin-seh-me-yah), hashish (“hash” for short), and hash oil. There are many different slang terms for marijuana and, as with other drugs, they change quickly and vary from region to region. But no matter its form or label, all cannabis preparations contain the mind-altering (psychoactive) chemical THC (delta-9-tetrahydrocannabinol). They also contain more than 400 other chemicals.

How is marijuana used?

Most users roll loose marijuana into a cigarette (called a joint) or smoke it in a pipe or a water pipe, sometimes referred to as a bong. Some users mix marijuana into foods, or use it to brew a tea. Another method is to slice open a cigar and replace the tobacco with marijuana, creating what is known as a blunt. Marijuana cigarettes or blunts sometimes are dipped in PCP or mixed with other substances, including crack cocaine.

How many people use marijuana?

Before the 1960s, many Americans had never heard of marijuana, but today it is the most often used illegal drug in the United States. According to a 2012 national survey, more than 111 million Americans over the age of 12 had tried marijuana at least once, and nearly 19 million had used the drug in the month before the survey.

Researchers have found that the use of marijuana and other drugs usually peaks in the late teens and early twenties, and then declines in later years. Therefore, marijuana use among young people remains a natural concern for parents and the focus of continuing research, particularly regarding its impact on brain development, which continues into a person's early twenties.

NIDA's annual Monitoring the Future survey reports that among students from 8th, 10th, and 12th grades, marijuana use has increased over the past 5 years; this increased use parallels a softening of perceptions about marijuana's risks. In 2013, 12.7 percent of 8th graders reported marijuana use in the past year, and 7 percent were current (past-month) users. Among 10th graders, 29.8 percent had used marijuana in the past year, and 18 percent were current users. Among 12th graders, past year use remained the same and 22.7 percent were current users.

How does marijuana work?

When marijuana is smoked, its effects are felt almost immediately. This is because THC (marijuana's psychoactive ingredient) rapidly reaches every organ in the body, including the brain. The effects of smoked marijuana can last from 1 to 3 hours. If consumed in foods, the effects come on slower and may not last as long.

Since 1975, the Monitoring the Future (MTF) survey has measured drug, alcohol, and cigarette use and related attitudes among adolescent students nationwide. Drug use is measured across three time periods: lifetime, past year, and past month; for some drugs, daily use is also reported. Initially, the survey included 12th graders only, but in 1991 it was expanded to include 8th and 10th graders.



More than

45%

OF TEENS

have used marijuana
before they graduate
from high school.

Marijuana works through THC attaching to specific sites on nerve cells in the brain and in other parts of the body. These sites are called cannabinoid receptors (CBRs) because they were discovered by scientists trying to understand how marijuana, or cannabis, exerts its effects. THC is chemically similar to a class of chemicals that our body produces naturally, called endocannabinoids, and marijuana disrupts the normal function of this system. CBRs are found in brain areas that influence pleasure, memory, thinking, concentration, movement, coordination, appetite, pain, and sensory and time perception. Because of this system's wide-ranging influence over many critical functions, it is not surprising that marijuana can have multiple effects—not just on the brain, but on a user's general health as well. Some of these effects are related to acute intoxication while others may accumulate over time to cause more persistent problems, including addiction.

What are marijuana's short-term effects?

The following are some effects that marijuana use can produce:

Euphoria (high). THC activates the reward system in the same way that nearly all drugs of abuse do: by stimulating brain cells to release the chemical dopamine.

Memory impairment. THC alters how information is processed in the hippocampus, a brain area related to memory; regular use can affect learning skills and academic achievement, including short-term memory and complex tasks requiring concentration.

Adverse mental reactions in some. These include anxiety, fear, distrust, or panic, particularly in new users or those taking it in a strange setting; some may even experience psychosis, which includes hallucinations, delusions, paranoia, and loss of the sense of personal identity.

Physical changes. Users may have red or blood-shot eyes, increased appetite ("the munchies"), increased heart rate, and sleep issues.

What determines how marijuana affects an individual?

How important is marijuana potency?

Like any other drug, marijuana's effects on an individual depend on a number of factors, including the person's previous experience with the drug (or other drugs), biology (e.g., genes), gender, how the drug is taken (smoked versus orally), and the drug's

potency. Potency—determined by the amount of THC contained in the marijuana—has received much attention lately because it has been increasing steadily. In 2012, THC concentrations in marijuana averaged 14.5 percent, compared to around 4 percent in the 1980s. Some current strains contain as much as 30 percent THC. This is based on analyses of marijuana samples confiscated by law enforcement agencies.

So what does this actually mean? For a new user, it may mean exposure to higher concentrations of THC, with a greater chance of an adverse or unpredictable reaction. In fact, increases in potency may account for the rise in emergency department visits involving marijuana use. For experienced users, it may mean a greater risk for addiction if they are exposing themselves to high doses on a regular basis. However, the full range of consequences associated with marijuana's higher potency is not well understood, nor is it known whether marijuana users adjust for the increase in potency by using less.



MARIJUANA CAN BE

ADDICTIVE.

About 1 in 6 people who start smoking in their teens, and 25–50 percent of people who use it every day, become addicted to marijuana.

Does using marijuana lead to other drug use?

Long-term studies of high school students' patterns of drug use show that most young people who use other drugs have tried marijuana, alcohol, or tobacco first. For example, young people who have used marijuana are at greater risk of using cocaine than are those who have not used marijuana. We also know from animal studies that rats previously administered THC show heightened brain activation not only when further exposed to THC but also when exposed to other drugs such as morphine—a phenomenon called cross-sensitization, which is not unique to marijuana. Researchers are now examining the possibility that exposure to marijuana in adolescence may cause changes in the brain that make a person more vulnerable to subsequent marijuana addiction or to the risk of becoming addicted to other drugs, such as alcohol, opioids, or cocaine.

It is important to point out, however, that research has not fully explained any of these effects, which are complex and likely to involve a combination of biological, social, and psychological factors.

Does smoking marijuana cause lung cancer?

We do not know yet. Studies have not found an increased risk of lung cancer in marijuana smokers, as compared with nonsmokers. However, marijuana smoke does irritate the lungs and increases the likelihood of other respiratory problems through exposure to carcinogens and other toxins. Repeated exposure to marijuana smoke can lead to daily cough

A grayscale background image of medical equipment, including an IV drip chamber and tubing, with a hand holding a syringe in the lower left corner.

In 2011, marijuana
was reported in over

455,000

**EMERGENCY
DEPARTMENT
VISITS IN THE U.S.**

Over 13 percent involved
people between the
ages of 12 and 17.

Marijuana users may
have many of the same

RESPIRATORY

PROBLEMS

tobacco smokers have,
such as chronic cough
and more frequent
chest colds.

and excess phlegm production, more frequent acute chest illnesses, and a greater risk of lung infections. Marijuana also affects the immune system, although the implications for cancer are unclear. Moreover, many people who smoke marijuana also smoke cigarettes, which do cause cancer, and quitting tobacco can be harder if the person uses marijuana as well.

Since marijuana can be addictive, can it produce withdrawal symptoms when someone quits?

Yes. When they stop using the drug, many long-term users experience symptoms that are similar in type and severity to those of nicotine withdrawal—irritability, sleeping difficulties, anxiety, and craving—which often prompt relapse. Withdrawal symptoms peak a few days after use has stopped and dissipate within about 2 weeks. And while these symptoms do not pose an immediate threat to health, they can make it hard for someone to keep from using the drug.

Is "Spice" (or "synthetic marijuana") as harmful as real marijuana?

Yes. Spice, which is sometimes also called K2 or Fake Weed, consists of shredded dried plant materials that have been sprayed with chemicals designed to act on the same brain-cell receptors as THC, but are often much more powerful and unpredictable. Spice products are labeled "not fit for human consumption" and many are now illegal, but their manufacturers are constantly creating new chemical compounds to evade legal restrictions. Their side effects, like the ingredients, often vary, but emergency rooms report large numbers of young people appearing with rapid heart rates, vomiting, agitation, and hallucinations after using these substances.

Are there treatments for people addicted to marijuana?

Currently, no FDA-approved medications exist for treating marijuana addiction, although promising research is under way to find medications for treating withdrawal symptoms and alleviating craving and other subjective effects of marijuana. Behavioral therapies are available and are similar to those used for treating other substance addiction. These include motivational enhancement to engage people in treatment; cognitive behavioral therapies to teach strategies for avoiding drug use and its triggers and for effectively managing stress; and motivational incentives, which provide vouchers or small cash rewards for sustained drug abstinence. Unfortunately, treatment success rates are rather modest, indicating that marijuana addiction, like other addictions, may need a long-term care approach that varies treatment intensity in line with the person's changing needs over time.

What are other risks related to marijuana that my child should be aware of?

Here are a few that you or your child may not have thought about:

- As with most drugs, marijuana use interferes with judgment, which can mean a greater chance of engaging in risky behaviors and experiencing their negative consequences (such as acquiring a sexually transmitted disease, driving while intoxicated, or riding with someone else who is intoxicated and getting into a car crash).
- In addition to psychosis, regular marijuana use has been associated with several psychological effects, including depression, anxiety, suicidal thoughts, and personality disturbances. One of the effects most frequently reported is an



MARIJUANA


AFFECTS

THE BRAIN

and leads to impaired short-term memory, perception, judgment, and motor skills.

“amotivational syndrome” characterized by a diminished or lost drive to engage in formerly rewarding activities. Whether this syndrome is a disorder unto itself or is a subtype of depression associated with marijuana use remains controversial, and whether marijuana causes it or is a response to it is still not understood. More research is needed to confirm and better understand these linkages.

- Marijuana use during pregnancy may harm the developing fetus. Research suggests that babies born to women who used marijuana during their pregnancies may have subtle neurological alterations and, later in childhood, can show diminished problem-solving skills, memory, and attention. However, the fact that pregnant women who use



Regular marijuana use
has been associated with several

PSYCHOLOGICAL EFFECTS,

including depression,
anxiety, suicidal thoughts,
and personality disturbances.

marijuana may also smoke cigarettes or drink alcohol makes it difficult to determine exactly how much of these effects are attributable specifically to marijuana.

Is marijuana medicine?

There has been much debate about the possible medical use of marijuana for certain conditions, including nausea relief for cancer chemotherapy patients and boosting appetite in people with AIDS. Currently, 20 states have legalized smoked marijuana for medical purposes, but the FDA, which assesses the safety and effectiveness of medications, has not approved marijuana as a medicine. There have not been enough large-scale clinical trials showing that smoked marijuana's benefits outweigh its many potential health risks in patients with the symptoms it is meant to treat. Also, to be considered a legitimate medicine, a substance must have well-defined and measurable ingredients that are consistent from one unit (such as a pill or injection) to the next. In addition to THC, the marijuana leaf contains over 400 other chemical compounds, which may have different effects in the body and which vary from plant to plant. This makes it difficult to consider its use as a medicine even if some of marijuana's specific ingredients may offer benefits.

However, THC itself is an FDA-approved medication. Medicines now on the market deliver the benefits of THC without the dangers and unpredictability of smoking marijuana. Scientists continue to investigate the medicinal properties of THC and other cannabinoids to better evaluate and harness their ability to help patients suffering from a broad range of conditions, while avoiding the negative effects of smoked marijuana.

How can I tell if my child has been using marijuana?

Parents should be aware of changes in their child's behavior, such as carelessness with grooming, mood changes, and deteriorating relationships with family members and friends. In addition, changes in academic performance, skipping classes or missing school, loss of interest in sports or other favorite activities, a change in peer group, changes in eating or sleeping habits, and getting in trouble in school or with the law could all be related to drug use—or may indicate other problems. See the list of specific warning signs for marijuana use below.

If your child is using marijuana, he or she might:

- ✦ seem unusually giggly and/or uncoordinated
- ✦ have very red, bloodshot eyes or frequently use eye drops
- ✦ have a hard time remembering things that just happened
- ✦ have drugs or drug paraphernalia, including pipes and rolling papers (perhaps claiming they belong to a friend, if confronted)
- ✦ have strangely smelling clothes or bedroom
- ✦ use incense and other deodorizers
- ✦ wear clothing or jewelry or have posters that promote drug use
- ✦ have unexplained lack of money or a surplus of cash on hand



**DRIVING WHILE HIGH
CAN LEAD TO**

CAR

ACCIDENTS.

Marijuana has adverse effects on many of the skills required for driving a car.



III. Starting the Conversation

As this booklet has shown, marijuana can pose a particular threat to the health and well-being of children and adolescents at a critical point in their lives—when they are growing, learning, maturing, and laying the foundation for their adult years. As a parent, your children look to you for help and guidance in working out problems and in making decisions, including the decision not to use drugs. Even if you have used drugs in the past, you can have an open conversation about the dangers. Divulging past drug use is an individual decision, but having used drugs should not prevent you from talking to your child about the dangers of drug use. In fact, experience can better equip us to teach others, including drawing on the value of possible mistakes.

Greater acceptance of marijuana use, compared with use of other illegal drugs, continues to underlie divergent opinions about its dangers, illegality, and potential value. Indeed, the ongoing public debate about "medical marijuana" may complicate your discussion.

Whether or not marijuana becomes legalized or permitted for medical purposes, it can be particularly dangerous for adolescents and can alter the trajectory of a young life, preventing a person from reaching their full potential. That is reason enough to have this sometimes difficult conversation with your children. We hope this booklet can serve as a catalyst and helpful guide to beginning the dialogue and, more importantly, continuing it and keeping the channels of communication open.



IV. Other Useful Resources

There are numerous resources, many right in your own community, where you can obtain information to help you talk to your children about drugs. Consult your local library, school, or community service organization. You may also contact the governmental organizations listed below.

National Institute on Drug Abuse (NIDA)

NIDA's mission is to lead the Nation in bringing the power of science to bear on drug abuse and addiction. This charge has two critical components. The first is the strategic support and conduct of research across a broad range of disciplines. The second is ensuring the rapid and effective dissemination and use of the results of that research to inform policy and improve practice.

NIDA offers an extensive collection of publications, videos, and educational materials to help parents talk to their children about drug use.

For more information on marijuana and other drugs, visit www.drugabuse.gov and www.teens.drugabuse.gov.

NIDA publications are available free of charge through the NIDA DRUGPUBS Research Dissemination Center

website: <http://drugpubs.drugabuse.gov>

e-mail: drugpubs@nida.nih.gov

phone: 1-877-NIDA-NIH [1-877-643-2644]
or 1-240-645-0228.

National Institute on Alcohol Abuse and Alcoholism (NIAAA)

NIAAA conducts and supports research across many scientific areas, coordinating with other institutes on alcohol-related issues, which frequently intersect with other drug abuse/addiction problems. Visit <http://www.niaaa.nih.gov/> for information on a variety of alcohol-related topics.

National Institute of Mental Health (NIMH)

NIMH provides numerous resources covering a variety of mental health disorders, which often co-occur with drug abuse and addiction. Visit www.nimh.nih.gov to access the latest research findings and other helpful mental health information.

Substance Abuse and Mental Health Services Administration (SAMHSA)

SAMHSA provides valuable information on its Web site, including resources for finding substance abuse treatment. Its treatment locator (<http://findtreatment.samhsa.gov/>) can help you find a drug abuse or alcohol treatment program near you. Visit <http://www.samhsa.gov> for more information on drug abuse prevention and treatment policies, programs, and services.

Feel free to reprint this publication in any quantity you wish.

Tips for Parents

- Be a good listener.
- Give clear no-use messages about drugs and alcohol.
- Help your child deal with peer pressure to use drugs.
- Get to know your child's friends and their parents.
- Monitor your child's whereabouts.
- Supervise teen activities.
- Talk to your child often.

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