



## Vaping and the Developing Brain: Vaping e-Journal Series, Part 3



### Vaping Prevention for Students

FCD Prevention Works is available to facilitate effective, health-based discussions with your students about vaping prevention. [Click here](#) to learn more about our approach to student prevention education in general.



### Vaping Prevention Resources

You can find a link to our recent webinar on vaping [here](#). We co-facilitated with the Founder and Executive Director of Stanford Medicine's [Tobacco Prevention Toolkit](#), Dr. Bonnie Halpern-Felsher.

### Quick Links

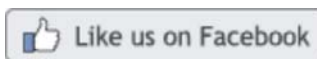


### Vaping Addiction Is Different for Teens

Ask any adult who has quit smoking, and they will tell you one of the most difficult parts of the process is managing daily triggers. Some former smokers associate a hot cup of coffee and a cigarette as the start to their morning. Others look forward to their cigarette break to step outside and away from work stress. Many unconsciously see that last cigarette of the evening as the calming end-of-the-day reward. On average, the adult smoker attempts to stop smoking five to eight times before successfully quitting. A whopping 90% of adult nicotine users began in their teenage years. This is why nicotine use prevention for your students is so critical.

From the start of adolescence through the 20s, the developing brain is going through significant changes, and through repetition it is creating connections that sustain habits. That's why, during these years, the little leaguer can set a trajectory for the majors and the music student can hone professional ability. This means, however, during this critical period, the brain is particularly vulnerable to highly addictive chemicals like nicotine, and youth who use substances are more likely to become addicted.

Introducing nicotine into the teenage brain can lead to a lifetime struggle with nicotine addiction, whether the nicotine is introduced into the body via traditional tobacco products or by vaping.



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## What's Vaping?

"Vaping" is a risky behavior by which an electronic cigarette (e-cig) or vaporizer (vape) delivers nicotine, marijuana, and/or other chemicals to the body. Vapes contain chemicals (e-juice) and a heating mechanism to deliver an aerosol form of those chemicals into the body and the environment around the user. Vaped chemicals enter the lungs, bloodstream, and brain in seconds. The user may feel lightheaded, dizzy, or experience a rush or high, which may set off cravings for more. Vapes come in many styles but generally look like high-tech cigarettes.

As of now, no vapes are regulated by the U.S. Food and Drug Administration. For young people, non-use is healthiest!

## Teen Nicotine Addiction Research

The use of e-cigarettes primes the teen brain for addiction. The Journal of the American Medical Association (JAMA) Pediatrics found that teens who vape are five times more likely to also be using tobacco cigarettes. A 2018 study done by the American Academy of Pediatrics found that teens who use e-cigarettes are also more likely to initiate marijuana use. Addiction is progressive and may extend to other substances, which is why prevention and early intervention is key.

A significant risk factor for nicotine addiction in teens is depression. Studies have linked depressive symptoms and nicotine addiction. What this means is that teens who are dealing with emotional health issues may need additional support in continuing to make healthy choices while dealing with stressors in their life. As healthy adults in the community, we can set the example and support their choice to stay substance-free by emphasizing the benefits of healthy coping skills.

## How Does Nicotine Work?

Nicotine is derived from the tobacco plant. For use in vape products, liquid nicotine is mixed with other chemicals that are inhaled by the user in the form of a mist or aerosol. Nicotine is absorbed into the bloodstream via the lungs, hitting peak concentration in the blood and brain in about 10 minutes. The user may feel a sense of alertness and euphoria, depending on the level of nicotine ingested. Twenty minutes after inhaling nicotine, levels of the chemical in the blood and brain drop by half and within 30 minutes, nicotine is nearly gone. What does this mean? Nicotine is rapidly absorbed by the body and processed quickly, setting the body up to crave more nicotine, and quickly.

Nicotine works in the brain by attaching to the neurotransmitter acetylcholine, increasing nicotine receptor sites in the brain. The more a person exposes their brain to nicotine, the more they crave the drug. The teenage brain is

particularly vulnerable to the effects of nicotine because it is still developing and being shaped through habit formation.

## Why Vaping Is a Huge Risk Factor for Teen Nicotine Addiction

Currently, vape products are not federally regulated. Manufacturers are not required to make users aware of how much nicotine is in their products. They are not even technically required by current U.S. law to state whether or not nicotine is present in their products at all! The same is true for many other areas in the world. This means kids can be vaping nicotine, and becoming addicted, without an awareness of the risks of their behavior.

A popular brand of vape product among children is the JUUL brand. According to JUUL, the company's intention is to help adult smokers switch to e-cigarettes from traditional cigarette smoking. Yet, JUUL products - and increasingly the products of their commercial competitors - produce nicotine-laden aerosols from an e-liquid that contains nicotine salts.

These nicotine salts are absorbed into the body at almost the same speed as nicotine in regular cigarettes. But unlike nicotine inhalation from cigarette smoke, which can feel very irritating inside the mouth, throat, and lungs, nicotine salt inhalation in the form of vape aerosols often feels much more pleasant in the chest and lungs.

What does this mean for teens? JUUL is one of the most talked about and broadly advertised vape brands currently on the market. Many teens are not aware that JUUL products even contain nicotine.

We as supportive adults need to know this information and discuss it with the kids in our lives, clearly and accurately, from a health perspective. Only then can we continue to effectively address the impact of addictive nicotine on the growing teenage brain.

## Quitting Nicotine

If a teen has begun using nicotine products, there are resources available to help. Seek to connect the teen first with caring and knowledgeable health professionals on campus. The following resources may also be useful in helping the teen make the healthy, common choice to be substance-free.

- Centers for Disease Control: <https://www.cdc.gov/tobacco/campaign/tips/quit-smoking/>
- Smokefree.gov: <https://smokefree.gov>
- Nicotine Anonymous: <https://nicotine-anonymous.org/>

## References

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## About the Author

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