Microlearning Toolkit: Vaping Prevention 101

Brush up on your cannabis knowledge with this series of short lessons on vaping and prevention! Each lesson consists of a 5-10 minute video followed by a brief quiz. Topics include: effects of nicotine on the adolescent brain, public health implications of youth ENDS use and why vaping/e-cigarette use appeals to youth.

How to use: complete the lessons yourself to increase your knowledge or share these lessons with your coalition members, for parent or youth education programs, or with others in your community. Lessons can be viewed in the online quiz format through the links below, or can be taught along with the discussion guide available for download to use with a group.

Option 1: Online Quiz Format

To complete the lessons using the online quiz format, follow the link to each lesson below.

Nicotine and the Adolescent Brain https://forms.gle/3iSMWPXhdz94zEQQ9

How does nicotine use affect the adolescent brain and development? What are potential short and long-term effects of nicotine use during adolescence?

Neurobiology of Nicotine and Cannabis https://forms.gle/ynrZEDYeXTM7LQsZ9

What happens in the brain when nicotine or cannabis are used in vapes or e-cigarettes?

Appeal of JUUL among Adolescents https://forms.gle/DXtKTu6WKcQf5Bbt6

What motivates young people to vape and why do some products appeal more than others?

Public Health Concerns of Youth E-Cigarette Use: https://forms.gle/CXLysBBjpVXLF449A

What are the public health considerations of youth e-cigarette use? How might that differ from adult use?

Option 2: Discussion guide

To use the lessons with a group in a discussion format, follow the discussion guide below. Each lesson includes a link to the video, followed by a set of discussion questions and answers

Lesson 1: Nicotine and the Adolescent Brain

How does nicotine affect the adolescent brain? How does it affect development and does it have any long-term impacts?

Watch the video

Video: https://www.youtube.com/watch?v=_80JhTtAuDM

Discussion questions:

- How does nicotine use at a young age relate to substance use later in life?
- What are the effects of nicotine on the adolescent brain?
- Can nicotine use lead to feelings of withdrawal?

Answers:

- Use of any substance, including nicotine found in e-cigarettes/vaping devices, as an adolescent increases risk of substance use disorder later in life. According to one study, 17% of people who first used marijuana at age 13 went on to develop a substance use disorder, compared to only 4% of people who first used marijuana after age 21, meaning those who used earlier were 4 times more likely to develop a substance use disorder.
- Research from both human and animal studies shows that early exposure to nicotine while the brain is still developing is associated with impairments in attention and working memory as well as risk for mood disorders and impulse control problems, along with increased risk for development of a substance use disorder.
- Stopping the use of nicotine can lead to withdrawal symptoms as quickly as 4 hours after cessation, and gradually taper off over 3-4 weeks of cessation.

Learn more:

- New England PTTC Vaping Prevention Resources and Information https://pttcnetwork.org/centers/new-england-pttc/vaping-prevention-resources-and-information
- Tips for Teens: E-Cigarettes - Resource from SAMHSA https://store.samhsa.gov/product/tips-for-teens-e-cigarettes/pep19-12

Lesson 2: Neurobiology of Nicotine and Cannabis

What happens in the brain when cannabis is used in vapes or e-cigarettes?

Language note: In this guide, we have used the term cannabis to refer to cannabis/marijuana. If you are using this guide with an audience who may be more familiar with another term, either marijuana or a different term, please substitute that word as needed.

Watch video: https://youtu.be/yRC2N7acojw

Discussion questions:

- What are some of the chemicals that make up a cannabis product?
- What are some of the short-term effects of cannabis use?
- Is it possible to become addicted to cannabis?
- Which vaping products contain higher potency chemicals?

Answers:

- THC (delta-9 tetrahydrocannabinol) and CBD (cannabidiol) are the two most common of the 500 chemicals found within the cannabis plant. THC is the psychoactive component that causes the "high" feeling and can impair cognitive and motor function. THC is illegal on the federal level but legal for medical or adult-use in many states.
- Short term effects of cannabis use may include a heightened sense of perception, poor attention and judgement, increased anxiety or paranoia, or decreased pain, among other effects.
- Yes, Cannabis Use Disorder is the term for a disorder in which a person is reliant on cannabis use. Just as a person may become dependent on alcohol or nicotine, especially with frequent use, a person can also become dependent on cannabis. A person with cannabis use disorder may experience withdrawal symptoms like irritability, restlessness, difficulty sleeping, and hot flashes
- Both nicotine and cannabis vaping products can contain very high potency chemicals. For example, a typical vaping pod or cartridge may contain the equivalent of 1 pack of cigarettes and can be consumed very rapidly. Likewise, the typical concentration of THC in a vaping cartridge can be 6-8 times higher than the concentration of a typical smoked product.

Learn more:

- Cannabis/Marijuana Use Disorder https://www.yalemedicine.org/conditions/marijuana-use-disorder
- Prevention and Youth Cannabis Use Toolkit (PTTC Network). https://pttcnetwork.org/centers/northeast-caribbean-pttc/product/prevention-and-youth-cannabis-use-toolkit
- Marijuana & Vaping - The Triangulum: The Future is Now https://attcnetwork.org/centers/central-east-attc/product/marijuana-vaping-triangulum-future-now

Lesson 3: Appeal of JUUL among Adolescents

How does cannabis use impact driving and road safety? This lesson reviews the impacts of cannabis use on road safety and policy and enforcement considerations in states with and without legalized cannabis.

Watch Video: https://www.youtube.com/watch?v=vZ6RqhZLMjo

Discussion Questions:

- What did adolescents report as the top reasons for liking JUUL or vaping products?
- What reasons did adolescents provide for not liking JUUL or vaping products?
- What regulatory policies would these findings support to address vape use among adolescents?

Answers:

In the study discussed in this video, which surveyed high school students in Connecticut about their views on vaping, students reported that they liked JUUL primarily because they like the "buzz," their friends use it, and they like the flavors. Students who reported that they liked the "buzz" also reported more frequent use of vaping products.

On the other hand, the most common reasons students reported disliking JUUL or vaping products were because they are too expensive, they have too much nicotine, or it gives them headaches.

This study provides some useful insight into policy and environmental strategies to reduce adolescent vaping. For example, it suggests limiting nicotine content and flavor options may help reduce adolescent use. Increasing taxes or the price of vaping products may also help reduce adolescent use.

Learn more:

- Kong, G., Bold, K. W., Morean, M. E., Bhatti, H., Camenga, D. R., Jackson, A., & Krishnan-Sarin, S. (2019). Appeal of JUUL among adolescents. Drug and alcohol dependence, 205, 107691. https://doi.org/10.1016/j.drugalcdep.2019.107691. Abstract accessible at: https://pubmed.ncbi.nlm.nih.gov/31706249/

Lesson 4: Public Health Concerns of Youth E-Cigarette Use

What are the public health considerations of youth e-cigarette use? How might that differ from adult use?

Watch Video: https://www.youtube.com/watch?v=HYnAohdt9eY

Discussion Questions:

- What are some of the major public health concerns of youth vaping/e-cigarette use?
- Are e-cigarettes an FDA-approved tobacco cessation product?
- How does exposure to nicotine and other chemicals differ between e-cigarettes and combustible cigarettes?

Answers:

There are a variety of public health concerns around youth use of vaping/e-cigarettes. Nicotine exposure at an early age can be detrimental to brain development and lead to nicotine dependence. There is also an increased risk that adolescents who start using vaping products will transition to combustible tobacco products (cigarettes, etc.). Another major risk is exposure to toxicants within the e-cigarette products.

The FDA has not currently approved e-cigarette/vaping products as a tobacco cessation product for adults or adolescents. Some other countries, such as the United Kingdom, have approved certain vaping devices for tobacco cessation for adults, although typically with lower limits on the allowable nicotine content.

Compared to combustible cigarettes, e-cigarettes contain fewer and lower levels of toxicants. However, people tend to use e-cigarettes more frequently throughout the day, so their exposure to chemicals contained in e-cigarette products can be high.

Learn More:

- New England PTTC Vaping Prevention Resources and Information https://pttcnetwork.org/centers/new-england-pttc/vaping-prevention-resources-and-information
- The Stanford Vaping Prevention Toolkit https://med.stanford.edu/tobaccopreventiontoolkit.html?_ga=2.102373313.1137840784.1570813274-757356592.1566651868