

Vaping, JUUL and E-Cigarettes: A Public Health Crisis

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A Public Health Crisis

Sept 18, 2019

Former FDA Commissioner Dr. Scott Gottlieb:

“We have an obligation to act on what we know. And what we know is very disturbing. Kids use of e-cigarettes has reached an epidemic level of growth.”

<https://www.fda.gov/NewsEvents/Newsroom/PressAccouncements/ucm620791.htm>

A Public Health Crisis

- In 2019, 27.5% of high school students used e-cigarettes in the past month.
- Nearly one million youth reported daily use of e-cigarettes in 2019.
- E-cigarettes are the **MOST POPULAR** tobacco product used by adolescents.
- 72% of youth who use e-cigarettes use flavored e-cigarette products

Cullen, et al. JAMA 2019

Electronic Nicotine Delivery Systems



Image Source: FDA

Cig-a-Likes * Vape Pens * Mods * Advanced Personal Vaporizers * E-cigars/Pipes * Pod Systems

E-Liquid

- Nicotine (0-59+ mg/ml)
- Propylene Glycol
- Vegetable Glycerin
- Flavoring
- Other compounds



https://commons.wikimedia.org/wiki/File:Various_E-liquid_Bottles.jpg

Flavoring

Flavor categories

- **Fruit, Dessert/Sweet**
- Tobacco
- Menthol/mint
- Alcohol Nuts/spices
- Coffee/tea
- Beverage
- Unflavored



https://commons.wikimedia.org/wiki/File:Various_E-liquid_Bottles.jpg www.juul.com

Pod Systems: JUUL

- **5% nicotine: 59 mg/ml**
- **Flavors**
 - **Menthol**
 - Virginia Tobacco
 - Classic Tobacco



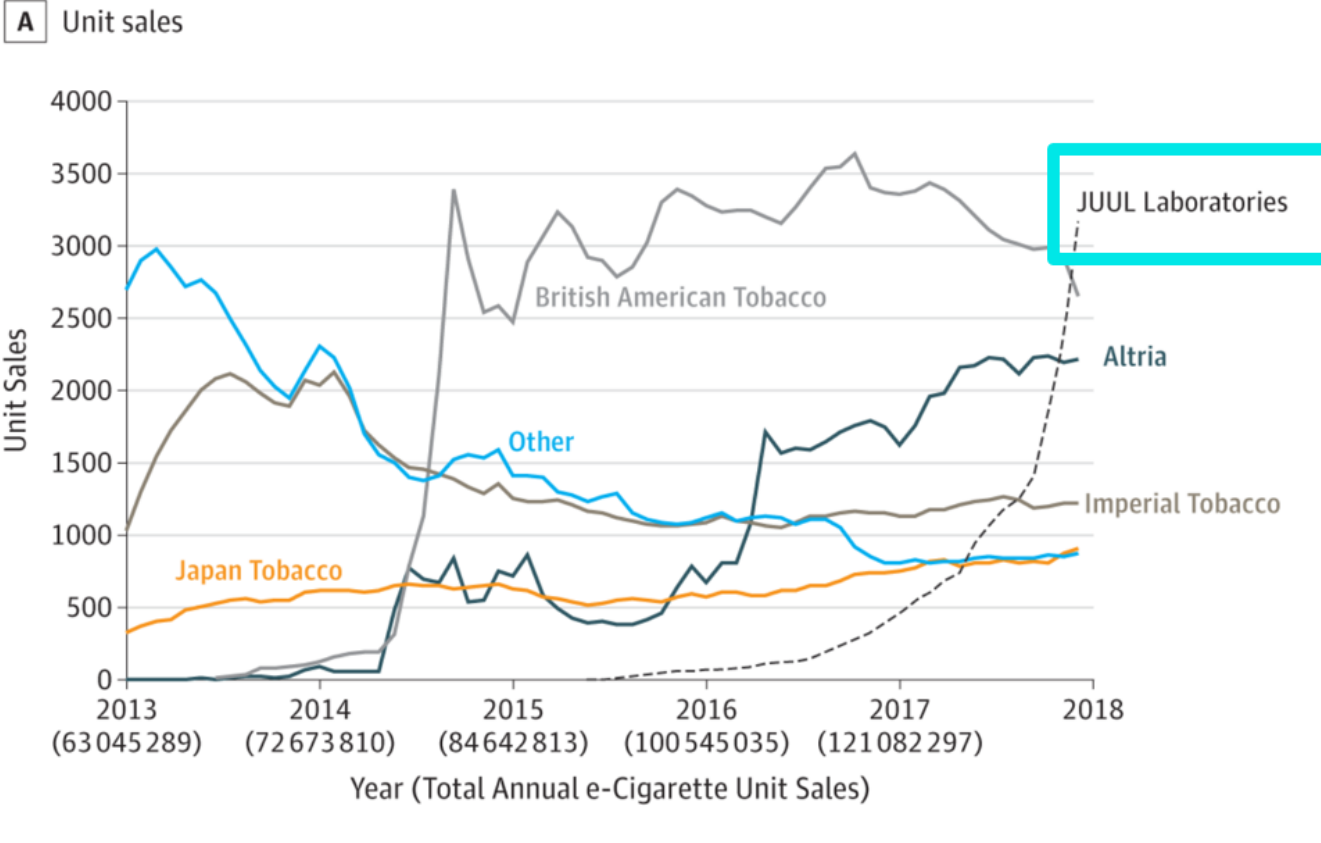
**10% of 15-17-year olds
have ever tried JUUL**

Vallone DM et. Al. Tobacco Control (2018)

www.juul.com

Electronic Cigarette Sales in the United States, 2013-2017

JAMA. 2018;320(13):1379-1380. doi:10.1001/jama.2018.10488



JUUL Laboratories
Pod Systems

Learning Objectives

1. Discuss the **known and potential risks** of e-cigarettes, vape devices, and pod systems (i.e. JUUL)
2. Review **methods to screen and counsel** youth and families
3. Identify **resources** to help youth understand risks

**Known and
potential
risks**

**Methods to
screen and
counsel**

Resources

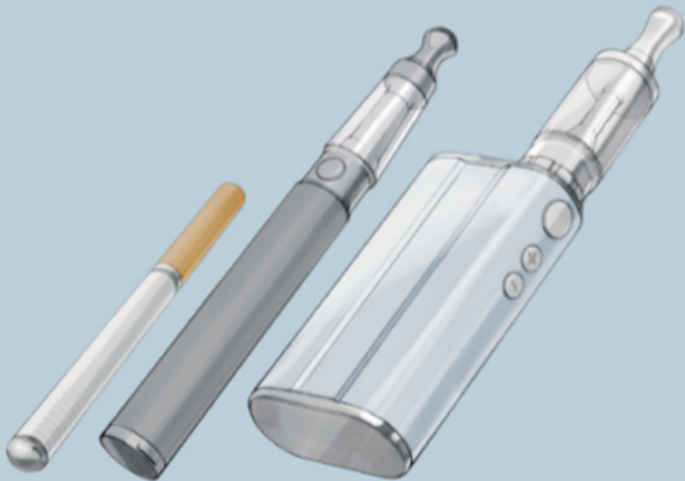
Risks

- 1. Initiation of combustible tobacco products**
- 2. Nicotine addiction**
- 3. Safety risks**
- 4. ? Long term health risks**

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CONSENSUS STUDY REPORT

Public Health
Consequences of
E-Cigarettes



INITIATION AND CESSATION

Conclusion 16-1:

There is substantial evidence that e-cigarette use increases risk of ever using combustible tobacco cigarettes among youth and young adults.

Nicotine Addiction

The adolescent brain is uniquely vulnerable to the rewarding effects of nicotine



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USDHHS. *Health Consequences of Smoking, 50 Years of Progress. A Report of the Surgeon General.* (2014)

Nicotine Addiction

Pod system e-liquids (including JUUL):

59 mg/ml

E-cigarettes can deliver higher levels of nicotine than traditional cigarettes.

63%

Of JUUL users do not know that the product always contains nicotine.

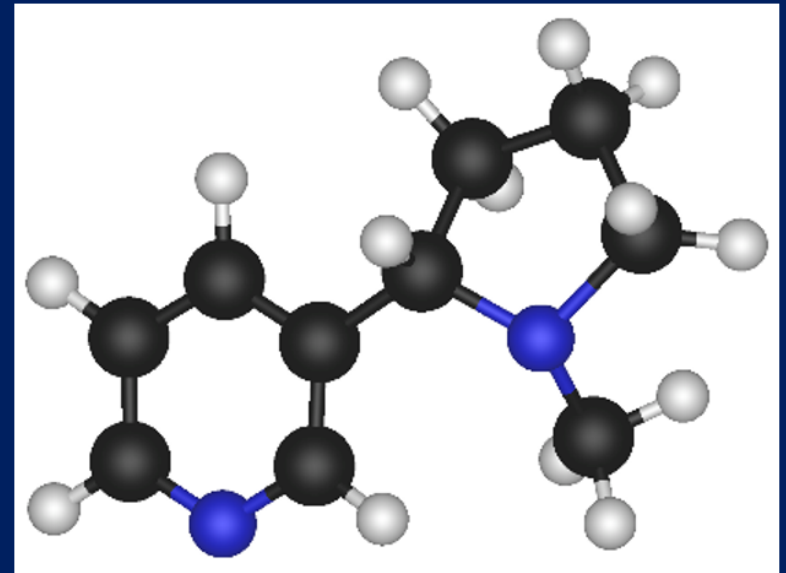
USDHHS. E-cigarette Use Among Youth and Young Adults: A Report of the Surgeon General. (2016)

Source: www.juul.com

Willett JG. *Tobacco Control* (2018)

Nicotine Addiction

- Nicotine salts
- Free base nicotine + benzoic acid
- May allow nicotine to be delivered at high concentrations without throat irritation



[This Photo](#) by Unknown Author is licensed under [CC BY-SA](#)

Duell AK et. al. *Research in Toxicology* (2018)

Safety Risks

- **Burns**
 - **2,035** explosion and burn injuries seen in US Emergency Departments from 2015-2017

- **Poisonings**
 - **8,269** liquid nicotine exposures reported among children <6 from 2012-2017
 - Child-resistant packaging laws associated with decreasing exposure rates

Rosshem ME et al. *Tob Control* (2018)
Govindarajan P. *Pediatrics* (2018)

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CONSENSUS STUDY REPORT

Public Health
Consequences of
E-Cigarettes



E-CIGARETTE EMISSIONS

Conclusion 5-1:

There is *conclusive evidence* that in addition to nicotine, most e-cigarette products **contain and emit numerous potentially toxic substances.**

? Long Term Health Impact

- **The health effects are not completely understood.**
- **There is evidence that completely switching to e-cigarettes from cigarettes reduces exposure to toxicants and carcinogens. (National Academies Report)**
- **Concerns with**
 - Inhalation of ultrafine particles deep into the lung
 - Exposure to heavy metals in e-cigarette aerosol (nickel, lead, tin)
 - Exposure to volatile organic compounds

Known and potential risks

Methods to screen and counsel

Resources

Risks

- 1. Initiation of combustible tobacco products**
- 2. Nicotine Addiction**
- 3. Safety risks**
- 4. ? Long term health risks**

Screen and Counsel

Known and
potential
risks

Methods to
screen and
counsel

Resources

1. Include e-cigarette terminology in tobacco screening.
2. Educate youth and families about the health risks of e-cigarettes.

Terminology

- E-cigs
- Vape pens, vapes
- E-cigars
- E-hookah
- Mods
- Personal vaporizers
- JUULs



- **Using E-cigarettes**
- **Vaping**
- **JUULing**

Screen and Counsel

Known and
potential risks

Methods to
screen and
counsel

Resources

1. Include e-cigarette terminology in tobacco screening.
2. Educate youth and families about the health risks of e-cigarettes.

E-cigarette advertising

- **7 in 10** teens were exposed to e-cigarette advertisements in 2016

Marynak K et al. MMWR (2018)

E-cigarette advertising

- **7 in 10 teens were exposed to e-cigarette advertisements in 2016:**

68% in retail stores

40% online

38% on television

24% in newspapers/magazines

E-cigarette advertising

****Receptivity to e-cigarette advertising is associated with trying e-cigarettes and cigarettes in the future****



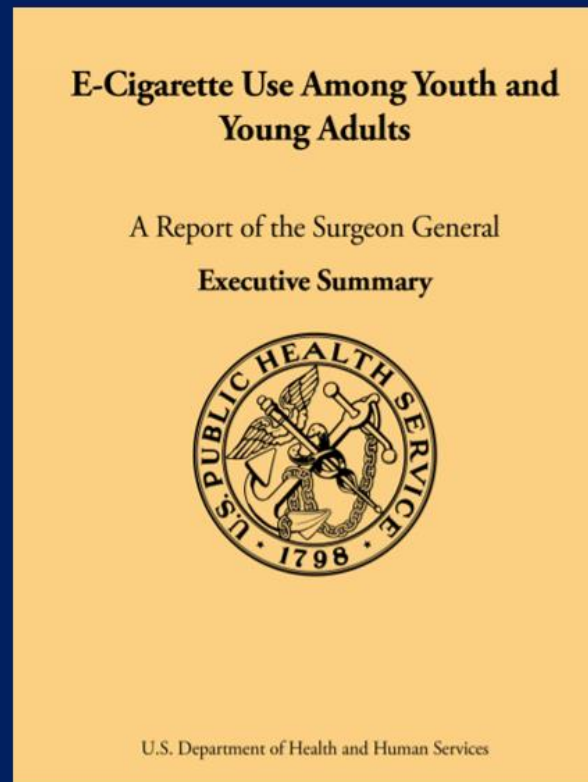
Source: E-cigarette Marketing Web Archive
(UCSF Industry Documents Library)
Pierce J et al. *JAMA Pediatrics* (2018)

Counsel About Risks

Known and potential risks

Methods to screen and counsel

Resources



“Tobacco use among youth and young adults in any form, including e-cigarettes, is not safe”

E-cigarettes.surgeongeneral.gov

Counsel About Risks of Nicotine

**Nicotine is
very common
in e-cigarettes.**

**Nicotine can harm
the developing
adolescent brain.
The brain keeps
developing until
about age 25.**

E-cigarettes.surgeongeneral.gov

Counsel About Risks of Nicotine

**NICOTINE CAN
CAUSE
ADDICTION**

Counsel About Health Risks

Scientists are still learning about the long-term health effects of e-cigarettes.

Some of the ingredients in e-cigarettes could be harmful to the lungs in the long-term.

E-cigarettes.surgeongeneral.gov

Counsel About Health Risks

- **Defective e-cigarette batteries have caused fires and explosions.**
- **Children and adults have been poisoned by swallowing, breathing, or absorbing e-cigarette liquid through their skin or eyes.**

E-cigarettes.surgeongeneral.gov

E-cigarettes.surgeongeneral.gov

Known and potential risks

Methods to screen and counsel

Resources



AAP Richmond Center: www.richmondcenter.org

Summary

1. E-cigarettes are **the most common tobacco product** used by adolescents
2. There are **substantial risks** associated with trying e-cigarettes
3. **Screen** all youth for tobacco exposure, and include e-cigarette terminology in tobacco screening.
4. **Educate** youth and families about the health risks of e-cigarettes.

Changes You May Wish to Make

1. Screen all youth for tobacco exposure and include e-cigarettes in your tobacco screening.
2. Educate youth and families about the health risks of e-cigarettes.

Thank you!

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Julius B. Richmond Center of Excellence

- Audience-Specific Resources
 - State-Specific Resources
 - Cessation Information
 - Funding Opportunities
 - Reimbursement Information
 - Tobacco Control E-mail List
- Pediatric Tobacco Control Guide
- Tobacco Prevention Policy Tool

www.aap.org/richmondcenter

AAP Policy Statement

AAP tobacco control and e-cigarette policy:

<https://www.aap.org/en-us/about-the-aap/Sections/Section-on-Tobacco-Control/Pages/Policy.aspx>

Acknowledgments

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- AAP Julius B. Richmond Center of Excellence
- AAP Section on Tobacco Control
- Feel free to add more! 😊