

Compilation of 2009–10 Student Editions

Heads Up: Real News About Drugs and Your Body

Welcome to Heads Up: Brought to you by Scholastic and the scientists at the National Institute on Drug Abuse, *Heads Up* gives you the facts about the real effects of drugs on the teen brain and body. Check out the articles and features inside to get the latest news so you can make informed choices about your health and your future.

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For more real news about drugs and your body, visit www.scholastic.com/headsup and <http://teens.drugabuse.gov>.

To order additional copies of this Heads Up Student Edition at no charge, call 1-877-643-2644 and refer to NIH Pub No.: 10-7647 or visit www.nida.nih.gov/scholastic.html.

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REAL Questions, REAL Answers

Leading scientists give teens the facts about drug abuse



Photo: girl with laptop © iStockphoto.

“All my friends try to get me to smoke crack and snort heroin with them. What should I tell them?” “Can you get addicted to drugs after one try?” “Is it okay to be a light drinker?” “Does marijuana really affect driving?”

These are just some of the questions that teens have asked on Drug Facts Chat Day, an event that allows thousands of teens to chat online with the nation’s top drug and addiction experts. Held in October, Chat Day is one way the National Institute on Drug Abuse (NIDA) talks with teens about drug abuse and addiction. The event encourages teens to ask questions they might be too scared or embarrassed to ask their friends or parents.

Each Chat Day has drawn thousands of questions from teens all over the United States, making it clear that many teens want accurate information about drugs. “The anonymous nature of the Internet encourages students to ask what is truly on their minds,” explains Dr. Nora Volkow, director of NIDA. “And on Chat Day, they get scientific answers, not lectures.”

Read on to find out the types of questions teens are asking about drugs—and how scientists have responded. Don’t see a question you’ve been wanting to ask? Check out the transcript of the most recent Chat Day at www.drugabuse.gov/chat, as well as other sources listed throughout this article.

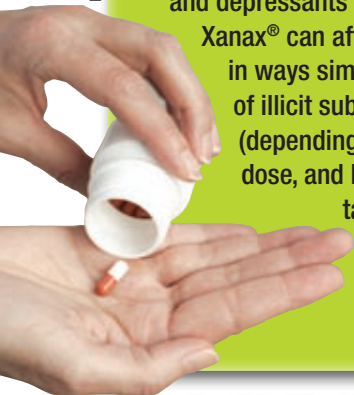
Photos: human brain © iStockphoto; all other photos © Media Bakery.



How addictive are prescription drugs?



Most people use prescription drugs responsibly, according to their doctor's instructions, to control pain or treat disorders such as Attention-Deficit Hyperactivity Disorder (ADHD). However, when they are abused, prescription drugs can be very addictive. Prescription pain relievers such as Vicodin®, stimulants such as Concerta®, and depressants such as Xanax® can affect the brain in ways similar to that of illicit substances (depending upon the dose, and how it is taken).



How effective is drug treatment? Why do celebrities go back to "rehab" again and again?



There are different types of treatments for drug addiction. Programs that are based on scientific evidence work best. There are many reasons why people return to drug abuse after treatment. Their brains have been changed and can take a long time to recover, or they may reconnect with friends they used to take drugs with, among other factors. Staying off drugs once you've been addicted is hard, but it is possible. It usually requires major lifestyle changes, ongoing support, and sometimes repeated treatments.



Why do some people get addicted to drugs and others don't?



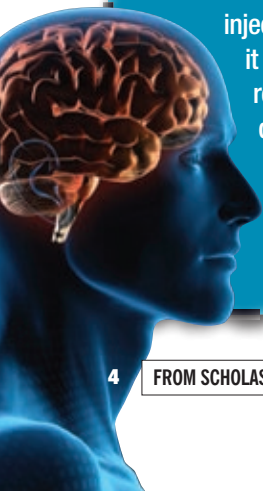
There are many factors that contribute to a person's risk of becoming addicted to drugs. These include genetics, whether or not his or her family members or friends use drugs, stress levels, and whether or not the person has any other mental disorders. To different degrees, all of these factors contribute to a person's risk for drug addiction.



What drug is the most addictive?



Scientists prefer not to rank drugs based on how addictive they are because there are too many variables involved. Some of the factors include how the drug is taken (orally, smoked, injected), how much is taken, and how easy it is to get. However, the important thing to remember is that research shows that many drugs—even nicotine in cigarettes, which some people don't think of as a drug—are highly addictive. In fact, nearly one-third of people who smoke become addicted to the nicotine in tobacco.



Are teens particularly vulnerable to becoming addicted to drugs?



Drug use often starts during the teen years, and the earlier a person starts to use drugs, the more likely he or she is to have drug-related problems later. The teen brain is still developing, which affects the way teens make decisions. This is why teens may take more risks than adults, including experimenting with drugs. Drug use during the teen years may affect how the brain develops into adulthood.



? How can I encourage my friend to stop taking drugs and get my friend some help?

a: Talk to your friend about his or her drug use. It's also a good idea to encourage your friend to confide in a trusted adult. If your friend is ready to get help, you can help him or her find a doctor, therapist, support group, or treatment program at <http://findtreatment.samhsa.gov> or 1-800-662-HELP. Keep reaching out even if your friend is not yet ready to get help. Get more information by logging on to the NIDA teen Web site <http://teens.drugabuse.gov>.



Tips for Making Smart Choices

What do you do when you are faced with an important decision? Here are some tips for making smart choices:

✓ **Pause.** Take a moment to think through your decision. For more information, check out: www.fox.com/pause/.

✓ **What do you know?** Ask yourself: What are the facts involved in the situation? For instance, if someone has offered you drugs, what facts do you know about how the drugs may affect your brain and body?

✓ **Do you know enough to make a decision?** If you don't know all the facts, remove yourself from the situation and find out more. Make sure to use reliable sources.

Where to Get Answers

Where can you go if you have questions about drugs and drug abuse? Here are some sources to consider:

1. Friends/other teens

Pros: You may feel most comfortable talking to your peers. They may be going through similar situations. They may also have good ideas about how to handle pressure.

Cons: Your peers may not always know the facts. "What you hear from friends about drugs may be based on myths and false rumors," says Dr. Volkow.

Talking Tip: Do you have a friend who is good at standing up to pressure about drugs? Ask him or her for advice.

2. A trusted adult such as a parent or teacher

Pros: Adults can guide you based on their own experiences and knowledge.

Cons: You may feel nervous talking to an adult about drugs, or scared that you will get in trouble.

Talking Tip: If you aren't sure how to start a conversation about drugs, try using a news story or TV show as an example to bring up the topic.

3. Your doctor or another health professional

Pros: A doctor can debunk myths and rumors about drugs and alcohol. Your doctor can tell you how substance abuse might affect your body, or how drugs can increase your chances of contracting certain diseases.

Cons: You may feel uncomfortable talking with your doctor about tough

topics like drugs, or you may be concerned about confidentiality.

Talking Tip: Start by asking your doctor how drugs can affect medications prescribed for you. Also, keep in mind that you can request confidential time with your doctor. If you don't feel comfortable with your doctor, ask to speak with another health professional.

4. The Internet

Pros: You can get information about drugs any time, day or night, and it's anonymous.

Cons: Since anyone can publish information on the Web, it may not come from a qualified source. A Web page that looks objective could be a sponsored form of advertising.

Tip: Stick to Web sites from known organizations like NIDA. Here are some trusted sites:

NIDA for Teens:
<http://teens.drugabuse.gov>

Heads Up:
www.scholastic.com/headsup

CRITICAL THINKING

1. What are some questions you have about drugs that weren't answered in this article?

2. Think of some specific people you could go to or places you could visit to get answers to your questions. How might you start a conversation about drugs and drug abuse?

TSI: TEEN SCIENCE INVESTIGATIONS

On the case, with winners of the 2009 Intel ISEF Addiction Science Awards

Do human corpses found intact in the desert hold clues about the dangers of methamphetamine abuse? Can the residue from burning tobacco cause genetic mutations in flies?

These questions led three 17-year-olds to create award-winning science research projects.

With their curiosity sparked by some unusual facts they came across, Daniel Martin, Jada

Dalley, and Sehar Salman became detectives on the trails of mysteries. They searched for answers using the scientific method, and their resulting research projects earned all of them a 2009 Intel International Science and Engineering Fair (ISEF) Addiction Science Award. Read on to learn about their remarkable teen science investigations.

Magnifying glass and fingerprints: © iStockphoto.

POISON FLESH

PROJECT: THE EFFECT OF METHAMPHETAMINE ON CARNIVORE SCAVENGING

DANIEL JEFFREY MARTIN, 17 YEARS OLD, PHOENIX, ARIZONA



Mystery: Daniel already knew that methamphetamine, a powerfully addictive stimulant drug, is highly toxic to the brain and body of a drug abuser. But a conversation with his mother made Daniel curious about whether the drug's effects on the body last even after death. His mother, who works with the medical examiner's office identifying bodies and determining causes of death, told Daniel that sometimes bodies remain in the deserts around Phoenix for a period of time before being discovered. Carnivorous animals searching for food often scavenge the remains. But, she added, if a person abused methamphetamine, scavenging animals stay away from the body.

Daniel decided to investigate. He came up with a testable hypothesis to

see if what his mother said was true. He hypothesized that as the level of methamphetamine in a deceased person's body increased, the amount of the body eaten by carnivorous scavengers would decrease.

Evidence Trail: To test his hypothesis, Daniel scoured 97 case records in the medical examiner's office that included toxicology results of how much (if any) methamphetamine was in the body when it was discovered. He studied forensic photographs taken of the bodies and calculated the amount of scavenging on each body. To rule out the effect of other factors, Daniel also tracked other data on the deceased person, such as age, weight, and gender.

Drawing a Conclusion: Daniel's data supported his hypothesis. It showed that there was an association between the amount of methamphetamine identified in the toxicology report and the amount of scavenging on a body—the more methamphetamine detected, the less the scavenging.

"Even just a little bit of methamphetamine in the body meant that there was a massive reduction in carnivore scavenging," he says. "I was surprised by how extreme the results were."

Daniel says the findings of his project highlight how dangerous a drug like methamphetamine must be if its effects can be seen even after death.

"Even animals know that this is a poison to your body," he says.

Project's full title: "The Effect of Human Methamphetamine Usage on Carnivore Scavenging"

HIGH-RISK RESIDUE

PROJECT: "THIRD-HAND SMOKE" CAUSES MUTATIONS IN FRUIT FLIES

JADA NICOLE DALLEY, 17 YEARS OLD, SAN ANTONIO, TEXAS

SEHAR ANJUM SALMAN, 17 YEARS OLD, SAN ANTONIO, TEXAS



Mystery: Sehar and Jada already knew about the health risks posed by second-hand smoke—the combination of exhaled smoke and the stream of smoke from a lit tobacco product. But Sehar was surprised to learn through a news article about another potential smoking hazard. She read that third-hand smoke—the invisible residue of gases and particles left behind on clothing and furniture when tobacco is burned—could also be dangerous. Jada and Sehar had recently completed a research project showing that exposure to second-hand smoke caused an increase in the number of genetic mutations in *Drosophila melanogaster* (fruit flies). Now Jada and Sehar became interested in a new question.

“We wanted to find out if third-hand smoke had the same effects,” says Jada. They set up an experiment to test their new hypothesis: Third-hand smoke would cause mutations in fruit flies similar to those produced by second-hand smoke.

Evidence Trail: For their experiment, Jada and Sehar exposed a tube containing food and a piece of foam to cigarette smoke. Fruit fly larvae, or young, were placed in the tube after the cigarette was removed and the smoke had settled. Two weeks later, Jada and Sehar observed the flies under microscopes to look for genetic mutations, such as curly or spread-out wings and changes in eye color.

Drawing a Conclusion:

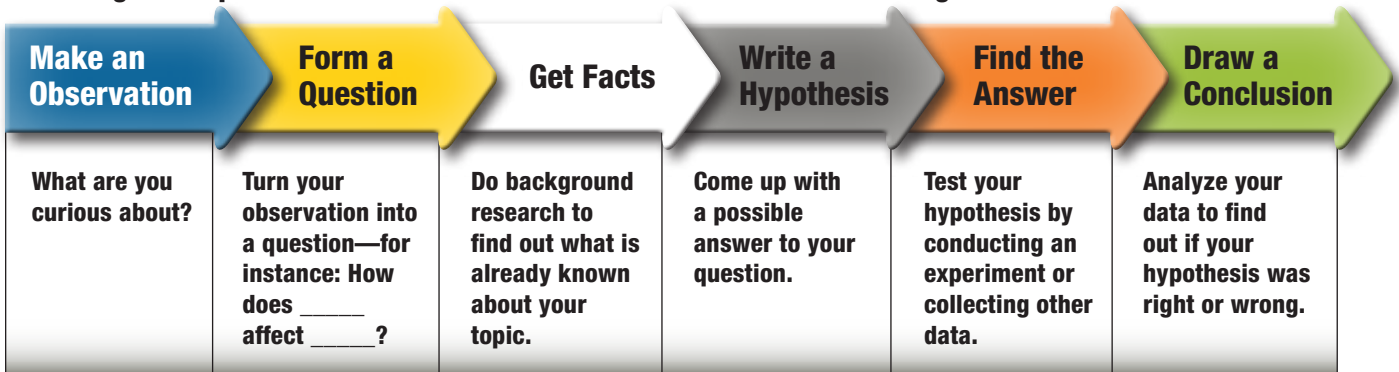
Jada and Sehar detected a surprising number of genetic mutations in the flies exposed to third-hand smoke. In fact, Sehar and Jada’s conclusion was that their hypothesis was correct. The number of mutations caused by third-hand smoke was just as high as the number found when flies were exposed to second-hand smoke. Sehar says their research shows that tobacco poses more risks than most people are aware of.

“If you smoke, you can harm not just yourself or people who are around you,” says Sehar. “You can even harm the next person who walks in the room.”

Project’s full title: “A Cytogenic Analysis of Genetic Mutation Induced by Cigarette Smoke in *Drosophila Melanogaster*”

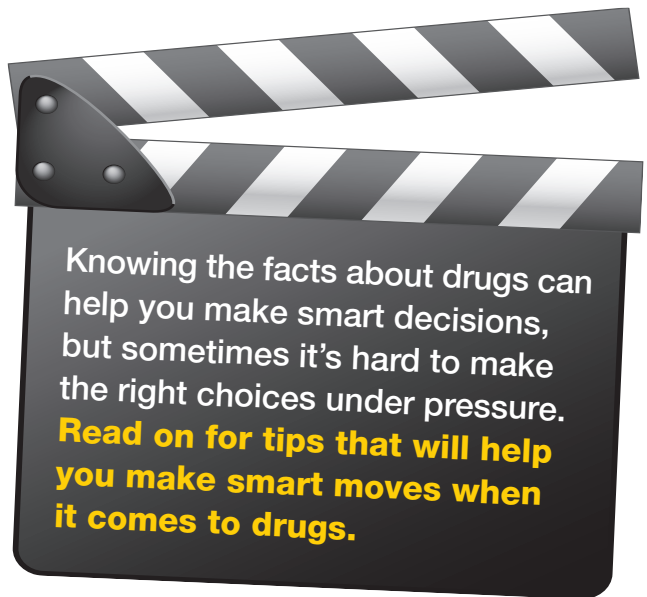
CONDUCT YOUR OWN INVESTIGATION

Following the steps of the scientific method can lead to a successful investigation.



For more information about the Intel ISEF Addiction Science Awards, visit www.drugabuse.gov/sciencefair.

FACTS INTO ACTION



SCENE #1:

You are hanging out with your best friend, checking out each other's Web pages. Your friend says, "Wanna try some of my mom's painkillers? It'd be fun." You are surprised and stop what you're doing. "It's not like the meds are illegal. My mom's doctor gave them to her. They're safe, for sure," your friend says.



REALITY CHECK! Your friend seems to believe the myth that prescription drugs are safer to abuse than illegal ones. **Not!**

Prescription drugs such as painkillers or ADHD medications, when taken as prescribed by a physician, make a huge positive difference in the lives of millions, but that doesn't mean they are safe to *abuse*. When used for nonmedical reasons or not as prescribed—such as to get high, relieve tension, or just to experiment—these drugs can lead to addiction. But it's not only addiction that a person risks when

abusing prescription painkillers. For example, a single, large dose of painkillers can cause your breathing to slow to dangerous levels.

TIME OUT You can't believe your friend is asking you to do this! You know the facts, but then again, you totally trust your friend and feel like maybe it would be OK, even fun. This is your BFF. You do everything together. What would happen if you said "no"? Will your friend stop hanging out with you? Wouldn't it be OK to try it just once? How can you get out of this situation without it becoming a big deal?

NOW WHAT? **Tell it like it is.** Since this is your BFF, lay it on the line and let your friend know where you are coming from. "That's not for me. Let's just hang out."

Be cool and change the subject. Coming up with another activity can distract people. "I don't really feel like it. Anyway, there's this cool new phone app that lets you add cat pics to photos. Want to download it?"

Give an excuse. It's OK to make an excuse when you are on the spot. "I have to leave soon for dinner."

SCENE #2:

It's Friday night and you're hanging with friends at a party. The tunes are blaring. Someone nudges you and another friend: "I have some weed if anyone feels like getting high." One girl responds, "Sure. I'm definitely in. It's not like you can get addicted to it."



REALITY CHECK!

TISNT! Looks like this girl mistakenly believes that people can't get addicted to marijuana. But they can and do. About 9 percent of people who try marijuana become

addicted to it. And, as with other addictive drugs, once addiction takes hold of you, you keep taking the drug even when everything starts to fall apart—long after the party ends. Young adults may be especially vulnerable: Studies show that about half of the individuals who enter drug treatment centers (sometimes referred to as "rehab") for marijuana use are under 25 years old.

In addition to causing addiction, the THC in marijuana (the chemical that gives you the "high") also affects your memory and distorts your perception (your senses), motor skills, reaction time, and judgment. It can make you mess up at school, in sports, and in other activities. Use it for too long, and you could start to lose interest in school, family, friends, and even your own well-being. Trying to quit has its own drawbacks, including depression, irritability, restlessness, trouble sleeping, anxiety, headaches, and other withdrawal symptoms.

TIME OUT

Should you smoke marijuana with your friends? You know the facts, and you know it's a bad idea to smoke. But you worry about how you'll look in front of others at the party if you say "no." What if people stop asking you to parties altogether? Even if the health risks aren't enough, fear of your mother's or father's anger if they smell it on you is reason enough not to smoke!

NOW WHAT?

Walk away, maybe create a diversion. "I feel like changing the tunes. Anyone want to come with me?"

Give a simple no. Don't make it a big deal. Be polite. "No, thanks."

Pretend you didn't hear. It's a party, go talk to other people. "I can't believe she's here, I've got to talk to her...."



YOUR MOVE

You have a better chance of making smart decisions if you can take a moment to think about a situation before you act.

Discussion Questions:

Think of a situation you might encounter where you'll have to make a decision that involves drugs.

- What is a myth that might be tossed around regarding that drug? What are the facts?
- What thoughts might be going through your head as you figure out how to respond? What are the pros and cons of your different options?
- What are some ways you can get out of a difficult situation?

To research the facts on drugs and drug abuse, check out:

- teens.drugabuse.gov
- scholastic.com/headsup

Web Hunt:

Questions About Drugs, Answers from Science



Every day, teens are bombarded with messages about drugs and drug abuse through music, movies, TV, the Internet, and their friends. How can you find out what's true and what's not? In the Web hunt below, discover **facts** from the scientists at the National Institute on Drug Abuse (NIDA), the leading supporter of research on drug abuse and addiction in the United States.

This handy sheet will help you keep track of what you learn about the facts of drug abuse and addiction.

1. Some people are more likely than others to become addicted to drugs. What are some of the factors that contribute to a person's risk of becoming addicted to drugs?

www2.scholastic.com/browse/article.jsp?id=3753489

2. Why are teens particularly vulnerable to becoming addicted to drugs?

www2.scholastic.com/browse/article.jsp?id=3753489

3. What is the relationship between brain development during adolescence and heightened risk-taking?

www2.scholastic.com/browse/article.jsp?id=3753494

4. What is the chemical found in a cigarette that makes it so addictive, and how does this chemical affect the brain?

www2.scholastic.com/browse/article.jsp?id=3753497

5. A teen researcher showed that carnivorous animals in the desert will avoid dead bodies that contain what toxic drug?

www2.scholastic.com/browse/article.jsp?id=3753492

6. Two other teen researchers used fruit flies to show the effects of “third-hand smoke.” What did the teens find?

www2.scholastic.com/browse/article.jsp?id=3753492

7. What are some of the health risks associated with abusing prescription drugs?

www2.scholastic.com/browse/article.jsp?id=3753495
www2.scholastic.com/browse/article.jsp?id=3753497

8. Some people mistakenly think that people can’t get addicted to marijuana. What is the addictive chemical in marijuana, and what are some of its other harmful effects?

www2.scholastic.com/browse/article.jsp?id=3753495

9. What are some of the dangers of mixing alcohol with drugs?

www2.scholastic.com/browse/article.jsp?id=3753497

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- 10.** Drug addiction is a treatable disease, and there are many different types of treatments. But stories of celebrities returning to “rehab” again and again are often in the news. What are some reasons people go back to using drugs after having gone through treatment?

www2.scholastic.com/browse/article.jsp?id=3753489

- 11.** What are some reliable sources you can consult if you have questions about drugs?

www2.scholastic.com/browse/article.jsp?id=3753489

Bonus Questions:

- 1.** What naturally occurring neurotransmitter in the brain is released in powerful amounts to produce a “high” when drugs are abused?

www.drugabuse.gov/chat/chatfaqs308.html#Addiction

- 2.** What are some signs that might tell you if someone has a drug problem?

http://teens.drugabuse.gov/facts/facts_brain2.php#problem

Resources

Find out more facts at these NIDA sites:

NIDA InfoFacts

www.drugabuse.gov/Infofacts

Find fact sheets about different drugs, drug abuse, and treatment.

Drug Facts Chat Day

www.drugabuse.gov/chat

Check out transcripts of scientists answering questions from teens all over the country.

NIDA for Teens

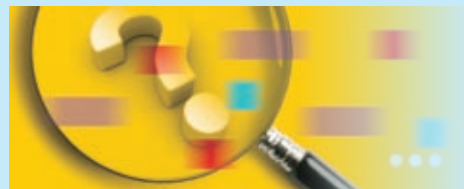
<http://teens.drugabuse.gov>

Includes facts about drugs and drug abuse, along with games and real-life stories.

Heads Up: Real News About Drugs and Your Body

www.scholastic.com/headsup

Developed by NIDA and Scholastic, this series brings the latest scientific news about drugs, drug addiction, and your health.



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