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

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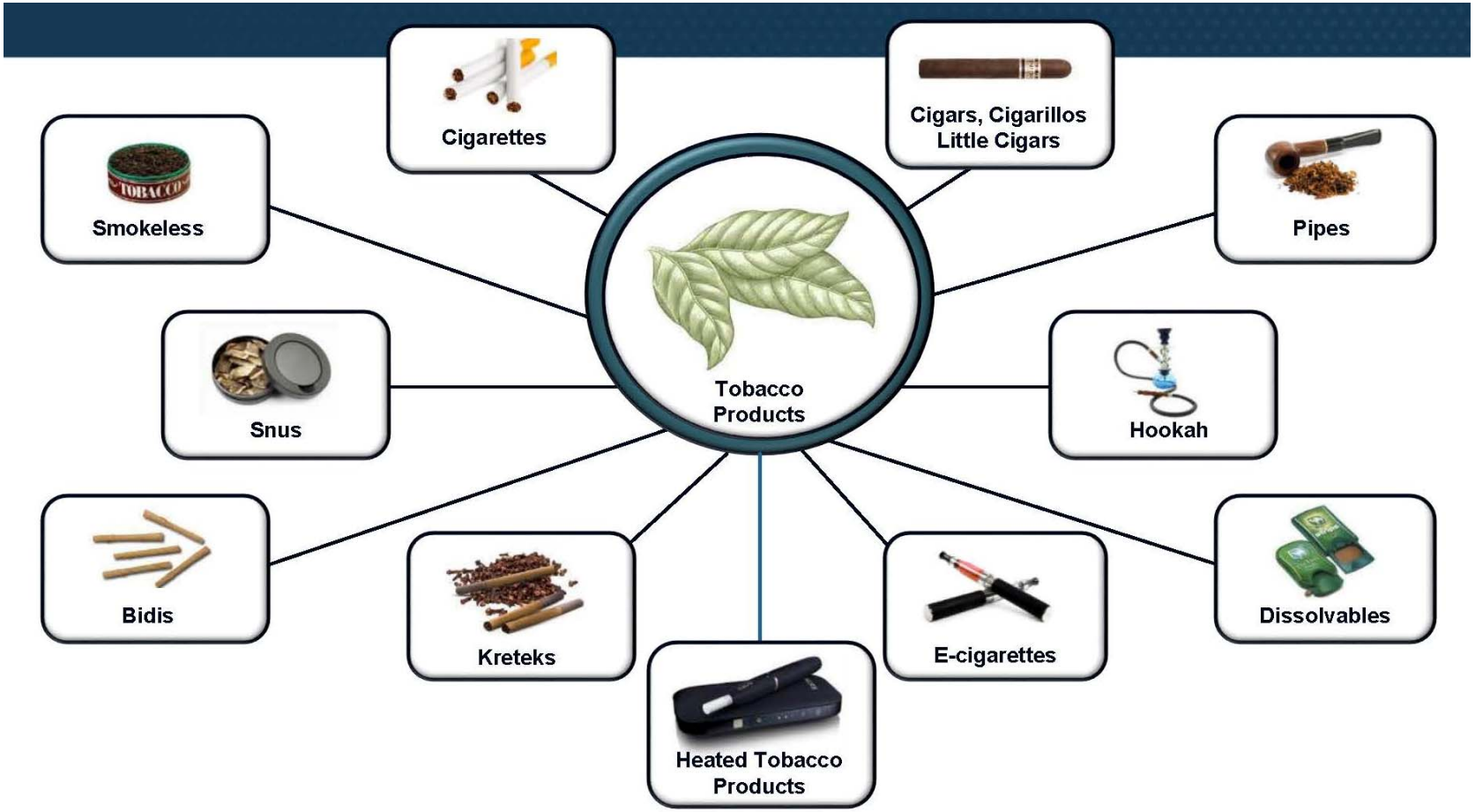
Learning Objectives

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

Evolution in the Landscape of Tobacco Products



Public Health Crisis

September 18, 2019

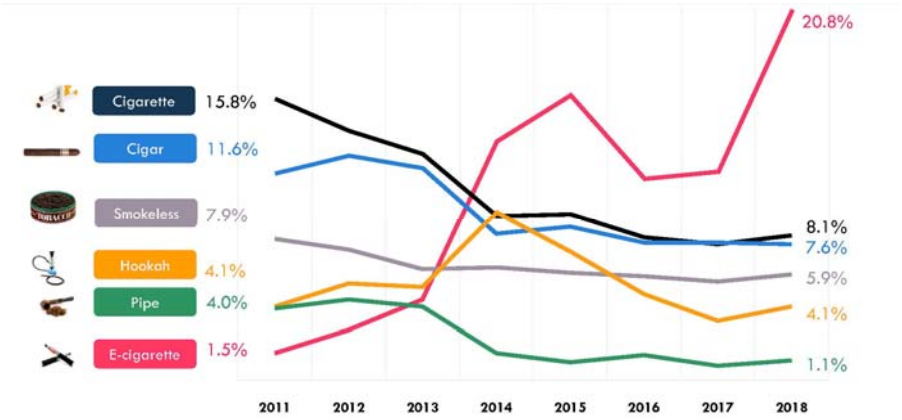
Former FDA Commissioner Dr. Scott Gottlieb:

“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.”

Public Health Crisis

Current Tobacco Product Use Among U.S. High School Students – 2011 - 2018

- In 2018, 20.8% of high school students used e-cigarettes <u>in the past month.</u>
- E-cigarettes are the **MOST POPULAR** tobacco product used by adolescents.
- Rates of use increased by **78%** from 2017 – 2018.



Source: Gentzke AS, Creamer M, Cullen KA, Ambrose BK, Willis G, Jamal A, King BA. Vital Signs: Tobacco Product Use Among Middle and High School Students – United States, 2011-2018. MMWR Morb Mortal Wkly Rep 2019; 68(6):1-8.

2019 National Youth Tobacco Survey

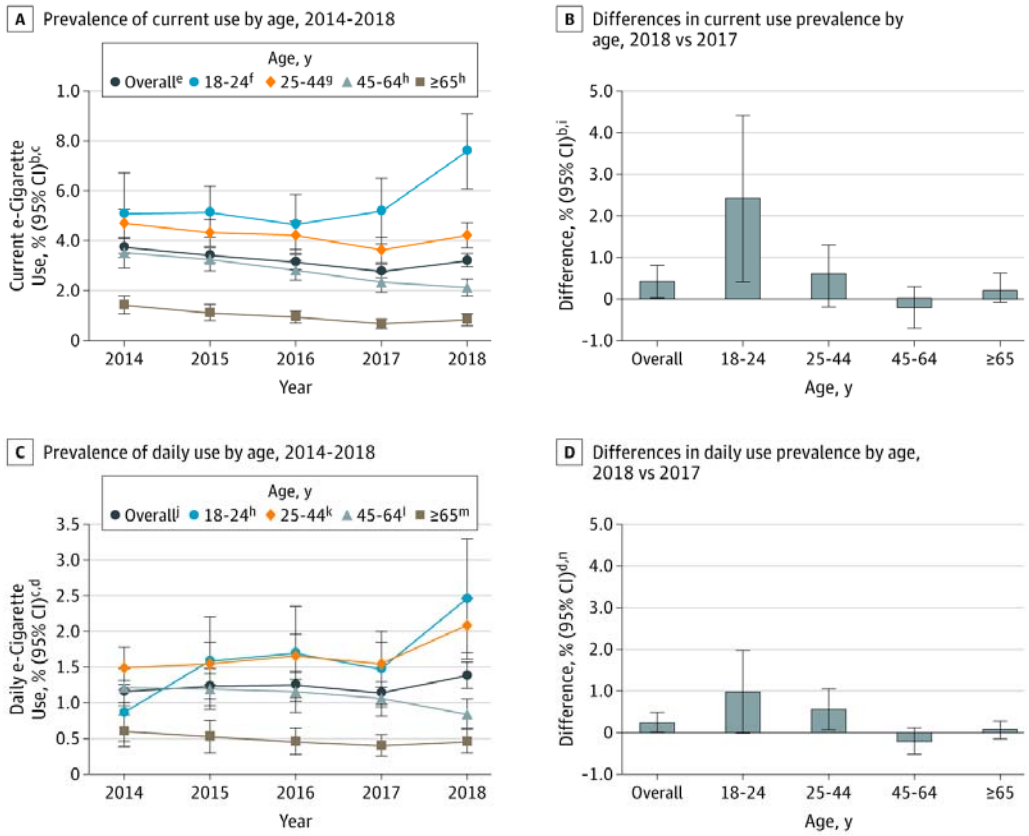
Estimated % of Tobacco Use in the Past 30 Days, by Product and School, 2019		
	High School Students	Middle School Students
E-Cigarettes	27.5 (25.3-29.7)	10.5 (9.4 – 11.8)
Cigarettes	5.8 (4.6 – 7.3)	2.3 (1.8 – 2.9)
Any tobacco product	31.2 (29.1– 33.5)	12.5 (11.2 – 13.9)

Table 3. Frequency of Use, Flavored Use, Flavor Types, and Usual Brand Among e-Cigarette Users, 2019

	High School Students		Middle School Students	
	Unweighted, No.	% (95% CI)	Unweighted, No.	% (95% CI)
Among Past 30-d e-Cigarette Users[a]				
Frequency of e-cigarette use in the past 30 d				
<20 d	1792	65.8 (62.7-68.8)	749	82.0 (78.8-84.8)
≥20 d	917	34.2 (31.2-37.3)	153	18.0 (15.2-21.2)
Daily e-cigarette use[b]	564	21.4 (19.0-24.0)	80	8.8 (6.9-11.2)
Exclusive e-cigarette use	1740	63.6 (59.3-67.8)	612	65.4 (60.6-69.9)
Usual brand[c]				
No usual brand	383	13.8 (12.0-15.9)	138	16.8 (13.6-20.7)
JUUL	1520	59.1 (54.8-63.2)	496	54.1 (49.1-59.0)
SMOK	205	7.8 (6.0-10.1)	40	4.1 (2.7-6.1)
Suorin	110	3.1 (2.1-4.5)	NA[d]	NA[d]
blu	77	2.6 (1.9-3.6)	32	4.0 (2.4-6.6)
Vuse	56	2.1 (1.4-3.1)	43	4.6 (3.0-7.0)
NJOY	32	1.2 (0.7-2.1)	NA[d]	NA[d]
Logic	23	0.8 (0.5-1.4)	NA[d]	NA[d]
MarkTen	20	0.8 (0.4-1.4)	NA[d]	NA[d]
Some other brand	256	8.4 (7.2-10.5)	90	10.5 (8.1-13.5)
Among past 30-d Exclusive e-Cigarette Users[e]				
Flavored e-cigarette use[f]				
Flavored	1257	72.2 (69.1-75.1)	376	59.2 (54.8-63.4)
Unflavored	440	25.4 (22.5-28.5)	216	38.1 (33.7-42.8)
Unknown	43	2.5 (1.7-3.6)	20	2.7 (1.6-4.5)
Flavor types reported used[g]				
Fruit	832	66.1 (62.4-69.5)	248	67.7 (62.6-72.5)
Menthol or mint	703	57.3 (53.3-61.3)	132	31.1 (25.6-37.2)
Candy, desserts, or other sweets	430	34.9 (31.3-38.7)	139	38.3 (32.6-44.2)
Chocolate	26	1.8 (1.2-2.9)	30	8.1 (5.1-12.7)
Alcoholic drink	28	2.3 (1.5-3.5)	14	4.4 (2.5-7.7)
Clove/spice	NA[d]	NA[d]	NA[d]	NA[d]
Other flavor not listed	112	8.8 (7.2-10.7)	40	9.4 (6.7-13.0)

Cullen KA, Gentzke AS, Sawdey MD, et al. e-Cigarette Use Among Youth in the United States, 2019. JAMA. 2019;322(21):2095–2103. doi:https://doi.org/10.1001/jama.2019.18387

What about Adults and E-Cigarette Use

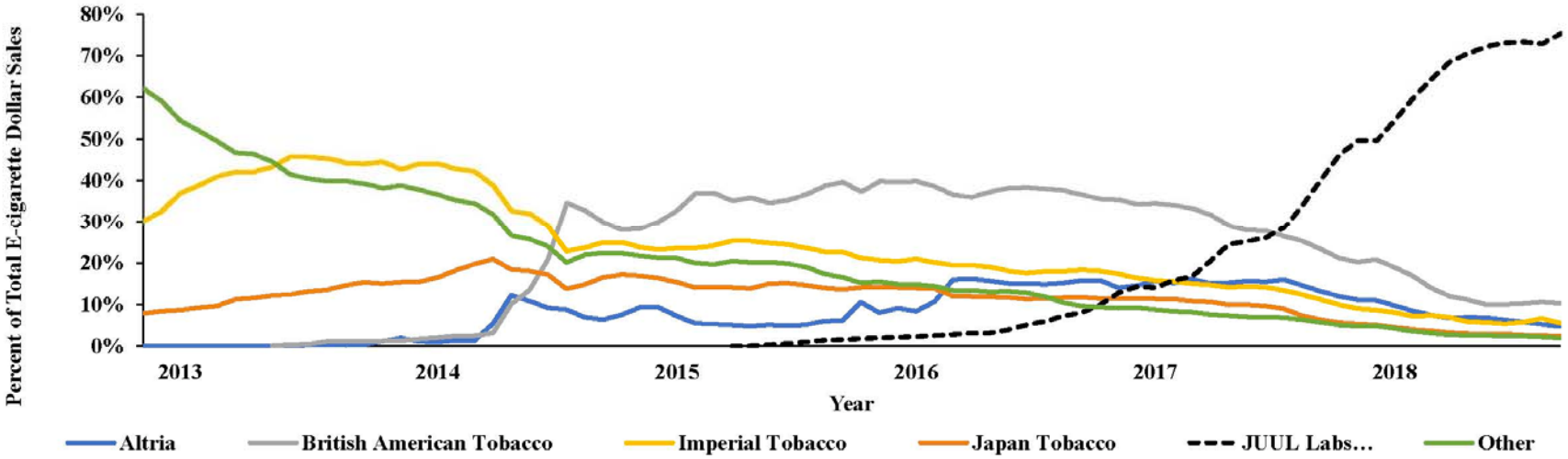


Dai H, Leventhal AM. Prevalence of e-Cigarette Use Among Adults in the United States, 2014-2018. JAMA. 2019;322(18):1824–1827. doi:https://doi.org/10.1001/jama.2019.15331

Electronic Nicotine Delivery System

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

E-Cigarette Market Share, by Dollar Sales United States, 2013-2018



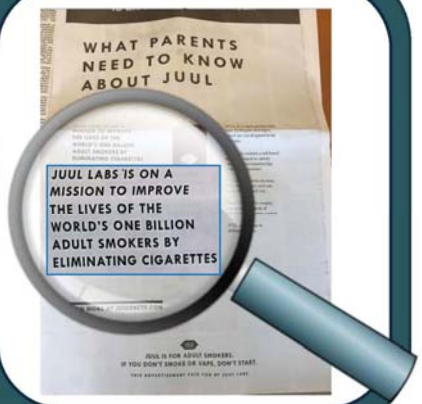
King BA, Gammon DG, Coats EM, Marynak KL, Loomis BR, Rogers T. The rise of the Pod Mod: Trends in E-cigarette Sales in the US, 2013-2017. Presented at 25th Annual Meeting of the Society for Research on Nicotine and Tobacco; February 2019; San Francisco, CA.

Why is everyone using JUUL?

One Juul cartridge equals the nicotine in one pack of cigarettes.

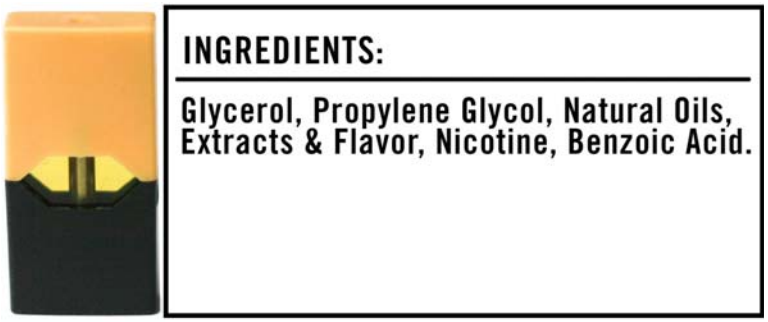
"We don't think a lot about addiction here because we're not trying to design a cessation product at all…anything about health is not on our mind"

JUUL R&D Engineer, quoted in *The Verge*, April 2015



2015 2018

What's in a Pod?



- 5% nicotine: 59 mg/ml
- Flavors
  - *Fruit*
  - *Mango*
  - *Mint*
  - *Virginia Tobacco*
  - *Classic Tobacco*
  - *Cucumber*
  - *Creme*

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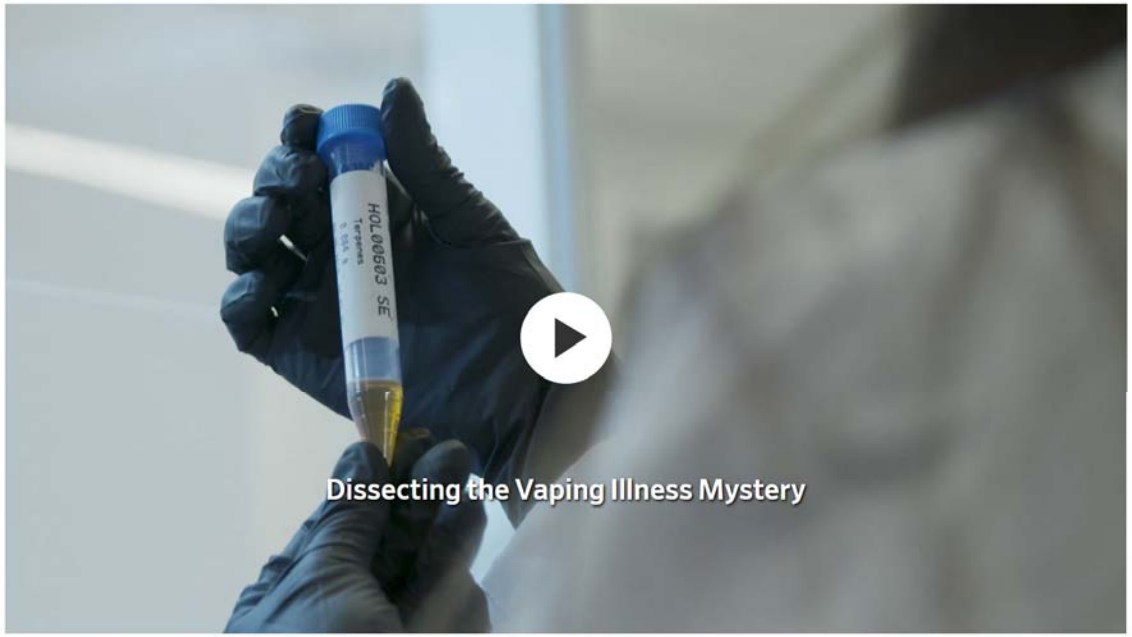
BUSINESS

Juul Halts Online Sales of Some Flavored E-Cigarettes

Move follows similar discontinuation in retail stores last year; online sales account for less than 10% of company's sales



Vaping related illnesses are on the rise, and it appears to be related to a black market of THC vapes. WSJ's Daniela Hernandez sat down with doctors and experts to understand what's happening with the outbreak.

RECOMMENDE
1. Sheila John Why Fear C Good Thing
2. The Big Que Around Ara Mega-IPO
3. Teens Expla YouTube (S Up, Grown-

Risks

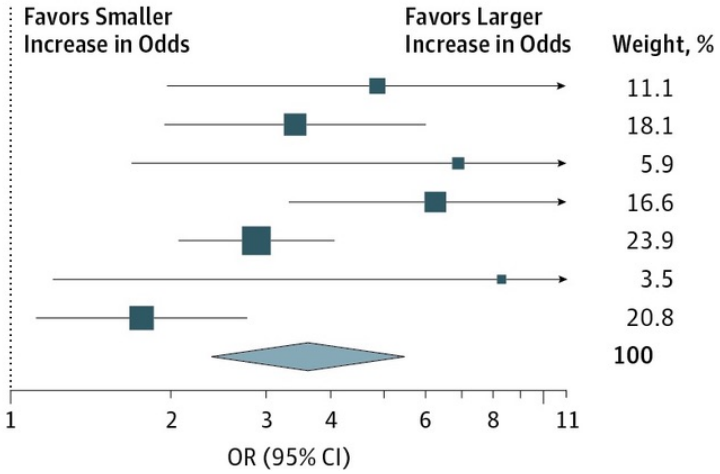
- Initiation of combustible tobacco products
- Nicotine Addiction
- Safety Risks
- Long-Term Health Risks

Cigarette Smoking Initiation

Association between initial use of e-cigarettes and subsequent cigarette smoking among adolescents and young adults

Source	Probability of Cigarette Smoking Initiation, %		Unadjusted OR (95% CI)	Adjusted OR (95% CI)
	Ever e-Cigarette Users	Never e-Cigarette Users		
Miech et al,[10] 2017	31.1	6.8	6.23 (1.57-24.63)	4.78 (1.91-11.96)
Spindle et al,[9] 2017	29.4	10.6	3.50 (2.41-5.09)	3.37 (1.91-5.94)
Primack et al,[22] 2016	37.5	9.0	6.06 (2.15-17.10)	6.82 (1.65-28.22)
Barrington-Trimis et al,[8] 2016	40.4	10.5	5.76 (3.12-10.66)	6.17 (3.29-11.57)
Wills et al,[7] 2016	19.5	5.4	4.25 (2.74-6.61)	2.87 (2.03-4.05)
Primack et al,[6] 2015	37.5	9.6	5.66 (1.99-16.07)	8.30 (1.19-58.00)
Leventhal et al,[5] 2015	8.8	3.1	2.65 (1.73-4.05)	1.75 (1.10-2.78)
Total	**23.2**	**7.2**	**3.83 (3.74-3.91)**	**3.50 (2.38-5.16)**

Heterogeneity: $\tau^2 = 0.13$; $Q_6 = 13.79$; $P = .03$; $I^2 = 56\%$
Test for overall effect: $z = 6.34$; $P < .001$

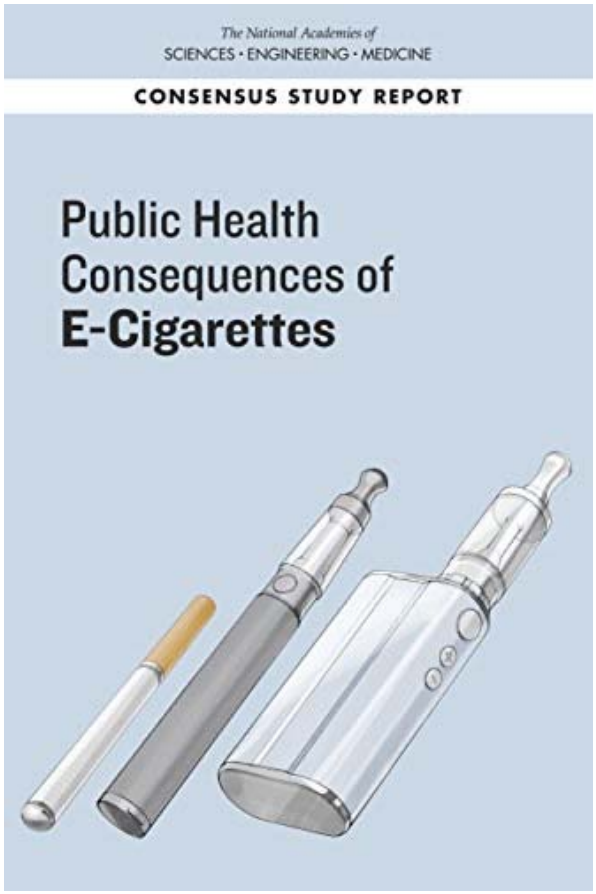


Soneji S, Barrington-Trimis B, Wills TA. JAMA Pediatr. 2017; 171(8): 788-797.

Initiation and Cessation

Conclusion 16-1:

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



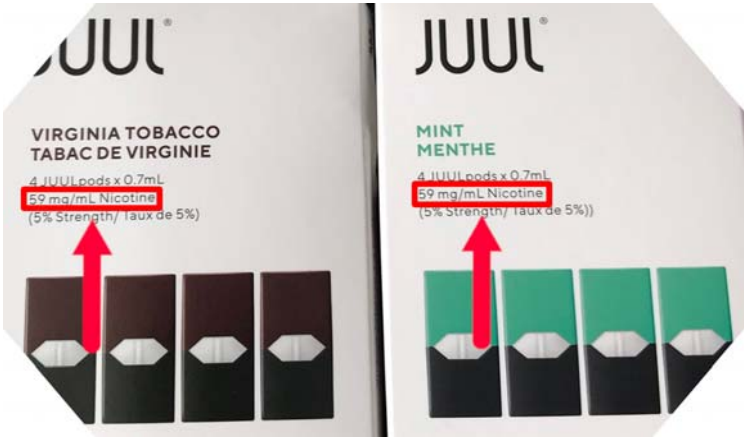
Nicotine Addiction

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

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

Nicotine Addiction

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

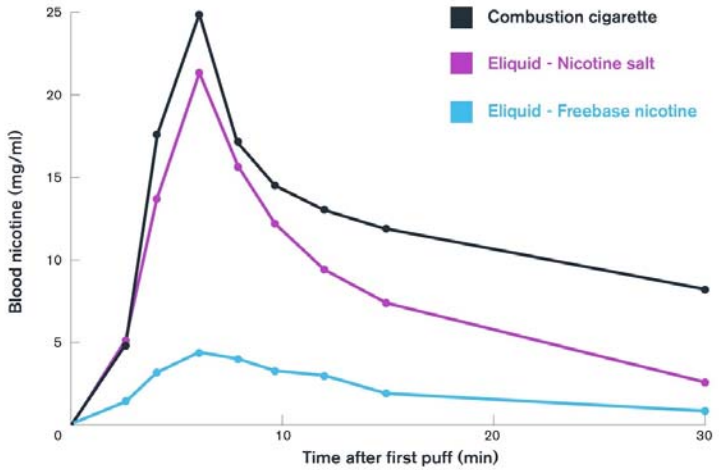


? 63% of JUUL users <u>do not know</u> that the product always contains nicotine

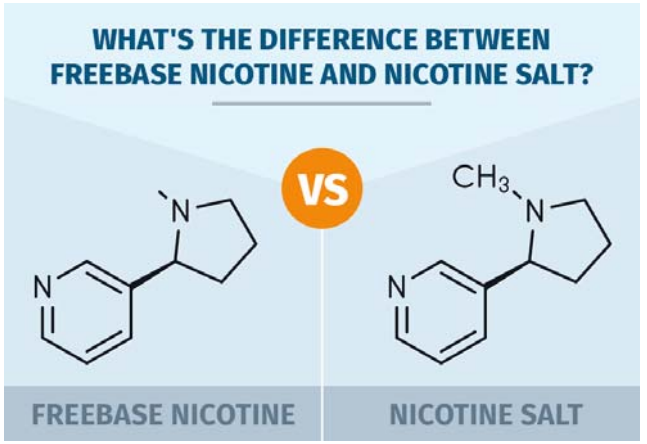
USDHHS. E-cigarette Use Among Youth and Young Adults. A Report of the Surgeon General. (2016)
Willett JG. Tabacco Control (2018)

Nicotine Addiction

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



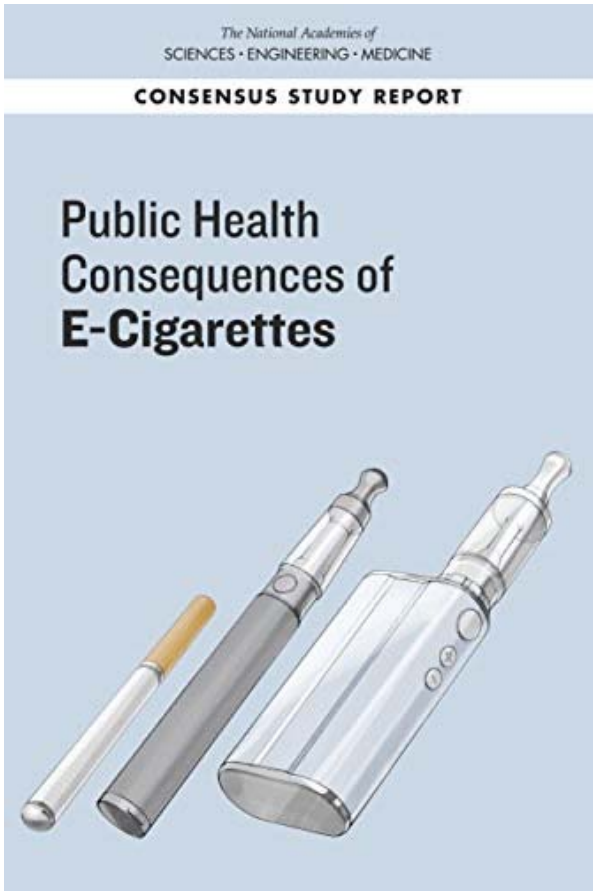
Source: vapeuk.co.uk



Initiation and Cessation

Conclusion 5-1:

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



Safety Risks

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

Source: Hickey S., Goverman J., Friedstat J., Sheridan R., and Schulz J.: Thermal injuries from exploding electronic cigarettes. Burns 2018; 44: pp. 1294-1301

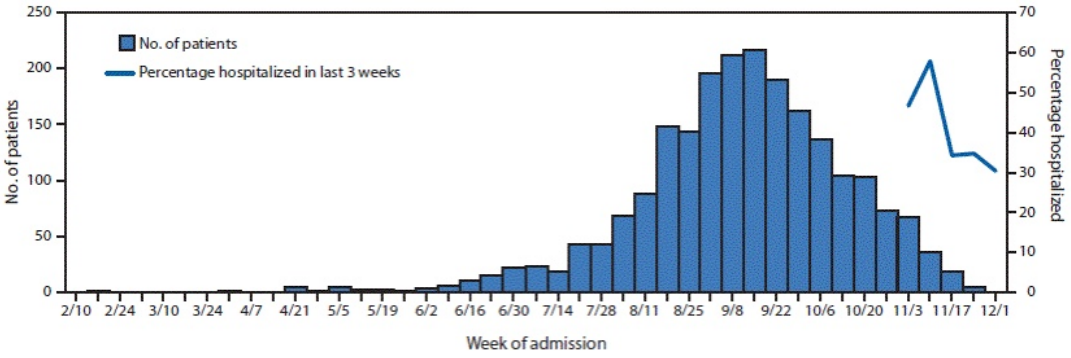
- Poisonings
  - 8,269 liquid nicotine exposures reported among children <6 from 2012-2017
  - Child-resistant packaging laws associated with decreasing exposure rates

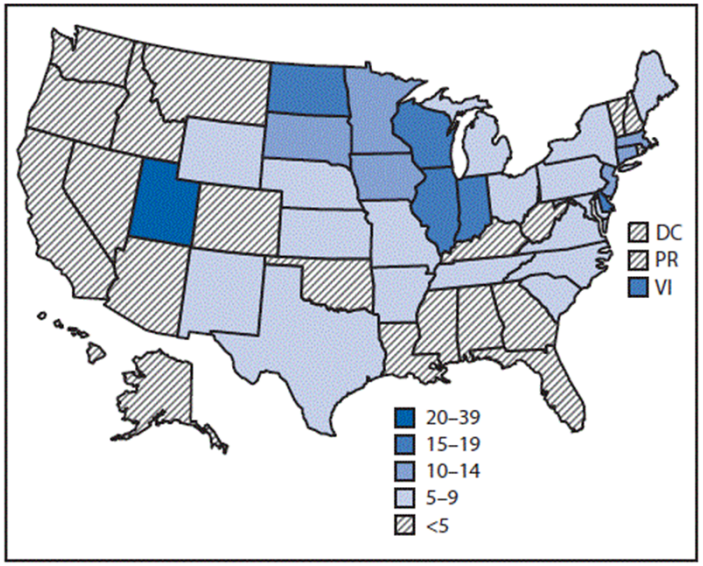
Rossheim ME, Livingston MD, Soule EK, et al. Electronic Cigarette explosion and burn injuries, US Emergency Departments 2015-2017. Tobacco Control 2019; 28: 472-474.
Govindarajan P, Spiller HA, Casvant MJ, Chounthirath T, Smith GA. E-Cigarette and Liquid Nicotine Exposures Among Young Children. Pediatrics May 2018, 141(5). e20173361

E-cigarette, or Vaping, Product Use-Associated Lung Injury (EVALI)

AKA – VpALI
Vaping-related Acute Lung Injury

- As of December 27, 2019, **2,561** hospitalized for EVALI cases or deaths have been reported to CDC from all 50 states, the District of Columbia, and two US Territories
  - **55** deaths have been confirmed in 27 states and the District of Columbia[1]

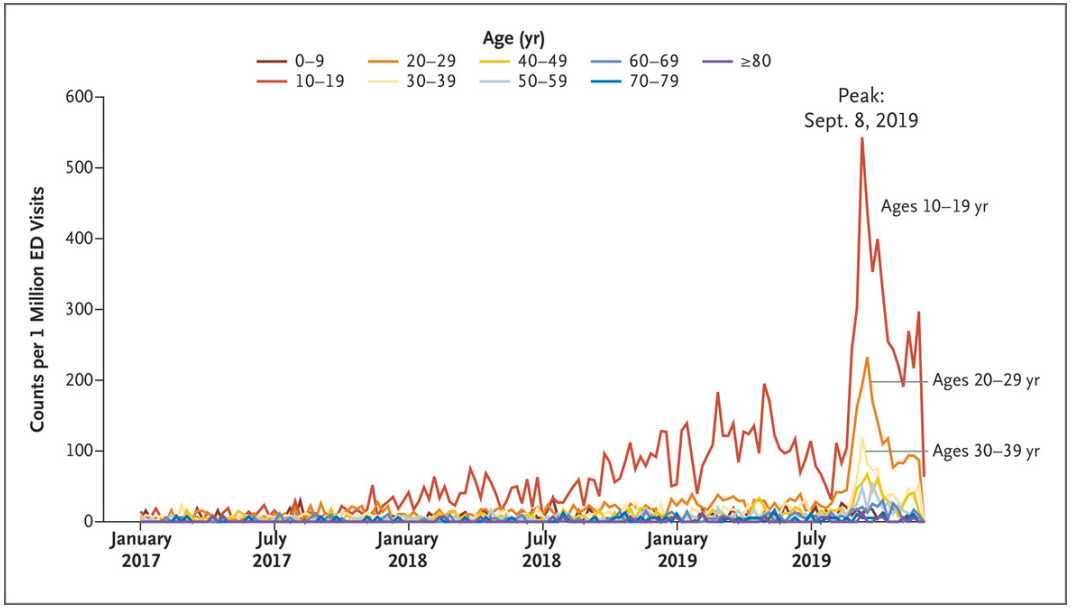




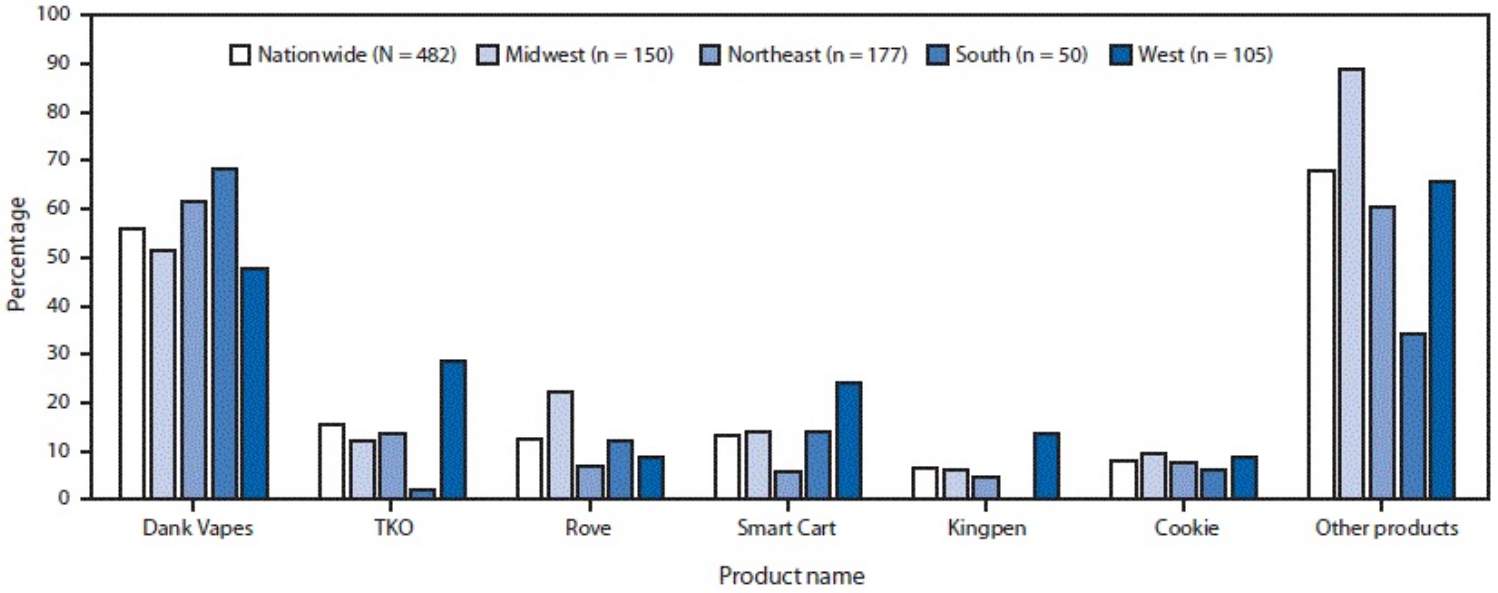
1. CDC Website
2. Lozier MJ et. al. Update: Demographic, Product, and Substance-Use Characteristics of Hospitalized Patients in a Nationwide Outbreak of E-cigarette, or Vaping, Product Use-Associated Lung Injuries - United States, December 2019. MMWR. December 13, 2019 / 68(49);1142–1148

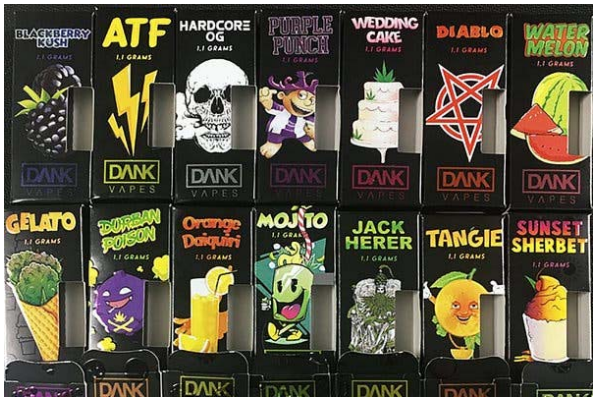
E-cigarette, or Vaping, Product Use-Associated Lung Injury (EVALI)

- Patient Demographics
  - *67% are male*
  - *78% are age < 35 years*
  - *80% report using e-cigarette products containing THC*



Hartnett KP, Kite-Powell A, Patel MT, et al. Syndromic Surveillance for E-Cigarette, or Vaping, Product Use-Associated Lung Injury. NEJM Dec 20, 2019. DOI: 10.1056/NEJMsr1915313





Lozier MJ et. al. Update: Demographic, Product, and Substance-Use Characteristics of Hospitalized Patients in a Nationwide Outbreak of E-cigarette, or Vaping, Product Use-Associated Lung Injuries - United States, December 2019. MMWR. December 13, 2019 / 68(49);1142–1148

Health-Related Effects of Electronic Cigarettes

Pulmonary Effects

- Heat- and solvent-related carcinogenic compounds
- Respiratory epithelial injury
- Reduced mucociliary clearance
- Increased risk of respiratory tract infections
- Vaping-related acute lung injury
- Increased Airway Reactivity

Cardiovascular Effects

- Increased oxidative stress and inflammation
- Increased platelet aggregation
- Increased odds of myocardial infarction

Thermal Injury

Psychosocial Effects

- Nicotine addiction
- Increased cannabis tolerance and withdrawal
- Increased use of other tobacco products, alcohol, and illicit drugs

Pulmonary Syndromes

- Inhalation injury
- Exogenous lipoid pneumonia
- Hypersensitivity pneumonitis
- Acute eosinophilic pneumonia
- Diffuse alveolar hemorrhage
- Pneumothorax/pneumomediastinum
- Acute respiratory distress syndrome
- Respiratory bronchiolitis-interstitial lung disease
- Bronchiolitis obliterans
- Acute fibrinous pneumonitis
- Organizing pneumonia
- Granulomatous pneumonitis

Fuentes XF et al. VpALI-Vaping-related Acute Lung Injury: A New Killer Around the Block. Mayo Clin Proc. Dec 2019; 94(12): 2534-2545.

VITAMIN E ACETATE

Vitamin E acetate, an additive in some THC-containing e-cigarette, or vaping, products is closely associated with EVALI

Blount BC, et al. Vitamin E Acetate in Bronchoalveolar-Lavage Fluid Associated with EVALI. NEJM. Dec 20, 2019. DOI: 10.1056/NEJMoa1916433.

The NEW ENGLAND JOURNAL of MEDICINE

Table 1. Case Definitions for Patients with EVALI.*

Confirmed Case	Probable Case
Use of e-cigarette ("vaping") or dabbing† during the 90 days before symptom onset *AND*	Use of e-cigarette ("vaping") or dabbing† during the 90 days before symptom onset *AND*
Presence of pulmonary infiltrate, such as opacities, on chest radiography or ground-glass opacities on chest computed tomography *AND*	Presence of pulmonary infiltrate, such as opacities, on chest radiography or ground-glass opacities on chest computed tomography *AND*
A negative respiratory viral panel *AND* A negative influenza PCR or rapid test, if local epidemiology supports influenza testing *AND* Negative results on testing for all other clinically indicated respiratory infectious diseases (e.g., urine antigen for *Streptococcus pneumoniae* and legionella species, sputum culture in the presence of productive cough, bronchoalveolar-lavage culture if performed, blood culture, and HIV-related opportunistic respiratory infections if appropriate) *AND*	Presence of infection identified on culture or PCR, but clinical team determines that this infection is not the sole cause of the underlying lung injury *OR* the minimum criteria to rule out pulmonary infection are not met (or testing not performed) and clinical team determines that this infection is not the sole cause of the underlying lung injury *AND*
No evidence in medical record of alternative plausible diagnoses (e.g., cardiac, rheumatologic, or neoplastic process)	No evidence in medical record of alternative plausible diagnoses (e.g., cardiac, rheumatologic, or neoplastic process).

* EVALI denotes electronic-cigarette, or vaping, product use–associated lung injury, HIV human immunodeficiency virus, and PCR polymerase chain reaction.
† This criterion is defined as the use of an electronic device (e.g., electronic nicotine-delivery system, e-cigarette, vaporizer, or other device) or dabbing to inhale substances (e.g., nicotine, marijuana, tetrahydrocannabinol [THC], THC concentrates, cannabidiol, synthetic cannabinoids, flavorings, and other substances).

Table 2. Characteristics of EVALI Case Patients and Healthy Comparators.*

	EVALI Case Patients (N=51)	Healthy Comparators			
		Nonusers (N=52)	E-Cigarette Users (N=18)	Cigarette Smokers (N=29)	All Comparators (N=99)
Median age (range) — yr	23 (16–67)	25 (21–37)	27 (21–30)	26 (21–44)	26 (21–44)
Male sex — no. (%)	35 (69)	19 (37)	12 (67)	22 (76)	53 (54)
Self-reported vaping — no./total no. (%)					
Nicotine products only	7/43 (16)	0/52	18/18 (100)	29/29 (100)	47/99 (47)
THC products only	11/43 (26)	0/52	0/18	0/29	0/99
Dual use of nicotine and THC products	22/43 (51)	0/52	0/18	0/29	0/99
Urinary carboxy-THC level ≥3.0 ng/ml — no./total no. (%)	NA	4/42 (10)	4/17 (24)	13/23 (57)	21/82 (26)

* NA denotes not analyzed.

Table 3. Frequency of Detection of Priority Toxicants in EVALI Case Patients and in Healthy Comparators.*

Toxicant	EVALI Case Patients (N=51)	Healthy Comparators			
		Nonusers (N=52)	E-Cigarette Users (N=18)	Cigarette Smokers (N=29)	All Comparators (N=99)
	number/total number (percent)				
Vitamin E acetate	48/51 (94)	0/52	0/18	0/29	0/99
Medium-chain triglyceride oil	0/49	0/34	0/11	0/18	0/63
Coconut oil	1/48 (2)	0/34	0/11	0/18	0/63
Plant oil	0/49	0/34	0/11	0/17	0/62
Squalane	0/38	0/52	0/17	0/29	0/98
Squalene	0/38	0/52	0/17	0/29	0/98
α-Pinene	0/39	0/52	0/17	0/28	0/97
β-Pinene	0/39	0/52	0/17	0/28	0/97
3-Carene	0/39	0/52	0/17	0/28	0/97
Limonene	1/39 (3)	0/52	0/17	0/28	0/97
Petroleum distillates	0/12	0/52	0/17	0/29	0/98

* The listed toxicants were detected in bronchoalveolar-lavage fluid obtained from 51 patients with EVALI in 16 states from August through December 2019 and in 99 healthy comparators.

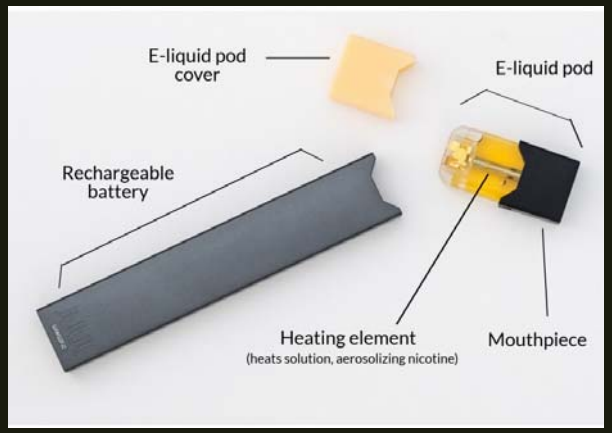
Long Term Health Impact

- 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, chromium, manganese, and zinc)*
  - *Exposure to volatile organic compounds*

National Academies of Science Engineering and Medicine: Public Health Consequences of E-cigarettes (2018)
E-Cigarettes. Surgeongeneral.gov
Olmedo P, Goessler W, Tanda S, et al. Metal Concentrations in e-Cigarette Liquid and Aerosol Samples: The Contribution of Metallic Coils. *Environ Health Perspect*. 2018;126(2):027010. Published 2018 Feb 21. doi:10.1289/EHP2175



Scientists say the tiny metal coils that heat the liquid nitrogen in e-cigarettes may contaminate the resulting vapor with lead, chromium, nickel, manganese and zinc.

Olmedo P, Goessler W, Tanda S, et al. Metal Concentrations in e-Cigarette Liquid and Aerosol Samples: The Contribution of Metallic Coils. *Environ Health Perspect*. 2018;126(2):027010. Published 2018 Feb 21. doi:10.1289/EHP2175

E-Cigarettes As Smoking Cessation?

NEJM 380: 629-637.

RESULTS

A total of 886 participants underwent randomization. The 1-year abstinence rate was 18.0% in the e-cigarette group, as compared with 9.9% in the nicotine-replacement group (relative risk, 1.83; 95% confidence interval [CI], 1.30 to 2.58; P<0.001). Among participants with 1-year abstinence, those in the e-cigarette group were more likely than those in the nicotine-replacement group to use their assigned product at 52 weeks (80% [63 of 79 participants] vs. 9% [4 of 44 participants]). Overall, throat or mouth irritation was reported more frequently in the e-cigarette group (65.3%, vs. 51.2% in the nicotine-replacement group) and nausea more frequently in the nicotine-replacement group (37.9%, vs. 31.3% in the e-cigarette group). The e-cigarette group reported greater declines in the incidence of cough and phlegm production from baseline to 52 weeks than did the nicotine-replacement group (relative risk for cough, 0.8; 95% CI, 0.6 to 0.9; relative risk for phlegm, 0.7; 95% CI, 0.6 to 0.9). There were no significant between-group differences in the incidence of wheezing or shortness of breath.

The “Harm Reduction” Aspect

Results

Whereas 11.5% and 1.3% of adults perceived e-cigarettes to have about the same level of harm and to be more harmful than cigarettes, respectively, in 2012, 35.7% and 4.1% did so in 2015. The proportion of adults who thought e-cigarettes were addictive more than doubled during 2012–2015 (32.0% in 2012 vs 67.6% in 2015). Compared with 2012, the odds of perceiving e-cigarettes to be equally or more harmful (than to be less harmful) doubled (95% CI=1.64, 2.41) in 2014, and tripled (95% CI=2.60, 3.81) in 2015.

Conclusions

There is an increase in the proportion of U.S. adults who misperceive the harm of e-cigarettes and consider them to be as harmful as combustible cigarettes. The study highlights the need to design public health messages that accurately interpret the scientific data on the potential harm of e-cigarettes and clearly differentiate the absolute from the relative harm of e-cigarettes.

Majeed BA, et al. Changing Perceptions of Harm of E-Cigarettes Among US Adults, 2012-2015. Am J Prev Med 2017 Mar; 52(3): 331-338.

SUD and Tobacco

- 63.5% of adult cigarette smokers reported co-use of alcohol in 2016 compared to 52.8% of adult non-smokers.

Current Illicit Drug and Alcohol Use Among Adult Cigarette Smokers Compared with Non-Smokers‡4		
	Smokers	**Non-Smokers**
Current illicit drug use (in past month)	**25.3%**	**7.1%**
Marijuana	21.8%	5.9%
Cocaine	2.5%	0.3%
Heroin	0.8%	0.0%
Hallucinogens	1.5%	0.3%
Inhalants	0.4%	0.1%
Non-medical use of prescription drugs	5.9%	1.5%
Current alcohol use (in past month)	**63.5%**	**52.8%**
Binge drinking§	43.5%	21.7%
Heavy drinking¶	14.6%	4.5%

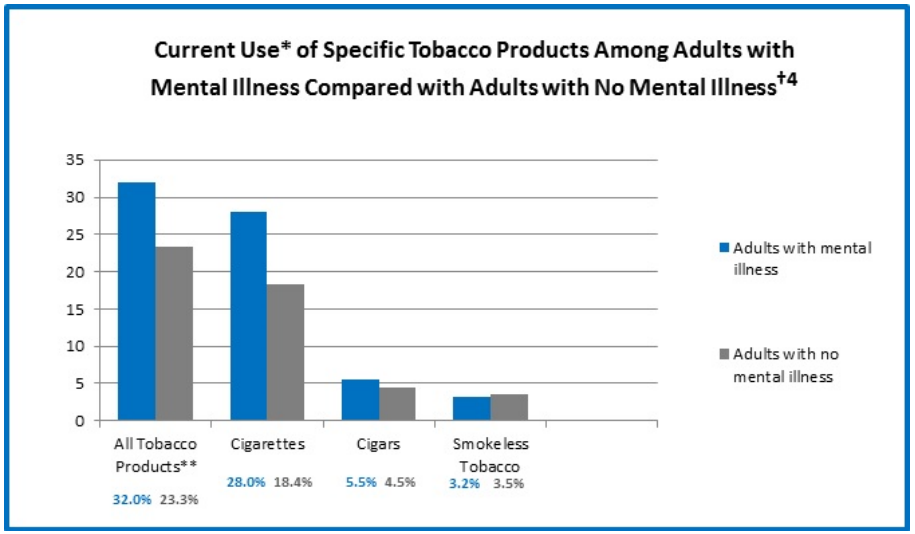
‡ Data taken from the National Survey on Drug Use and Health, 2016, and refer to persons aged 18 years and older reporting smoking, drug, and/or alcohol use in the past 30 days.
§ Binge alcohol use is defined as drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours of each other) on at least 1 day in the past 30 days.
¶ Heavy alcohol use is defined as drinking five or more drinks on the same occasion on each of 5 or more days in the past 30 days; all heavy alcohol users are also binge alcohol users.

https://www.cdc.gov/tobacco/disparities/mental-illness-substance-use/index.htm

Mental Illness – Tobacco Use

Adults with Mental Illness or Substance Use Disorder Account for 40% of All Cigarettes Smoked.

32.0% of adults with any mental illness reported current use* of tobacco in 2016 compared to 23.3% of adults with no mental illness.



* "Current Use" is defined as self-reported consumption of cigarettes, cigars, and smokeless tobacco in the past month (at the time of survey).
** All Tobacco Products includes cigarettes, smokeless tobacco (i.e., snuff, dip, chewing tobacco, or "snus"), cigars, and pipe tobacco.
† Data taken from the National Survey on Drug Use and Health, 2016, and refer to adults aged 18 years and older self-reporting any mental illness in the past year, excluding serious mental illness.

Vaping & Cannabis

- E-Cigarettes
  - *Dry Herb*
  - *Cannabinoid concentrates - Butane hash oil & wax*
- Dabbing
  - *Inhalation of the combustion of cannabinoid concentrates*
  - *Faster hallucinogen effect due to higher concentration of THC*

- 1 in 10 high school students have vaped cannabis

Fuentes XF et al. VpALI-Vaping-related Acute Lung Injury: A New Killer Around the Block. Mayo Clin Proc. Dec 2019; 94(12): 2534-2545.
Kowitt SD, Osman A, Meemik C, et al. Vaping cannabis among adolescents: prevalence and association with tobacco use from a cross-sectional study in the USA. BMJ Open. 2019; 9(6): e028535.

Screen & Counsel

- Include e-cigarette terminology in tobacco screening

- Education patients and families about the health risks of e-cigarettes

Slang for e-cigarettes

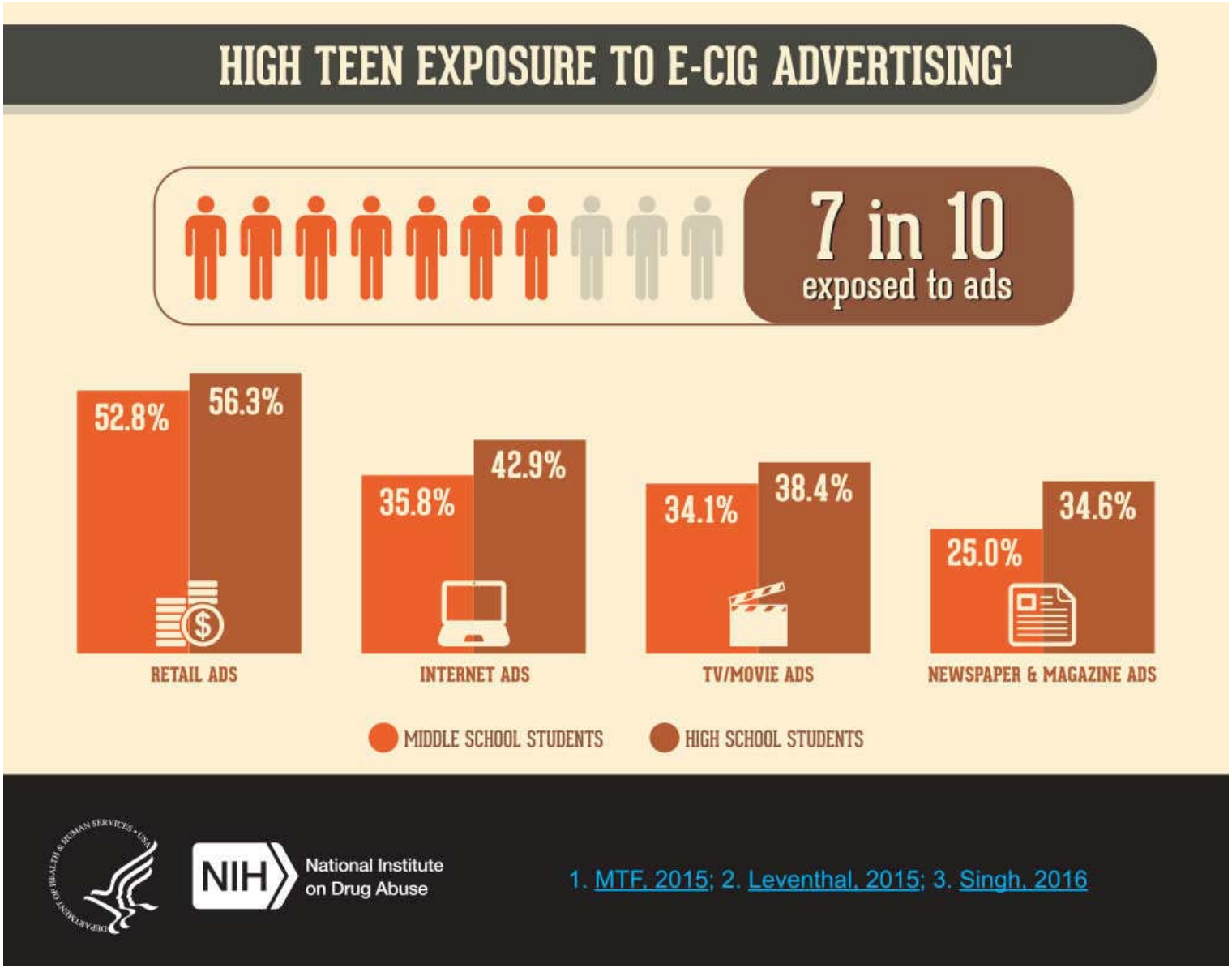
- Vaping
- Vapes
- Vape Pens
- Vooping
- Vaples
- Vapindaganja
- Tank Systems
- Mods
- E-cigs
- E-hookahs
- E-Juice
- JUULing
- Cloud Chasing
- Skitzin
- Ride the Mist
- Cold Boxing

https://www.gosmokefree.co.uk/e-cigarette-slang-and-definitions-glossary/

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*

Marynak K, Gentzke A, Wang TW, Neff L, King BA. Exposure to Electronic Cigarette Advertising Among Middle and High School Students - United States, 2014 - 2016. MMWR. March 16, 2018; 67(20): 294-299.


HIGH TEEN EXPOSURE TO E-CIG ADVERTISING[1]
7 in 10
exposed to ads
52.8%
56.3%
RETAIL ADS
35.8%
42.9%
INTERNET ADS
34.1%
38.4%
TV/MOVIE ADS
25.0%
34.6%
NEWSPAPER & MAGAZINE ADS
MIDDLE SCHOOL STUDENTS
HIGH SCHOOL STUDENTS
National Institute on Drug Abuse
1. MTF, 2015; 2. Leventhal, 2015; 3. Singh, 2016

E-Cigarette Advertising

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

Profit Incentive

- James Monsees & Adam Bowen
- Standford University – smoke break 2004
- Cessation
- Ploom 2007
- Pax labs cannabis

- JUUL
- $1.7 Billion Sales in 2018
- $1.2 Billion Sales (Jan – Jun 2019)
- Units Sold
  - *2016: 2.2 million*
  - *2017: 16.2 million*

Profit Incentive

- September 25: CEO Kevin Burnes had resigned & stop advertising
- October 2019
  - *Altria Group devalued its investment in Juul labs by $4.5 billion*
- November 2019
  - *JUUL Net Worth - $24 Billion*
    - Down from $38 Billion in December 2018
- JUUL laid off ~15% of its workforce at end of 2019
- Under criminal investigation by the US Attorney's office in Northern District of California
  - *Marketing tactics*
  - *Long-term health impacts*

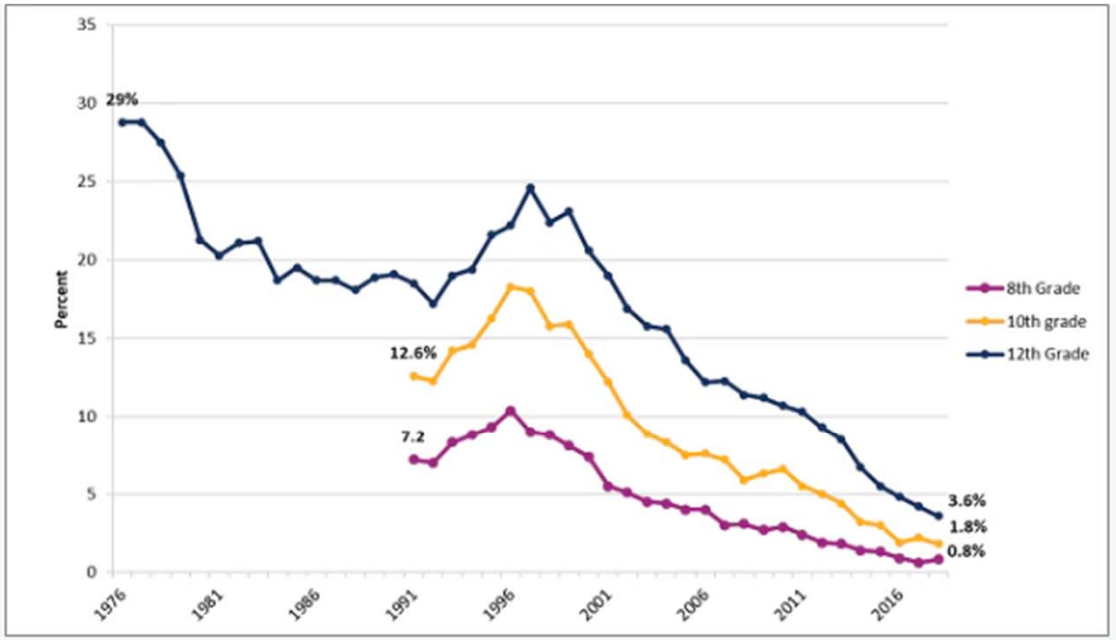
Business Insider (October 29, 2019). Juul is cutting 500 jobs by the end of the year, and its cofounders have both lost their billionaire status after less than 10 months in the 3-comma club.

Tobacco Advertising

Public Health Cigarette Smoking Act of 1969

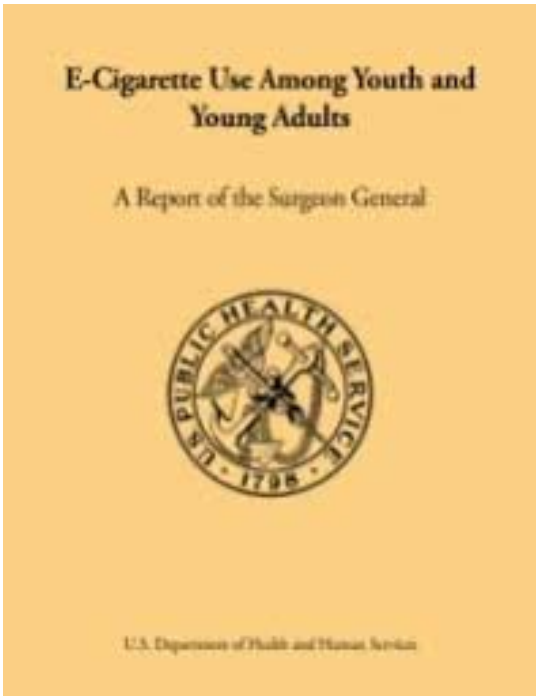
- Required package warning label— Warning: The Surgeon General Has Determined that Cigarette Smoking Is Dangerous to Your Health" (other health warnings prohibited)
- Temporarily preempted FTC requirement of health labels on advertisements
- Prohibited cigarette advertising on television and radio (authority to Department of Justice [DOJ])
- Prevents states or localities from regulating or prohibiting cigarette advertising or promotion for health-related reasons

Tobacco Advertising



Source: Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2019). *Monitoring the Future national survey results on drug use 1975-2018: Overview, key findings on adolescent drug use*. Ann Arbor: Institute for Social Research, University of Michigan. Retrieved from http://www.monitoringthefuture.org/pubs/monographs/mtf-overview2018.pdf - PDF.

Counsel About Risk



e-cigarettes.surgeongeneral.gov

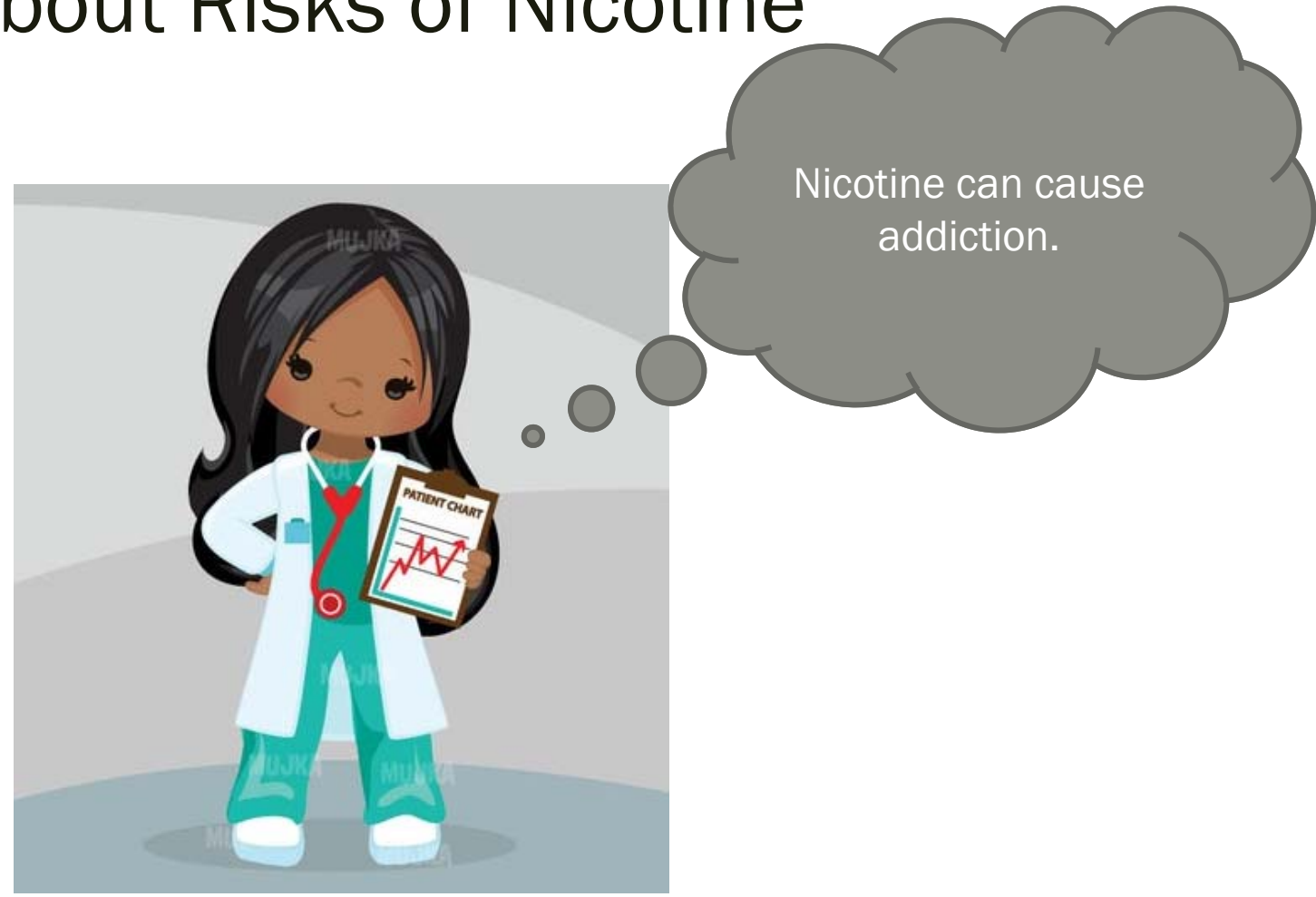
"Tobacco use among youth and young adults in **any form**, including e-cigarettes, **is not safe**"

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.

Counsel About Risks of Nicotine

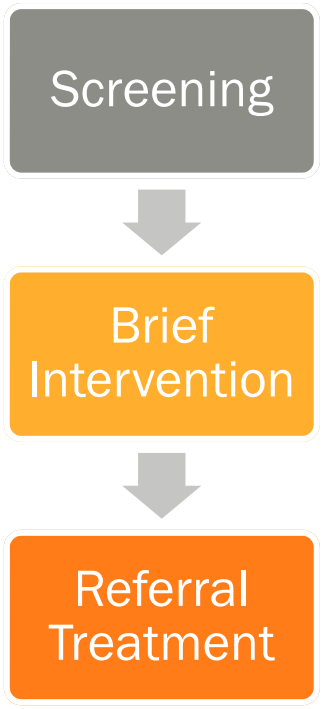


Counsel About Risks of Nicotine

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.

Point of Care Actions



ASK about tobacco USE

ADVISE Tobacco users to QUIT

ASSESS Readiness to make a QUIT attempt

ASSIST with the QUIT ATTEMPT

ARRANGE FOLLOW-UP care

Counsel About Health Risks Associated with E-Cigarettes

Defective E-Cigarette batteries have caused fires & explosions.

Poisoning have occurred by swallowing, breathing, or absorbing e-cigarette liquid through skin or eyes.

Resources & References

- Oklahoma Laws Related to Vaping – https://www.publichealthlawcenter.org/resources/us-e-cigarette-regulations-50-state-review/ok
- Surgeon General - https://e-cigarettes.surgeongeneral.gov/
- AAP Richmond Center: www.richmondcenter.og
- AAP Tobacco control and e-cigarette policy: https://www.aap.org/en-us/about-the-aap/Sections/Section-on-Tobacco-Control/Pages/Policy.aspx
- American Lung Association - https://www.lung.org/stop-smoking/smoking-facts/e-cigarettes-and-lung-health.html
- Substance Abuse and Mental Health Service Administration (SAMHSA) – www.samhsa.gov
- CDC – https://www.cdc.gov/tobacco/basic_information/e-cigarettes/sever-lung-disease.html

Summary

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