Drugs and the Teen Brain

Adolescence is a critical time in brain development. The harmful effects of drugs and alcohol may affect teens more than adults.

BY THE TIME YOU ARE A TEENAGER, many parts of your brain have developed. You may be able to perform complicated calculations. You may even have a sharper memory than some adults!

But one critical part of your brain—the prefrontal cortex—won’t be developed until your mid-twenties. This puts teens at a higher risk than adults for experiencing the harmful effects of drugs and alcohol.

Under Construction

The prefrontal cortex is used in critical thinking. It helps people weigh pros and cons before making a decision.

Because the prefrontal cortex is not fully developed in teens, they rely more on the limbic system to make decisions. This system is linked to emotions and experiencing rewards.

This means that teens may make decisions based on what provides immediate happiness. This can lead them to take more risks than adults. Rather than thinking through consequences, teens focus on the reward of social acceptance.

Taking chances is part of growing up.

But it can be dangerous when it comes to drugs and alcohol.

One example is binge drinking, which means having four to five alcoholic drinks within a few hours. Because teens don’t always think through consequences, they may have a hard time knowing when to stop. This makes them more likely than adults to binge drink. A few sessions of binge drinking can harm a developing brain.

Addiction Risk

Teens are also at a higher risk of developing addiction. Scientists believe that addiction is closely linked to dopamine. This chemical helps transmit signals in the brain.

Any rewarding activity causes a dopamine release. But the surge is much higher and more intense with drugs. Repeated drug use can “teach” the brain to seek drugs over healthier rewards. That is addiction.

The limbic systems of teens are very sensitive to dopamine. Because of this, teens may crave drugs more strongly than adults. The earlier that someone starts drug use, the higher his or her addiction risk.
The brain’s prefrontal cortex (the part in charge of critical thinking) is not yet fully developed in teens. So they rely more on the limbic system (which is tied to rewards and emotions) to make decisions.

**Brain Changes**

As you grow, your body strengthens pathways between neurons (nerve cells) in the brain and gets rid of ones that aren’t used. These synapses determine how your brain processes information. The network of synapses supports everything from your memory to your ability to learn.

Exposing the teen brain to drugs can change how synapses are organized and how the brain functions. Drug use can cause problems with attention, memory, and problem solving that can last through adulthood.

But thinking through your actions can help your brain. Learn a new sport or a foreign language. These skills help build new connections that make your brain stronger. Be good to your brain and it will be good to you.

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