

Heads Up: Real News About Drugs and Your Body

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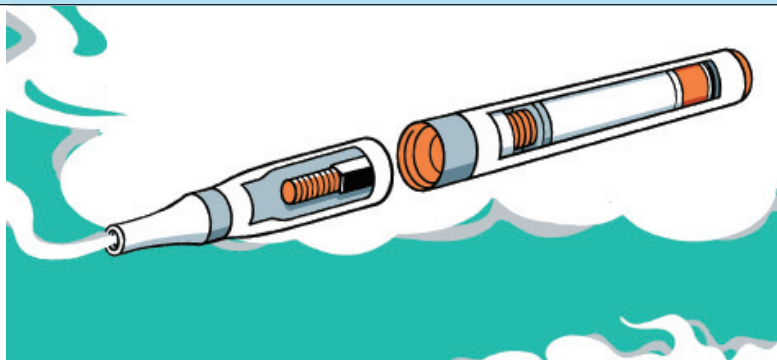
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Marijuana: Breaking Down the Buzz

Attitudes and laws are changing, but what does science have to say? And what can we learn from the history of cigarette smoking?

As lawmakers in some states legalize marijuana for adults and people with certain medical conditions, you may be confused about how safe it is.

But the science shows: Smoking marijuana on a regular basis can harm the developing teen brain. (See next page.)

We still have a lot to learn about marijuana's effects on health. But applying lessons from tobacco's past and understanding what scientists have already learned about marijuana can help us break down the hype.

The Tale of Tobacco

In the 1920s, researchers first linked smoking cigarettes to cancer. In 1957, the nation's top doctor—the U.S. Surgeon General—warned that cigarette smoking could cause lung cancer. In spite of this, until the 1970s, nearly half of adults in the United States smoked.¹ Tobacco

Lessons From Tobacco: Back to the Future

If you want a clue how attitudes can change with facts, take a look at tobacco.

1913
First modern cigarette introduced.



1920s–50s
The height of tobacco advertising.



1914–18
Doctors claim cigarettes help wounded soldiers.

1920s–40s
Research links cancer to burned tobacco.

1957
The U.S. Surgeon General warns cigarette smoking can cause lung cancer.

More Info: For additional facts about the brain and drugs, visit scholastic.com/headsup and teens.drugabuse.gov.



SCIENTIFIC FACTS ABOUT MARIJUANA

smoke was everywhere—including restaurants, bars, airplanes, offices, and theaters.

Because of mounting scientific evidence, limits were placed on smoking in public. But it wasn't until the mid-1960s (40 years after the lung cancer link was discovered!) that smoking rates began to significantly drop. From 1965 to 2011, rates for adults dropped 55 percent.² For teens, from 1991 to 2011, the drop was 34 percent.³ Although these decreases are an improvement, 480,000 people in the United States still die prematurely every year from smoking or secondhand exposure to smoke.⁴ In fact, tobacco, along with alcohol, is responsible for more drug-related disease and deaths than all illegal drugs combined.⁵

Is Marijuana the Next Tobacco?

Legalizing marijuana will likely make it easier to get and may increase the number of people who use it. But its use may also decline over time, as it did with tobacco, if people fully understand its harmful effects.

However, fewer young people now think marijuana is harmful than in the past.⁶ So how harmful is marijuana for teens? The science has a lot to say.

► Brain Effects

- Long-term, regular use of marijuana—starting in the teen years—may impair brain development and lower IQ, meaning the brain may not reach its full potential.⁷
- Decision making, memory, and concentration can suffer for days after use, especially in regular users.⁸

► Addiction Risk

- The risk for marijuana addiction almost *doubles* for people who begin using as teens (16 percent vs. 9 percent).⁹ Daily use increases the risk for addiction—to about 25–50 percent.¹⁰
- Risk for addiction depends on a person's genes, as well as his or her environment (social, economic, and emotional) and age. The younger the starting age, the greater the chances of addiction.

► Life Effects

For teens, frequent use of marijuana is linked to higher dropout rates, poorer grades, and driving accidents.¹¹

For adults, continued regular use is linked to financial struggles, unemployment, and life dissatisfaction.¹²

► Other Drug Use

Teens who use marijuana are more likely to use other drugs and develop drug problems compared with teens who don't. Researchers don't yet know if this is because of changes to the brain caused by marijuana or if it's because marijuana smokers may hang out with people who also use other drugs.

► Possible Increased Risk for Mental Disorders

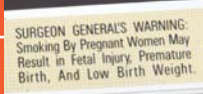
Marijuana use in adolescence has been linked to anxiety, depression, and schizophrenia, but scientists don't yet know whether it directly causes these diseases.

HASH OIL ALERT The honey-like resin from the marijuana plant has three to five times more THC (the main active ingredient in marijuana) than the plant itself. Smoking it (also called “dabbing”) can lead to dangerous levels of intoxication requiring emergency treatment.

Fire Warning: People have been burned in fires and explosions caused by attempts to extract hash oil using butane (lighter fluid).

1964

Surgeon General's Report on Smoking and Health is issued.



1964

70 million people in the U.S. spend a total of \$8 billion per year on cigarettes.

1960s–90s

- Warnings appear on cigarette packs.
- Cigarette ads are banned on TV and radio.
- Smoking is banned on U.S. commercial flights.



1998

Tobacco industry is fined \$206 billion for tobacco-related deaths and diseases.

2003–07

E-cigs (electronic cigarettes) are introduced worldwide.

2014

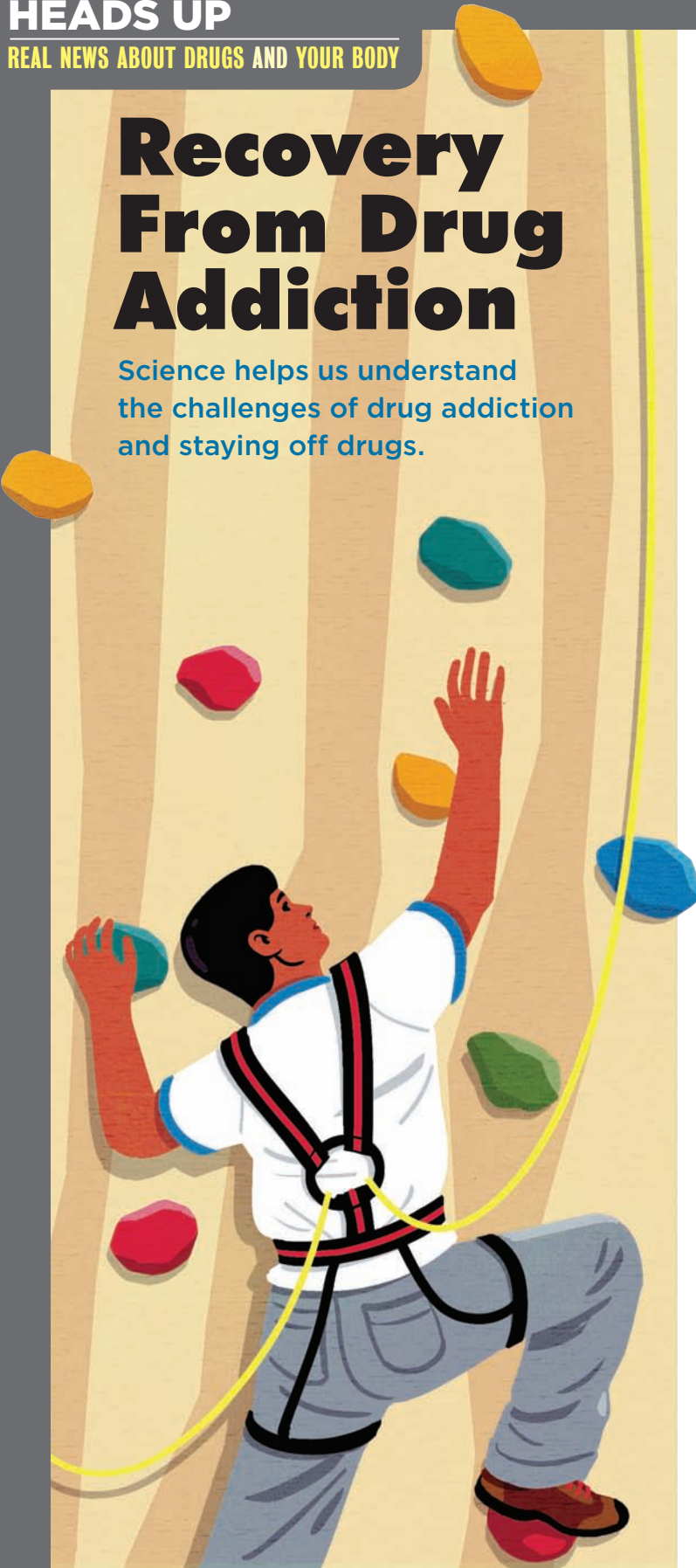
- Worldwide, tobacco kills 6 million people each year. 600,000 are nonsmokers who die from secondhand smoke.¹³
- Health officials urge limits and research on e-cigs.

More Info on Marijuana: <http://teens.drugabuse.gov/blog/mj>

SOURCES: ¹GALLUP; ²CENTERS FOR DISEASE CONTROL AND PREVENTION; ³THE LANCET; ⁴MONITORING THE FUTURE; ⁵THE LANCET; ⁶THE LANCET; ⁷THE LANCET; ⁸W.D. HALL & P.L. PACULA; ⁹ADDICTION JOURNAL and AMERICAN JOURNAL OF EPIDEMIOLOGY; ¹⁰ADDICTION JOURNAL; ¹¹WORLD HEALTH ORGANIZATION; ¹²WORLD HEALTH ORGANIZATION. Photos: ad with doctor, courtesy of Gaslight; ad with woman, © Illustrated London News Ltd/Mary Evans; x-ray, © Shoofoek/Thinkstock; warning label, © Krista Kennel/Sipa Press/AP Photo; no-smoking symbol, © Rachia Maysaluk/123RF.

Recovery From Drug Addiction

Science helps us understand the challenges of drug addiction and staying off drugs.



Drug addiction is a brain disease because drugs change how the brain works. People who are addicted to drugs can't stop using them, even when they really want to. Their priorities change and getting drugs can become more important than their loved ones, responsibilities, and life goals. Drug addiction can be treated, but recovery can take time—sometimes a long time. Like other chronic diseases such as heart disease, drug addiction often requires treatment throughout a person's life. Even after a period of time without using drugs, an addicted person may have a relapse, meaning they start to use again. Relapse requires more or different treatment in order for him or her to stop using drugs again.

Why Do Some People Become Addicted While Others Do Not?

A person's risk for drug addiction is affected by several factors:

- **Genetics**—some genes make people more prone to becoming addicted;
- **Family and social environment**—negative influences can include peer pressure; physical or sexual abuse; stress; poor relationships with parents or friends; and availability of drugs;
- **Mental health**—mental illness could place some people at a greater risk for addiction;
- **Age**—the younger a person is when drug use begins, the greater the chance for addiction.

One thing is certain: Drug addiction can never develop in people who never use drugs.

Recovering From Addiction

In 2012, 23 million people in the United States needed treatment for alcohol/drug use.¹ Of those 23 million people, however, only 4 million actually got treatment, making recovery even more challenging. Most people who succeed in treatment commit to a lifelong process of recovery: getting more treatment when needed; living a healthy lifestyle; and relying on family, friends, and others in recovery for support.

▶ **More Info:** For additional facts about the brain and drugs, visit scholastic.com/headsup and teens.drugabuse.gov.

Why Does Relapse Happen?

Relapse happens because drugs change the wiring in a person's brain. Once addicted, a person is at high risk of using drugs when "triggered." Like patients with other chronic diseases such as asthma and diabetes, patients with drug addiction must learn to carefully manage their condition to avoid relapses.

What Are "Triggers"?

Triggers can be situations (including stress), people, smells, and even songs that remind someone of using drugs. These cause the brain to release the chemical dopamine—which signals pleasure—and creates intense drug cravings. Triggers differ for each person and are often subconscious—meaning that the person isn't aware of what is happening. Treatment helps people learn how to handle their triggers without using drugs.

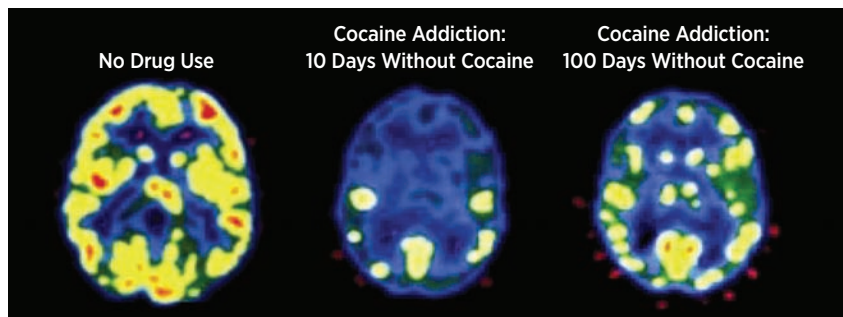
Challenges of Recovery

Recovery from drug addiction means overcoming obstacles:

1. Finding and paying for the right treatment—for as long as it is needed.
2. Maintaining permanent lifestyle changes to avoid drug use. A strong support system of family, friends, and/or others in recovery can help.
3. Avoiding triggers by staying away from drug users or parties with drugs, or other situations that might lead to drug cravings.

Addiction is a long-term condition and avoiding relapse is an ongoing challenge, even after many years in recovery. The sooner treatment is started, or restarted after relapse, the faster someone can get healthy.

How the Brain Changes and Recovers From Drug Use



The images² above show that once addicted to drugs, the brain can be affected for a long time, although recovery is possible.

- The first image shows a normal-functioning brain without drugs. A lot of yellow means lots of brain activity.
- The next two images show the brain of someone addicted to cocaine, but who has not used in 10 days and again in 100 days. The amount of brain activity (yellow) increases over time.

How much a brain recovers after addiction depends on the drug, how long it was used, how long without use, and the person's genes.

Recovery: Getting the Right Support

A successful treatment plan for drug addiction puts different types of support together in a way that works for each person's particular situation. When relapse happens, it's time to step back and adjust the plan, which can be constructed from many different types of support, including:



To Get Help for Drug Problems:

teens.drugabuse.gov/drug-problem-help

¹NSDUH, 2012. Population figures include people ages 12 or older. ²NORA D. VOLKOW, 1992, NIH.

E-Cigarettes: What You Need to Know

As lawmakers and scientists respond to a growing industry, there are many good reasons for teens to take a pass on this latest trend.

You may have seen electronic cigarettes (e-cigarettes) in stores, in advertisements, or being used. But e-cigarettes, while increasingly popular, are not harmless. Created as an alternative to tobacco cigarettes, e-cigarettes are sophisticated mechanical devices designed to deliver the same highly addictive nicotine

that is in tobacco cigarettes, without the other harmful effects of tobacco.

What's Happening

In the past decade, e-cigarettes have become a more than \$1 billion industry in the United States, with over 460 brands on the market. Many adults

How Do E-Cigarettes Work?

E-cigarettes provide nicotine through an aerosol (instead of through smoke, as with a tobacco cigarette). Puffing on the mouthpiece of the cartridge activates a battery-powered device. A heater then converts a liquid solution, which contains nicotine, flavors, and other chemicals, into an aerosol (commonly called “vapor”) that the user inhales. The act of inhaling this aerosolized solution is sometimes called “vaping.”

Cartridge containing a liquid solution made up of propylene glycol, glycerol, water, nicotine, flavorings, and other chemicals

Battery that powers the device

Vaporizer (heating device) that turns the liquid solution into an aerosol (commonly called vapor), which can be inhaled

▶ **More Info:** For additional facts about the brain and drugs, visit scholastic.com/headsup and teens.drugabuse.gov.

who use e-cigarettes are current or former smokers looking to stop nicotine cravings, quit smoking, or cut down on tobacco cigarettes. However, e-cigarettes may not be that helpful for quitting, since at least 75 percent of adults who use e-cigarettes also use tobacco cigarettes.¹

And although most states prohibit the sale of e-cigarettes to people under the age of 18, more and more teens are using them. In fact, recent surveys² show dramatic increases each year in the number of teens who have tried an e-cigarette, as well as in the number who have used them in the past month. This is at a time when smoking tobacco cigarettes is at an all-time low among middle and high school students.

What's Ahead

With e-cigarette use on the rise, the federal government is considering regulation of how e-cigarettes are made and sold. If this happens, rules on safety, advertising, and warning labels may govern e-cigarettes just as they currently do for tobacco cigarettes. At this time, e-cigarettes are not guaranteed to be safe. And consumers should not assume that advertising claims are scientifically proven.

As for the science on the risk of e-cigarettes and the possible benefits for current smokers, research is just beginning. But there is already a growing body of evidence showing that teens would be smart never to start using e-cigarettes.

What Are the Risks for Teens?

Nine out of 10 adult smokers started smoking tobacco cigarettes before age 18. This is because if people start smoking in their teens, when their brains are still developing, they are especially susceptible to the addictive effects of nicotine (and other drugs as well). Once someone is addicted to nicotine, it's very hard to quit. Early studies show a strong link between teens using e-cigarettes and smoking tobacco cigarettes. Researchers will continue to study e-cigarette and tobacco-cigarette use among teens, to understand the relationship between the two.

What Is the Effect of E-Cigarette Aerosol (Vapor) on the Body?

E-cigarettes contain propylene glycol, glycerol, nicotine, flavorings, water, and additional chemicals. Tests of the liquid in some e-cigarettes have also found toxic ingredients, such as formaldehyde (a chemical that may cause cancer). Health experts do not yet know the effects of these chemicals on people who use e-cigarettes or who are exposed to secondhand e-cigarette aerosol. Research is under way to measure exposure to nicotine and other chemicals from the aerosol to better understand risks.

How Does Nicotine Addiction Affect the Brain?

Research studies have found that nicotine may make animals' brains more receptive to the effects of other drugs. Some

experts think this could also be true for people. If so, a young person who uses an e-cigarette or a tobacco cigarette may find other drugs, like cocaine, more rewarding. This "priming effect" on the brain increases the likelihood of further drug use and possible addiction. To further study this possibility, researchers will track young people who use e-cigarettes to see if they are more likely to become addicted to other drugs.

Do E-Cigarettes Help Smokers Quit?

Some studies show that e-cigarettes help people quit tobacco cigarettes, and others suggest that they interfere with quitting. As more research is conducted, the effectiveness of e-cigarettes as a quitting aid will become better understood. Meanwhile, smokers who want to quit have other good options with proven effectiveness. Find out more at teen.smokefree.gov and cdc.gov/tobacco/campaign/tips/quit-smoking.

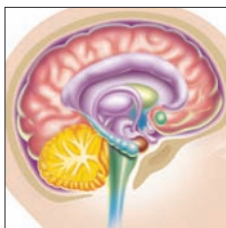


Warning! Accidental Poisoning

Calls to poison control centers involving e-cigarettes jumped from one per month in 2010 to 215 per month in 2014.³ The liquid in e-cigarettes can be toxic if someone drinks it, sniffs it, or touches it. Children under 5 years old made up more than half of the poisoning cases.

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Articles



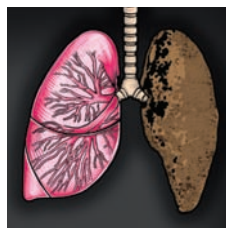
Articles and infographics on the effects of drugs

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Videos that illustrate the science of drug abuse

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Interactives that explore important scientific info

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Posters on the impact of drugs on a person's brain, body, and life

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