

# Surgeon General's Advisory on E-cigarette Use Among Youth

*I, Surgeon General of the United States Public Health Service, VADM Jerome Adams, am emphasizing the importance of protecting our children from a lifetime of nicotine addiction and associated health risks by immediately addressing the epidemic of youth e-cigarette use. The recent surge in e-cigarette use among youth, which has been fueled by new types of e-cigarettes that have recently entered the market, is a cause for great concern. We must take action now to protect the health of our nation's young people.*

**KNOW THE RISKS. TAKE ACTION. PROTECT OUR KIDS.**

## The E-cigarette Epidemic Among Youth

Considerable progress has been made in reducing cigarette smoking among our nation's youth.<sup>1</sup> However, the tobacco product landscape continues to evolve to include a variety of tobacco products, including smoked, smokeless, and electronic products, such as e-cigarettes.<sup>2</sup> E-cigarettes are designed to deliver nicotine, flavorings, and other additives to the user via an inhaled aerosol.<sup>2</sup>

E-cigarettes entered the U.S. marketplace around 2007, and since 2014, they have been the most commonly used tobacco product among U.S. youth.<sup>2</sup> E-cigarette use among U.S. middle and high school students increased 900% during 2011-2015, before declining for the first time during 2015-2017.<sup>3</sup> However, current e-cigarette use increased 78% among high school students during the past year, from 11.7% in 2017 to 20.8% in 2018.<sup>4</sup> In 2018, more than 3.6 million U.S. youth, including 1 in 5 high school students and 1 in 20 middle school students, currently use e-cigarettes.<sup>4</sup>

E-cigarette aerosol is not harmless.<sup>2</sup> Most e-cigarettes contain nicotine – the addictive drug in regular cigarettes, cigars, and other tobacco products.<sup>2</sup> Nicotine exposure during adolescence can harm the developing brain – which continues to develop until about age 25.<sup>2</sup> Nicotine exposure during adolescence can impact learning, memory, and attention.<sup>1,2</sup> Using nicotine in adolescence can also increase risk for future addiction to other drugs.<sup>1,2</sup> In addition to nicotine, the aerosol that users inhale and exhale from e-cigarettes can potentially expose both themselves and bystanders to other harmful substances, including heavy metals, volatile organic compounds, and ultrafine particles that can be inhaled deeply into the lungs.<sup>2</sup>

Many e-cigarettes also come in kid-friendly flavors. In addition to making e-cigarettes more appealing to young people,<sup>5</sup> some of the chemicals used to make certain flavors may also have health risks.<sup>2</sup> E-cigarettes can also be used to deliver other drugs, including marijuana.<sup>2</sup> In 2016, one-third of U.S. middle and high school students who ever used e-cigarettes had used marijuana in e-cigarettes.<sup>6</sup>

For adults, e-cigarettes may have the potential to reduce risk for current smokers if they completely transition from cigarettes to e-cigarettes; however, a majority of adults who use e-cigarettes also smoke cigarettes.<sup>7</sup> For youth, the use of multiple tobacco products puts youth at even greater risk for addiction and tobacco-related harms.<sup>1,2</sup> Moreover, a 2018 National Academy of Sciences, Engineering, and Medicine report concluded that there was moderate evidence that e-cigarette use increases the frequency and intensity of cigarette smoking in the future.<sup>7</sup> But any e-cigarette use among young people is unsafe, even if they do not progress to future cigarette smoking.<sup>2</sup>

## E-cigarettes Come in Many Shapes and Sizes

E-cigarettes are a rapidly changing product class, and are known by many different names, including "e-cigs," "e-hookahs," "mods," and "vape pens."<sup>2</sup> Recently, a new type of e-cigarette has become increasingly popular among our nation's youth due to its minimal exhaled aerosol, reduced odor, and small size, making it easy to conceal.<sup>8</sup> Many of these new e-cigarettes look like a USB flash drive, among other shapes. One of the most commonly sold

USB flash drive shaped e-cigarettes is JUUL, which experienced a 600% surge in sales during 2016-2017, giving it the greatest market share of any e-cigarette in the U.S. by the end of 2017.<sup>9</sup> Other companies are now also starting to sell e-cigarettes that look like USB flash drives.

All JUUL e-cigarettes have a high level of nicotine. A typical JUUL cartridge, or "pod," contains about as much nicotine as a pack of 20 regular cigarettes.<sup>10</sup> These products also use nicotine salts, which allow particularly high levels of nicotine to be inhaled more easily and with less irritation than the free-base nicotine that has traditionally been used in tobacco products, including e-cigarettes. This is of particular concern for young people, because it could make it easier for them to initiate the use of nicotine through these products and also could make it easier to progress to regular e-cigarette use and nicotine dependence. However, despite these risks, approximately two-thirds of JUUL users aged 15-24 do not know that JUUL always contains nicotine.<sup>11</sup>

## You Can Take Action

We must take aggressive steps to protect our children from these highly potent products that risk exposing a new generation of young people to nicotine.<sup>2,7</sup> The bad news is that e-cigarette use has become an epidemic among our nation's young people. However, the good news is that we know what works to effectively protect our kids from all forms of tobacco product use, including e-cigarettes.<sup>1,2,12</sup> We must now apply these strategies to e-cigarettes, including USB flash drive shaped products such as JUUL. To achieve success, we must work together, aligning and coordinating efforts across both old and new partners at the national, state, and local levels. Everyone can play an important role in protecting our nation's young people from the risks of e-cigarettes.

## Information for Parents

- **You have an important role to play in addressing this public health epidemic.**
- Learn about the different shapes and types of e-cigarettes and the risks of all forms of e-cigarette use for young people at <https://e-cigarettes.surgeongeneral.gov/>.
- Set a good example by being tobacco-free. If you use tobacco products, it's never too late to quit. Talk to a healthcare professional about quitting all forms of tobacco product use. For free help, visit [smokefree.gov](https://smokefree.gov) or call **1-800-QUIT-NOW**.
- Adopt tobacco-free rules, including e-cigarettes, in your home and vehicle.
- Talk to your child or teen about why e-cigarettes are harmful for them. It's never too late.
- Get the Surgeon General's tip sheet for parents, **Talk With Your Teen About E-cigarettes**, at <https://e-cigarettes.surgeongeneral.gov/>. Start the conversation early with children about why e-cigarettes, including JUUL, are harmful for them.
- Let your child know that you want them to stay away from all tobacco products, including e-cigarettes, because they are not safe for them. Seek help and get involved.
  - Set up an appointment with your child's health care provider so that they can hear from a medical professional about the health risks of tobacco products, including e-cigarettes.
  - Speak with your child's teacher and school administrator about enforcement of tobacco-free school policies and tobacco prevention curriculum.
  - Encourage your child to learn the facts and get tips for quitting tobacco products at [Teen.smokefree.gov](https://teen.smokefree.gov).

## Information for Teachers

- **You have an important role to play in addressing this public health epidemic.**
- Learn about the different shapes and types of e-cigarettes and the risks of all forms of e-cigarette use, including JUUL, for young people at <https://e-cigarettes.surgeongeneral.gov/>.
- Develop, implement, and enforce tobacco-free school policies and prevention programs that are free from tobacco industry influence, and that address all types of tobacco products, including e-cigarettes.

- Engage your students in discussions about the dangers of e-cigarette use. To help you, the Food and Drug Administration (FDA), and Scholastic, developed free resources for teachers. These materials can be found at [www.scholastic.com/youthvapingrisks](http://www.scholastic.com/youthvapingrisks).

## Information for Health Professionals

- **You have an important role to play in addressing this public health epidemic.**
- Learn about the different shapes and types of e-cigarettes and the risks of all forms of e-cigarette use, including JUUL, for young people at <https://e-cigarettes.surgeongeneral.gov/>.
- Ask about e-cigarettes, including small, discreet devices such as JUUL, when screening patients for the use of any tobacco products.
- Educate patients about the risks of all forms of tobacco product use, including e-cigarettes, for young people.
- Encourage patients to quit. For free help, patients can visit [smokefree.gov](http://smokefree.gov) or call [1-800-QUIT-NOW](tel:1800QUITNOW).

## Information for States, Communities, Tribes, and Territories

- **You have an important role to play in addressing this public health epidemic.**
- Implement evidence-based population-level strategies to reduce e-cigarette use among young people, such as including e-cigarettes in smoke-free indoor air policies, restricting young peoples' access to e-cigarettes in retail settings, licensing retailers, implementing price policies, and developing educational initiatives targeting young people.
- Implement strategies to curb e-cigarette advertising and marketing that are appealing to young people.
- Implement strategies to reduce access to flavored tobacco products by young people.

KNOW THE RISKS. TAKE ACTION. PROTECT OUR KIDS.

## References

1. Office of the Surgeon General. *The Health Consequences of Smoking-50 Years of Progress: A Report of the Surgeon General*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention (US), National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014. <https://www.surgeongeneral.gov/library/reports/50-years-of-progress/full-report.pdf>.
2. Office of the Surgeon General. *E-cigarette Use among Youth and Young Adults: A Report of the Surgeon General*. Washington, DC: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2016. [https://www.cdc.gov/tobacco/data\\_statistics/sgr/e-cigarettes/pdfs/2016\\_sgr\\_entire\\_report\\_508.pdf](https://www.cdc.gov/tobacco/data_statistics/sgr/e-cigarettes/pdfs/2016_sgr_entire_report_508.pdf).
3. Wang TW, Gentzke A, Sharapova S, et al. Tobacco Use Among Middle and High School Students - United States, 2011-2017. *MMWR Morbidity and Mortality Weekly Report*. 2018;67(22):629-633.
4. Cullen KA, Ambrose BK, Gentzke AS, Apelberg BJ, Jamal A, King BA. Notes from the Field: Increase in use of electronic cigarettes and any tobacco product among middle and high school students – United States, 2011-2018. *MMWR Morbidity & Mortality Weekly Report* 2018; 67(45):1276-1277.
5. Ambrose BK, Day HR, Rostron B, et al. Flavored Tobacco Product Use Among US Youth Aged 12-17 Years, 2013-2014. *Jama*. 2015;314(17):1871-1873.
6. Trivers KF, Phillips E, Gentzke AS, Tynan MA, Neff LJ. Prevalence of Cannabis Use in Electronic Cigarettes Among US Youth. *JAMA pediatrics*. 2018;172(11):1097-1099.
7. National Academies of Sciences, Engineering, and Medicine. 2018. Public Health Consequences of E-Cigarettes. Washington, DC: The National Academies Press. <https://doi.org/10.17226/24952>.
8. Ramamurthi D, Chau C, Jackler RK. JUUL and other stealth vaporisers: hiding the habit from parents and teachers. *Tob Control*. 2018. Epub ahead of print. doi: 10.1136/tobaccocontrol-2018-054455.
9. King BA, Gammon DG, Marynak KL, Rogers T. Electronic Cigarette Sales in the United States, 2013-2017. *Jama*. 2018;320(13):1379-1380.

10. Willett JG, Bennett M, Hair EC, et al. Recognition, use and perceptions of JUUL among youth and young adults. *Tab Control*. 2018. Epub ahead of print. doi: 10.1136/tobaccocontrol-2018-054273.
11. Truth Initiative. JUUL e-cigarettes gain popularity among youth, but awareness of nicotine presence remains low. <https://truthinitiative.org/news/juul-e-cigarettes-gain-popularity-among-youth>.
12. US Department of Health and Human Services. *Preventing tobacco use among youth and young adults*. Atlanta, GA: US Department of Health and Human Services, CDC;2012. [https://www.cdc.gov/tobacco/data\\_statistics/srr/2012/index.htm](https://www.cdc.gov/tobacco/data_statistics/srr/2012/index.htm).

# E-Cigarettes and Vaping: What Clinicians Need to Know

## ***Facts about E-Cigarettes:***

- E-cigarettes produce an aerosolized mixture containing flavored solution and nicotine that is inhaled by the user. The solution can contain 0-59 mg/mL of nicotine
- E-cigarettes have many names, including e-cigs, vape pens, e-hookah, e-cigars, mechanical mods, and pod systems
- E-cigarettes are battery-powered. They can be disposable or rechargeable via a USB port
- E-cigarettes come in many forms. They can resemble combustible cigarettes, cigars, pipes, flash drives or pens
- E-cigarettes contain a liquid nicotine solution that is often flavored. Most flavors appeal to children, including fruit, candy, peppermint, bubble gum and many others



Common types of e-cigarettes

## ***Health Harms:***

- E-cigarette solutions contain harmful chemicals and carcinogens
- The nicotine in e-cigarettes is addictive and has neurotoxic effects on developing brains
- Animal data shows that exposure to secondhand e-cigarette vapor harms lung growth and function
- Long-term health effects on users and bystanders are still unknown
- These products can also be used to vape marijuana, herbs, waxes, and oils

## ***Danger to Youth:***

- E-cigarettes are the most common tobacco product among teens: in 2018, over 20% of high school students reported having used e-cigarettes in the last 30 days
- Youth who use e-cigarettes are at increased risk of smoking traditional cigarettes
- Children are exposed to e-cigarette marketing in media, magazines, billboards and online
- E-cigarettes mimic combustible cigarette use and help re-normalize smoking behaviors
- E-cigarettes have been marketed as a way to quit smoking, however, there is no conclusive data to support this claim. Many studies have found that smokers are less likely to quit if they are using e-cigarettes.

## ***How to Talk about E-Cigarette Use with Patients and Families:***

- E-cigarette use is often not considered smoking. Asking "Do you smoke?" may not help you identify patients and families who use e-cigarettes
- Instead, combine broad screening questions with specific examples, such as: "In the past year, have you used a tobacco product, like cigarettes, e-cigarettes (vaping devices such as tanks, mods or JUUL) or cigarillos/little cigars?"
- Talk to families about the health harms of these products, especially for youth
- Do not recommend e-cigarettes for smoking cessation. If a patient is using e-cigarettes to try to quit smoking, suggest proven smoking cessation techniques, including Nicotine Replacement Therapy and refer to national quitline or online help (call 1-800-QUIT NOW or go online to [www.smokefree.gov](http://www.smokefree.gov))



### ***Regulatory Issues:***

- In 2016, the Food & Drug Administration (FDA) expanded its regulatory authority to include the manufacture, import, packaging, labeling, advertising, promotion, sale and distribution of all tobacco products, including e-cigarettes
- Under this new law, often called "Deeming," the FDA:
  - Requires health warnings on e-cigarettes and other tobacco products
  - Prohibits the sales of e-cigarettes to youth under the age of 18
  - Bans free samples and prohibits the sale of e-cigarettes in vending machines
  - Requires that e-cigarette manufacturers receive marketing authorization from FDA
  - Requires vape shops that mix e-liquids to comply with legal requirements for tobacco manufacturers
- If you suspect a retailer is violating the FDA rules, you can report them to FDA: <http://bit.ly/2bewrVh>
- AAP Policy recommends prohibiting the sale of e-cigarettes to youth under age 21, banning e-cigarette use in workplaces and public spaces, prohibiting flavors in e-cigarette liquids, and banning advertising of e-cigarettes where youth may see it. The AAP Division of State Government Affairs has created a resource to help you understand and track e-cigarette legislation in your state: <http://bit.ly/2bevPPA>

### ***Risk of Poisoning:***

- E-liquid nicotine solutions can poison children and adults through ingestion or skin absorption
- Calls to poison control centers related to e-cigarettes skyrocketed from 1 per month in 2010 to 215 per month in 2015: half of these calls involve children under 5 years old
- Less than half a teaspoon of liquid nicotine can be fatal to a toddler
- The Child Nicotine Poisoning Prevention Act was signed into law in 2016, requiring that liquid nicotine used for e-cigarettes refills be sold in childproof packaging

### ***What to Watch For: Nicotine Poisoning***

- Initial symptoms of nicotine poisoning include emesis, sweating, and dizziness
- Can progress to tachycardia, hypertension, lethargy, seizures, and respiratory muscle weakness

### ***Recommendations for E-Cigarette Users (Courtesy of American Association of Poison Control Centers)***

- Protect your skin when handling the products
- Always keep e-cigarettes and liquid nicotine locked up and out of the reach of children
- Follow the specific disposal instructions on the label
- If exposure to liquid nicotine occurs, call the local poison center at 1-800-222-1222

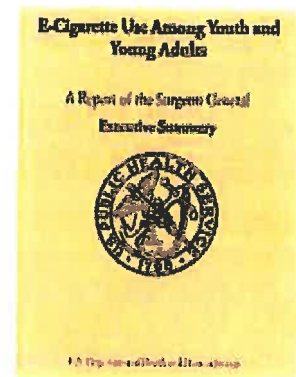
For more information about these devices, including statistics and citations, please visit

<http://www2.aap.org/richmondcenter/ENDS.html>

Visit the AAP Richmond Center online at: [www.richmondcenter.org](http://www.richmondcenter.org)

# Understanding the 2016 Surgeon General's Report on Youth and Electronic Cigarettes: What Clinicians Need to Know

In December 2016, US Surgeon General Vivek Murthy, MD MBA released a report about youth and electronic cigarettes (e-cigarettes). The AAP Julius B. Richmond Center of Excellence has created this fact sheet to help pediatric clinicians interpret the findings of the Surgeon General's Report and incorporate the information into patient care.



## Key Findings

After a comprehensive review of current literature, the report made the following conclusions:

1. The landscape of e-cigarettes and other electronic nicotine delivery systems is diverse, and these products are known by many different names.
2. E-cigarette use among youth and young adults is a public health concern, and has increased significantly in recent years.
3. E-cigarettes are the most commonly-used tobacco product among youth, and use of e-cigarettes is associated with use of traditional cigarettes and other tobacco products.
4. E-cigarettes and other products containing nicotine pose a danger for youth, pregnant women and fetuses. Youth use of nicotine, including in e-cigarettes, is unsafe.
5. Secondhand exposure to e-cigarette aerosol is not harmless; it contains nicotine and other harmful constituents. The nicotine contained in aerosol can cause addiction and have neurotoxic effects on the adolescent brain.
6. E-cigarettes are advertised and marketed to youth using the same tactics the tobacco industry has used to promote cigarette smoking in the past.
7. Evidence-based tobacco control interventions should be used to protect youth from e-cigarette use and exposure.

## Recommendations for Patient Care

**Screen:** Ask about tobacco use, including use of e-cigarettes, as a part of routine clinical screening with every patient and family.

**Ask the Right Questions:** Because e-cigarettes are known by many different names, it's important to use a specific e-cigarette screening question.

One example is: *"Do you use any kind of tobacco, such as cigarettes? What about electronic smoking devices like e-cigarettes or vape pens?"*

**Talk with Teens Honestly:** Counsel about the harms of e-cigarette use, and stress the importance of avoiding these products. Explain that e-cigarettes contain nicotine and cancer-causing chemicals; they are not "just water vapor." Discuss the effects of e-cigarettes on brain function, and explain that nicotine addiction happens quickly, and that users have an increased risk of using other tobacco products, including cigarettes.

When counseling, choose messages that resonate with adolescents: consider talking about the expense of e-cigarettes, or the loss of freedom that occurs when you're addicted to nicotine. Talk with them about the tobacco industry's efforts to target them with misinformation and advertising.

For both users and non-users, mention the dangers of secondhand e-cigarette exposure, and advise teens to avoid secondhand e-cigarette aerosol, and to discourage others from using e-cigarettes around them. For teens who babysit or have young siblings, explain that e-liquid is poisonous and can be fatal if ingested. Ensure that e-liquid is kept in childproof containers, and out of the reach of children.

Some suggestions for starting the conversation include:

- *"Can you tell me what you know about e-cigarettes?"*
- *"I know there's a lot of confusion out there about e-cigarettes, but I'd like to tell you what I know for sure."*

**Use Evidence-Based Interventions:** Although e-cigarettes are relatively new to the market, there are many evidence-based tobacco interventions that can be applied to e-cigarette use. Consider adapting the US Public Health Service's "5As" Tobacco Cessation Intervention to guide your conversation with parents and with youth:

- **ASK** about e-cigarette use
- **ADVISE** against e-cigarette use and about avoiding secondhand vapor exposure
- **ASSESS** whether teen is ready to quit using e-cigarettes
- **ASSIST** them in quitting, by setting a quit date and giving them practical advice for a successful quit attempt and for prevention of secondhand exposure by non-users
- **ARRANGE** follow-up to check on the teen's progress with quitting

## Related Resources

For the full text of the Surgeon General's Report, visit [www.surgeongeneral.gov](http://www.surgeongeneral.gov); for related resources, visit [E-cigarettes.Surgeongeneral.gov](http://E-cigarettes.Surgeongeneral.gov).

For more information about electronic cigarettes, including statistics and citations, visit:  
<http://www2.aap.org/richmondcenter/ENDS.html>

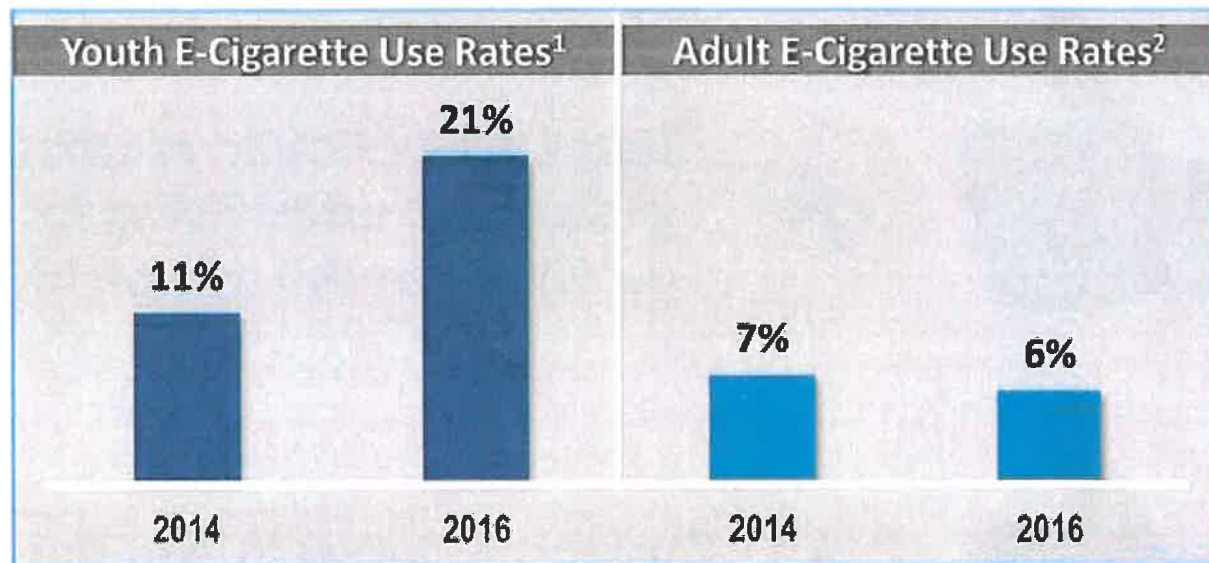
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**Electronic cigarettes (e-cigarettes) are battery-powered devices that heat a solution of liquid nicotine, flavorings, and other chemicals creating an aerosol that is inhaled by the user**

E-cigarette use among New York youth doubled from 2014 to 2016 and is now triple the rate of e-cigarette use among New York adults



**E-cigarettes are the most commonly used tobacco product among youth in New York.<sup>3</sup>**



E-cigarettes are not an FDA approved smoking cessation aid



The aerosol contains heavy metals, volatile organic compounds, ultrafine particles, and other toxic chemicals in addition to nicotine



E-cigarette use can increase the risk of using tobacco cigarettes among youth and young adults

<sup>1</sup> New York State Youth Tobacco Survey, 2014, 2016.

<sup>2</sup> New York State Adult Tobacco Survey, 2014, 2016.

<sup>3</sup> New York State Department of Health (2016). StatShot Vol. 10, No. 1/Mar 2017. Youth Cigarette Use at All-Time Low, ENDS Use Doubles.



**New York adults support policies  
that would restrict youth access  
to e-cigarettes**



**Support a policy to restrict  
e-cigarette advertising to  
youth under the age of 18**



**Support a policy to ban the  
sale of flavored nicotine  
used in e-cigarettes**

**63%**

**of New Yorkers favor raising the  
minimum age to 21 to purchase  
cigarettes, e-cigarettes and other  
tobacco products**



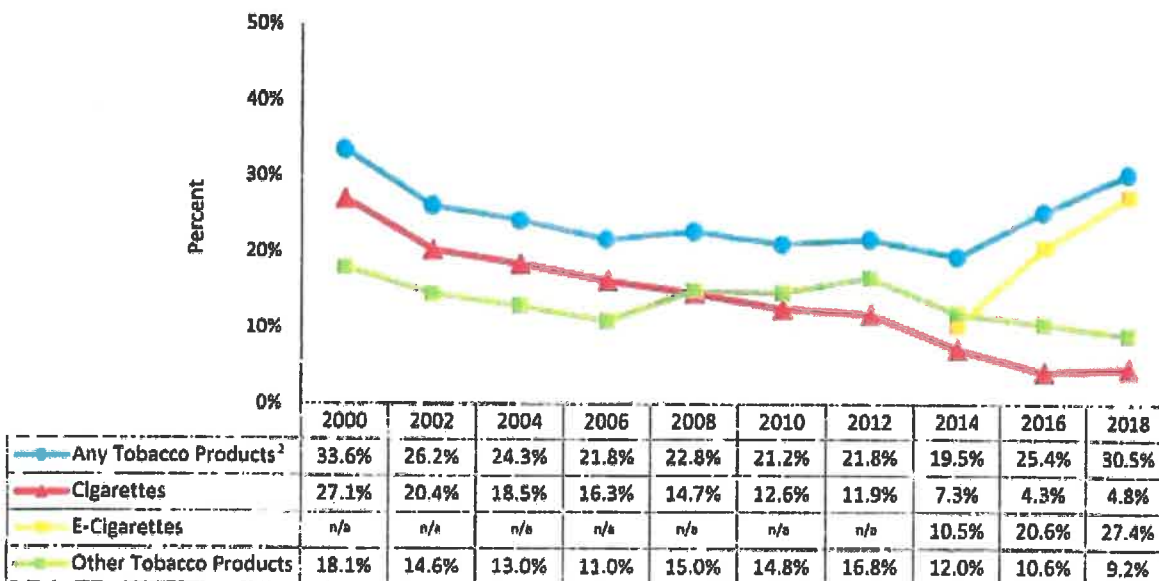
## Electronic Cigarette Use by Youth Increased 160% Between 2014 and 2018

According to the U.S. Surgeon General, tobacco use among youth and young adults in any form, including electronic cigarettes (e-cigarettes) is not safe: nicotine exposure during adolescence can cause addiction and can harm the developing adolescent brain.<sup>1</sup> An objective of the New York State (NYS) Prevention Agenda is to reduce the prevalence of any tobacco product use by high school age youth to 15% by 2018.<sup>2</sup> After years of downward trends in the use of tobacco products among high school youth in NYS, there has been a significant increase in the use of e-cigarettes. According to data from the NYS Youth Tobacco Survey (NYS-YTS):

- Cigarette smoking among high school youth declined by 82% between 2000 and 2018. From 2016 to 2018 the rate increased from 4.3% to 4.8%, the first increase in combustible cigarette use among youth in NYS since 2000.
- In contrast, use of e-cigarettes among high school youth continues to rise. Between 2014 and 2018, the rate increased fully 160%, from 10.5% to 27.4%. E-cigarettes remain the most commonly used tobacco product among youth surpassing cigarettes, cigars, smokeless tobacco, and hookah.

The NYS-YTS monitors the use of tobacco products available to and used by youth. Cigarettes, cigars, and smokeless tobacco have been monitored since 2000, while products such as hookah (2008) and e-cigarettes (2014) were added to the NYS-YTS as they gained popularity. The addition of new products to the market is one of many factors contributing to the recent increase in any tobacco product use among high school youth. For example, e-cigarettes are marketed using similar tactics as those proven to lead to youth smoking, including: candy-flavored products; youth-resonant themes such as rebellion, glamour and sex; and celebrity endorsements.<sup>3</sup> Continued surveillance of all tobacco product use among youth is important, especially to monitor the use of emergent products in this population.

### Trends in Any Tobacco Product Use among High School Students<sup>3</sup> in NYS, 2000-2018



1. U.S. Department of Health and Human Services. E-Cigarette Use Among Youth and Young Adults. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2016.

2. "Any Tobacco Product" refers to the products that were asked about in the YTS year. Cigarettes, cigars, and smokeless tobacco have been monitored since 2000. Bidis and kreteks were included from 2000 to 2010. Pipe was included from 2000 to 2008, and again in 2014. Hookah was included beginning in 2008 and ENDS were included beginning in 2014. "Other Tobacco Product" refers to any product other than cigarettes or ENDS. Current tobacco use is defined as use on one or more days in the past 30 days.

3. Based on methods developed by CDC, the YTS is a school-based survey of a representative sample of high school students in NYS. The average sample size of high school students in the YTS, for all years excluding 2008, is 4,286. In 2008, a special study was conducted and the sample was increased to 23,133.

Source: New York State Youth Tobacco Survey 2000-2018. Contact the Bureau of Chronic Disease Evaluation and Research, New York State Department of Health at (518) 473-0673 or send an e-mail to [tcp@health.ny.gov](mailto:tcp@health.ny.gov). StatShots can be accessed online at: [http://www.health.ny.gov/prevention/tobacco\\_control/reports/statshots](http://www.health.ny.gov/prevention/tobacco_control/reports/statshots)



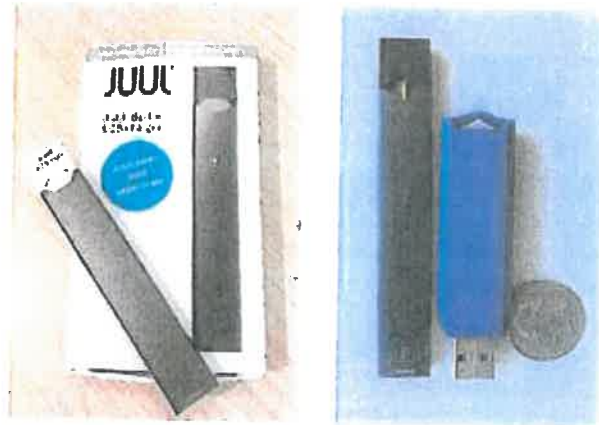
## JUULing: What Pediatricians and Families Need to Know

### What is a JUUL?

JUUL (pronounced "jewel") is a brand of e-cigarette made by JUUL Labs Inc.

JUUL has grown quickly in popularity since introduction to the market in 2015, fueled by a serious following among youth and young adults.

JUUL's popularity among youth raises significant concerns for pediatric health.



### JUUL Characteristics:

JUUL is a sleek, small e-cigarette that resembles a flash drive. Unlike other types of e-cigarettes, JUUL does not look like a traditional cigarette and thus may not be immediately identifiable as a vaping device. Due to their size, JUUL devices are discrete and can be easily concealed in a fist or a pocket.

JUUL operates by heating a "pod" of e-liquid containing nicotine, flavorings and other substances. When heated, the e-liquid creates an aerosol which is inhaled by the user.

JUUL has spawned its own terminology: use of these devices is called "juuling."

### Public Health Concerns:

JUUL comes in youth-friendly flavors, including mango, mint and fruit-medley. For decades, the tobacco industry has used flavors to attract youth to their products.<sup>1</sup> Youth cite flavors as a common reason for e-cigarette use.<sup>2</sup>

JUUL is highly addictive. The concentration of nicotine in JUUL is more than double the concentration found in other e-cigarettes. This high concentration is a serious concern for youth, who are already uniquely susceptible to nicotine addiction. The addictive potential is so high that the US Surgeon General has declared that youth use of nicotine in any form is unsafe.<sup>3</sup>

JUUL users have a significant risk of becoming cigarette smokers. Youth who use e-cigarettes are more likely to progress to smoking traditional cigarettes.<sup>3,4</sup>

JUULing is increasingly common in high school and college campuses. Educators report that youth are using JUUL in classrooms, hallways and restrooms, and are sharing devices with their peers. This social use encourages non-users to try JUUL, and enables students who are too young to purchase these products, or who could not otherwise afford them, to access them through peers.

### References:

1. U.S. Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta (GA): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2012.
2. Tsai J, Walton K, Coleman BN, et al. *Reasons for Electronic Cigarette Use Among Middle and High School Students—National Youth Tobacco Survey, United States, 2016*. *MMWR* 2018;67:196-200.
3. U.S. Department of Health and Human Services. *E-Cigarette Use Among Youth and Young Adults, A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2016.
4. National Academies of Sciences, Engineering and Medicine. 2018. *Public Health Consequences of E-Cigarettes*. Washington, DC: The National Academies Press.





## Electronic nicotine delivery systems (ENDS)

### What physicians should know about ENDS

- Electronic nicotine delivery systems (ENDS), also called electronic cigarettes, e-cigarettes, vaping devices, or vape pens, are battery-powered devices used to smoke or “vape” a flavored solution.
- ENDS solution often contains nicotine, an addictive chemical also found in cigarettes.
- ENDS use is popular—the rate of adults trying an e-cigarette at least once more than doubled from 2010 to 2013,<sup>1</sup> and more youth are current users of e-cigarettes than combustible cigarettes.<sup>2</sup>
- In 2016, the Food and Drug Administration (FDA) expanded its regulatory authority to include the manufacture, import, packaging, labeling, advertising, promotion, sale, and distribution of all tobacco products, including ENDS. Under this new law, often called the “Deeming Rule,” the FDA:
  - Requires health warnings on ENDS and other tobacco products.
  - Prohibits the sales of ENDS to youth under the age of 18.
  - Bans free samples and prohibits the sale of ENDS in vending machines.
  - Requires that ENDS manufacturers receive marketing authorization from the FDA.
  - Requires vape shops that mix e-liquids to comply with legal requirements for tobacco manufacturers.
- Exhaled ENDS vapor is not harmless water vapor—it has been shown to contain chemicals that cause cancer,<sup>3</sup> can cause harm to unborn babies,<sup>4</sup> and is a source of indoor air pollution.<sup>5</sup> ENDS are promoted as a way to smoke where smoking is prohibited. However, state and local officials are incorporating ENDS use into existing smoke-free air regulations to protect health.
- Some people use ENDS as a way to quit smoking combustible cigarettes, but current evidence is insufficient to recommend ENDS for tobacco cessation in adults,<sup>6</sup> and some people use both devices due to the addictive nature of nicotine.

### ENDS are a health hazard

- ENDS companies can legally promote these products by using techniques that cigarette companies have not been able to use since the 1998 Master Settlement Agreement, including television and radio ads, billboards, outdoor signage, and sponsorships.
- ENDS and ENDS solutions are available in many flavors (bubble gum, chocolate, peppermint, etc.) that appeal to youth. Flavors, design, and marketing renormalize and glamorize smoking.
- In 2016, the Child Nicotine Poisoning Prevention Act was signed into law. This law requires packaging safety standards for ENDS and the containers that hold ENDS solution. Under this law, liquid nicotine must be packaged in child-proof packaging, in accordance with Consumer Product Safety Commission standards. This law is an important step to protect children’s health. Prior to the passage of this act, poison control centers in the United States reported skyrocketing adverse exposures from e-cigarettes and liquid nicotine since 2011.<sup>7</sup>



## What physicians should tell patients and families about ENDS

- ENDS emissions are not harmless water vapor. Both the user and those around them are exposed to chemicals, some of which cause cancer.
- There is insufficient evidence to suggest ENDS are less harmful to a fetus than traditional cigarettes. Women who are pregnant or trying to become pregnant should be informed about the risks that ENDS pose for both maternal and neonatal health.
- The U.S. Preventive Services Task Force concludes that the current evidence is insufficient to recommend ENDS for smoking cessation.<sup>6</sup> Patients may ask about ENDS because they are interested in quitting smoking. Be ready to counsel as appropriate.
- Ask the right questions: "Do you smoke?" is a less effective way to get patients talking. Also ask patients, "Do you vape or use electronic cigarettes?"
- Recommend FDA-approved cessation products and refer patients to the state quitline (1-800-QUIT NOW), a text-based program (text QUIT to 47848), or an in-person cessation program.
- Insurance covers some medications and programs, and grants may be available to offer free cessation help. Do not let cost be a barrier to quitting.
- In 2016, the U.S. Surgeon General released a report,<sup>8</sup> which concluded that youth use of ENDS products is a public health concern. The report found that:
  - Youth use of e-cigarettes is associated with the use of other tobacco products.
  - Youth use of nicotine in any form, including ENDS, is unsafe.
  - Secondhand exposure to ENDS aerosol contains nicotine and other harmful constituents.

## References

- 1) King BA, Patel R, Nguyen KH, Dube SR. Trends in awareness and use of electronic cigarettes among U.S. adults, 2010-2013. *Nicotine Tob Res.* 2015;17(2):219-27
- 2) Johnston LD, et al. Monitoring the future. National survey results on drug use. 1975-2014. Overview. Key findings on adolescent drug use. National Institutes of Health. National Institute on Drug Abuse. The University of Michigan. Institute for Social Research. Ann Arbor, MI. 2015.  
<http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2014.pdf>. Accessed 10/2/15.
- 3) Grana R, Benowitz N, Glantz SA. E-cigarettes: a scientific review. *Circulation.* 2014;129(19):1972-86.
- 4) Bahl V, Lin S, Xu N, Davis B, Wang YH, Talbot P. Comparison of electronic cigarette refill fluid cytotoxicity using embryonic and adult models. *Reprod Toxicol.* 2012;34(4):529-37.
- 5) Schober W, Szendrei K, Matzen W, et al. Use of electronic cigarettes (e-cigarettes) impairs indoor air quality and increases FeNO levels of e-cigarette consumers. *Int J Hyg Environ Health.* 2014;217(6):628-37.
- 6) Siu AL. Behavioral and pharmacotherapy interventions for tobacco smoking cessation in adults, including pregnant women: U.S. Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2015;163(8):622-634.
- 7) American Association of Poison Control Centers. Electronic cigarettes and liquid nicotine data. August 31, 2015. [https://aapcc.s3.amazonaws.com/files/library/E-cig\\_\\_Nicotine\\_Web\\_Data\\_through\\_8.2015\\_BjqUYv.pdf](https://aapcc.s3.amazonaws.com/files/library/E-cig__Nicotine_Web_Data_through_8.2015_BjqUYv.pdf). Accessed Oct. 1, 2015.
- 8) U.S. Department of Health and Human Services. E-cigarette use among youth and young adults: a report of the Surgeon General. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2016.

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