E-cigarettes & Kids

Preventing use among youth and young adults

acscan.org

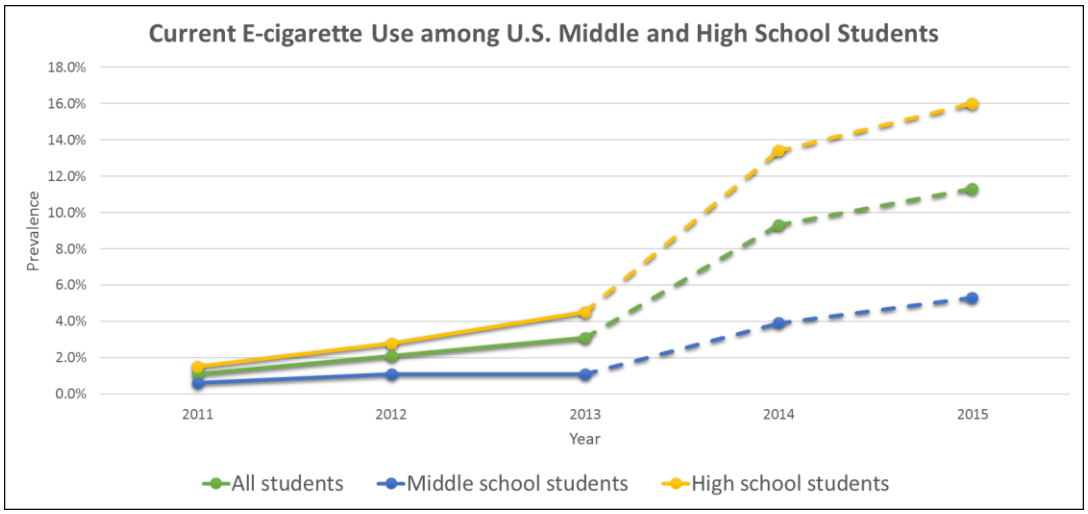
What are Electronic Cigarettes?

Electronic cigarettes, or e-cigarettes, are a diverse group of products that go by many names including vape pens, tank systems, e-hookah, and mods. E-cigarettes are typically battery-operated products designed to deliver a heated solution, or aerosol of nicotine and other chemicals, to the user. E-cigarettes can be disposable or consist of a rechargeable, battery-operated heating element; a replaceable or refillable cartridge that may contain nicotine, flavoring agents, and other chemicals (sometimes called "e-juices"); and an atomizer that uses heat to convert the contents of the cartridge into an aerosol that is inhaled by the user.[i]

In May 2016, the U.S. Food and Drug Administration (FDA) finalized a rule asserting its authority over the manufacture, sale, and marketing of e-cigarettes. The rule requires e-cigarette manufacturers to adhere to provisions of the Family Smoking Prevention and Tobacco Control Act that require registering with and providing product information to the FDA, prohibits unsubstantiated health claims, prohibits sales to youth under the age of 18, and requires a new warning label.[ii] However, there are long compliance periods and rulemaking is generally slow, so it could be years before these and other requirements are fully implemented.

Youth & Young Adult E-cigarette Use

Nationwide, e-cigarette use has increased rapidly among youth. E-cigarettes are the most commonly used tobacco product by middle and high school students, surpassing cigarette use, according to the most recent data available.[iii] In 2011, 1.5 percent of high school students and 0.6 percent of middle school students reported using e-cigarettes. By 2015, those numbers rose to 16 percent of high school students and 5.3 percent of middle school students, totaling 3 million students. E-cigarette and cigarette use was higher in male students compared to female students, and non-Hispanic white and Hispanic students as compared to non-Hispanic black students.



Source: National Youth Tobacco Survey, past-30-day use. In 2014, the survey question was modified to enhance its accuracy.

The 2016 Surgeon General's Report concluded that "e-cigarette use is strongly associated with the use of other tobacco products among youth and young adults, particularly combustible tobacco products.[iv]" In 2015, among high school students who used e-cigarettes, 58.8 percent also smoked at least two types of combustible products, and 77 percent also smoked at least 2 types of combustible products and used other tobacco products such as smokeless tobacco. Among middle school students who use e-cigarettes, 61.3 percent also used at least two types of combustible products, and 74.6 percent also smoked at least two types of combustible products and used noncombustible products.

Among students who had ever used an e-cigarette, rechargeable/refillable e-cigarettes (53.4 percent) were most often used as compared to disposable e-cigarettes (14.5 percent); though about one-third of students reported using both types (32.5 percent).[v] Among those ever e-cigarette users who remembered their brand of e-cigarette, blu and VUSE were the most popular. blu and VUSE are owned and marketed by large cigarette manufacturers which may explain their popularity among youth.

Young adults (aged 18-24) were more likely to have ever tried an e-cigarette (21.6 percent) and more likely to be current users than older adults (5.1 percent) in 2014.[vi] In fact, both ever trying and current use declined with age. Young adults who have never smoked cigarettes were also more likely to have ever tried e-cigarettes as compared to older adults. In 2015, 40 percent of current young adult e-cigarette users had never smoked cigarettes.[vii]

SPOTLIGHT: Flavored E-cigarettes

Cigarette manufacturers had effectively used flavors, including menthol in cigarettes as a promotional tool to lure in and addict new smokers, particularly young people, until the Family Smoking Prevention and Tobacco Control Act became law in 2009. When the law, which prohibited the use of characterizing flavors in cigarettes, took effect, there was a spike in the use of flavors in other tobacco products. Flavored e-cigarettes have exploded on the market with one study identifying more than 7,700 unique e-cigarette flavors as of January 2014, and more than 240 new flavors being added per month.[xxi] The overwhelming majority of these e-cigarette flavors are fruit or candy and dessert flavors, and are often paired with flashy marketing campaigns that are appealing to youth.

Use of flavored e-cigarettes among youth and young adults is high. Data from the 2013-2014 PATH study, the largest national longitudinal study looking at tobacco use and its effects, found that among teens who use e-cigarettes, 85.3 percent regularly used a flavored product.[xxii] Also, among those teens who had ever tried an e-cigarette, 81 percent used a flavor product for the first time. Among young adults who reported using e-cigarettes every day or some days, 91.6 percent used a flavored product.[xxiii]

Health Effects of E-cigarettes

E-cigarette aerosol poses potential risk to users and nonusers. The most recent Surgeon General's report concluded that "e-cigarette aerosol is not harmless. It can contain harmful and potentially harmful constituents, including nicotine.[viii]" In fact, one study found up to 31 harmful or potential harmful constituents in the aerosol, including nicotine, acetaldehyde, and diacetyl, a chemical linked to serious lung

disease.[ix] Studies have found the aerosol to contain ultrafine particles that can be inhaled deeply into the lungs, heavy metals, volatile organic compounds, and tobacco-specific nitrosamines, among other potentially harmful chemicals.[x,xi,xii] Studies have shown that the use of e-cigarettes can cause short-term lung changes and irritations.[xiii]

E-cigarettes can vary in the amount of nicotine present.[xiv] Nicotine exposure during adolescence and young adulthood can affect the developing brain and may have lasting effects on cognitive function, decision-making, and impulse control.[xv] Exposure to nicotine during adolescence puts the user at greater risk for a lifelong addiction, as the developing brain is more susceptible to addiction than an adult brain. Nicotine exposure, through maternal use, can also negatively affect fetal development leading to sudden infant death syndrome (SIDS), brain alterations, deficits in auditory processing, and obesity.

The health effects of e-cigarette use and exposure to the aerosol will vary based on great diversity in products and patterns of use. Research will be required to keep pace with the evolution of the market and use by consumers of e-cigarettes, as well as other tobacco products.

Industry Targeting of Youth & Young Adults

The 2012 Surgeon General's report concluded that tobacco industry advertising and promotions causes initiation and progression of use among youth and young adults.[xvi] Tobacco industry marketing increases the awareness of smoking, recognition of specific brands, positive attitudes about smoking, intention to smoke, and actual smoking behavior. Furthermore, as shown by tobacco industry documents, this marketing to youth and young adults was intentional. The tobacco industry uses images popular with youth and young adults, including images of independence, rebelliousness, social acceptability, and sexual attraction.

E-cigarette manufacturers are using the same marketing practices effectively used by the other tobacco manufacturers to target youth and mislead consumers about the effects of their products.[xvii] These practices include celebrity endorsements, sports and musical sponsorships, use of images of e-cigarettes as rebellious, sexy and cool, and the use of flavorings in their products.[xviii] Particularly troubling is that e-cigarettes are not subject to the legal restrictions to which cigarettes and other tobacco products are required to adhere. E-cigarettes are advertised on television, radio, online, in print magazines, including those with high youth readership, and at sports and music events.

Youth are seeing e-cigarette advertising. In 2014, almost 70 percent of middle and high school students reported seeing e-cigarette advertising and promotions. More than half of students reported seeing these advertisements in retail stores (54.8 percent), 39.8 percent on the Internet, 36.5 percent on TV and in movies, and 30.4 percent in newspapers and magazines. Another survey found even higher levels of exposure to e-cigarette advertising, with 82 percent of 13-17 years and 88 percent of 18-21 years reporting seeing e-cigarette advertising and promotions.[xix] Exposure was even higher in youth who had ever used a cigarette, was a current smoker, or had ever used an e-cigarette. Recent research shows that youth exposed to e-cigarette advertising are more likely to ever and currently use e-cigarettes, with a dose-effect, even among youth who had never used an e-cigarette.[xx]

ACS CAN's Position:

The rapid increase in use of e-cigarettes by youth and young adults, aggressive marketing tactics by their manufacturers, including the use of flavors appealing to youth, and under-regulation of these products requires the public health community to take action to protect youth and young adults, and the public

health at-large. ACS CAN supports several evidence-based strategies:

- **Strong Federal Regulation:** The FDA should act on its new authority over e-cigarettes by restricting the marketing of these products to youth, prohibiting flavors that appeal to youth and young adults, enforce the prohibition on unsubstantiated health claims, and use sound scientific evidence when evaluating marketing applications and proposing product standards for the protection of public health.
- **Strengthen State and Local Tobacco Control Measures:** Many states and localities are moving forward and enacting regulations on the sale and use of e-cigarettes. E-cigarettes should be included in evidence-based state and local tobacco control laws.
    - E-cigarettes should be defined as tobacco products and included in the definitions of smoking to:
        - Prohibit e-cigarette use where smoking and/or tobacco use is prohibited.
        - Prohibit the sale of e-cigarettes to minors under the age of 21.
        - Prohibit the sale of flavored e-cigarettes and e-juices.
        - Include e-cigarettes in tobacco sales and marketing restrictions.
    - State tobacco control programs should include e-cigarettes in their surveillance and evaluation tools, as appropriate.

---

[i] U.S. Food and Drug Administration. E-Cigarettes: Questions and Answers. September 17, 2010. Available online at http://www.fda.gov/ForConsumers/ConsumerUpdates/ucm225210.htm.

[ii] ACS CAN. FDA's Final Deeming Rule on Other Tobacco Products. https://www.acscan.org/policy-resources/fda%E2%80%99s-final-deeming-rule-other-tobacco-products.

[iii] Centers for Disease Control and Prevention. Tobacco Use Among Middle and High School Students—United States, 2011–2015. Morbidity and Mortality Weekly Report, 2016;65(14):361–7.

[iv] [iv] 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.

[v] Centers for Disease Control and Prevention. Characteristics of Electronic Cigarette Use Among Middle and High School Students – United States, 2015. Morbidity and Mortality Weekly Report, 2016; 65(50&51): 1425-9.

[vi] Schoenborn CA, Gindi RM. Electronic cigarette use among adults: United States, 2014. NCHS data brief, no. 217. Hyattsville, MD: National Center for Health Statistics. 2015.

[vii] Centers for Disease Control and Prevention. QuickStats: Cigarette Smoking Status Among Current Adult E-cigarette Users, by Age Group – National Health Interview Survey, United States, 2015. MMWR, 2016; 65(42): 1177.

[viii] 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.

[ix] Sleiman M, et al. Emissions from Electronic Cigarettes: Key Parameters Affecting the Release of Harmful Chemicals. Environmental Science & Technology 2016; 50 (1&) 9644-9651.

[x] Cheng, T. Chemical evaluation of electronic cigarettes. Tobacco Control 2014; 23: ii11-ii17.

[xi] Goniewicz, ML et al. Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. Tobacco Control 2014; 23:122-9.

[xii] 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.

[xiii] Callahan-Lyon, P. Electronic cigarettes: human health effects. Tobacco Control 2014; 23: ii36-II40.

[xiv] Goniewicz ML et al. Nicotine levels in electronic cigarette refill solutions: a comparative analysis of products from the U.S., Korea, and Poland. *International Journal of Drug Policy* 2015; 26(6): 583-8. Zhu SH et al. Four hundred and sixty brands of e-cigarettes and counting: implications for product regulation. *Tobacco Control* 2014; 23(Suppl 3): iii3-iii9.

[xv] U.S. Department of Health and Human Services. The Health Consequences of Smoking – 50 Years of Progress: 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. 2014.

[xvi] 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.
[xvii] 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.
[xviii] U.S. Surgeon General. *Preventing Tobacco Use Among Youth and Young Adults.* Atlanta, GA: Department of Health and Human Services, Centers for Disease Control and Prevention; 2012
[xix] Truth Initiative. Vaporized: youth and young adult exposure to e-cigarette marketing, 2015.
[xx] Mantey DS et al. E-Cigarette Marketing Exposure is Associated with E-Cigarette Use Among US Youth. Journal of Adolescent Health, 2016; 58: 686-690.
[xxi] Zju, S-H, et al. Four Hundred and Sixty Brands of E-cigarettes and Counting: Implications for Product Regulation. Tobacco Control, 2014; 23(Suppl 3): iii3-iii9.
[xxii] Ambrose et al. Flavored tobacco product use among U.S. youth aged 12-17 years, 2013-2014. JAMA, 2015; 314(17): 1871-3.
[xxiii] Centers for Disease Control and Prevention. Characteristics of Electronic Cigarette Use Among Middle and High School Students – United States, 2015. Morbidity and Mortality Weekly Report, 2016; 65(50&51): 1425-9.