

Pediatric Tobacco Today

Addressing New Problems and Old Issues in a Changing
Landscape

Rachel Boykan, MD

May 30, 2019

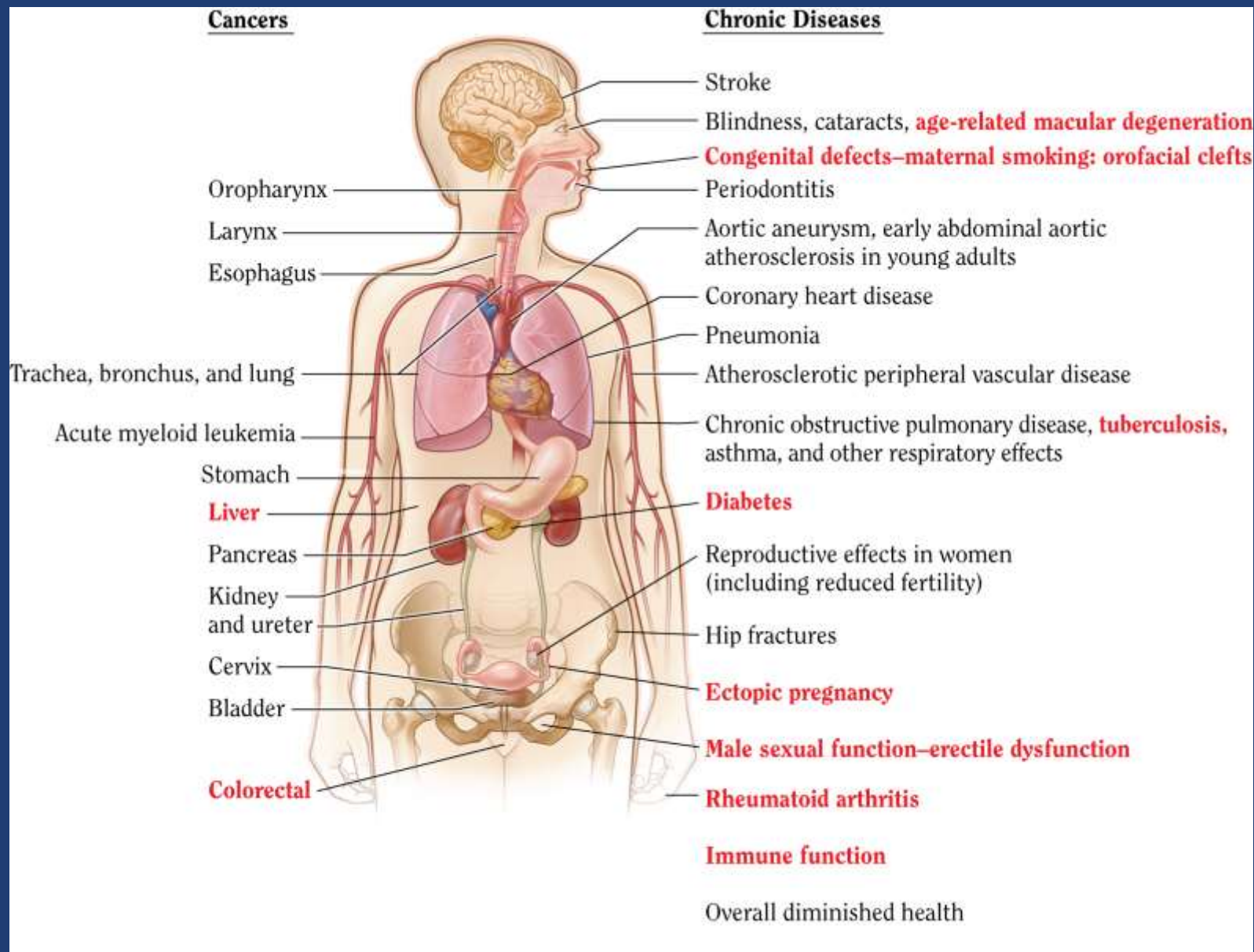
Disclosures

No financial relationships to disclose or
conflicts of Interest to resolve

Objectives

1. Describe epidemiology of youth tobacco use and exposure, including new electronic products
2. Develop strategies to address parents' and adolescents' use of tobacco
3. Identify opportunities for advocacy in addressing youth tobacco use and exposure



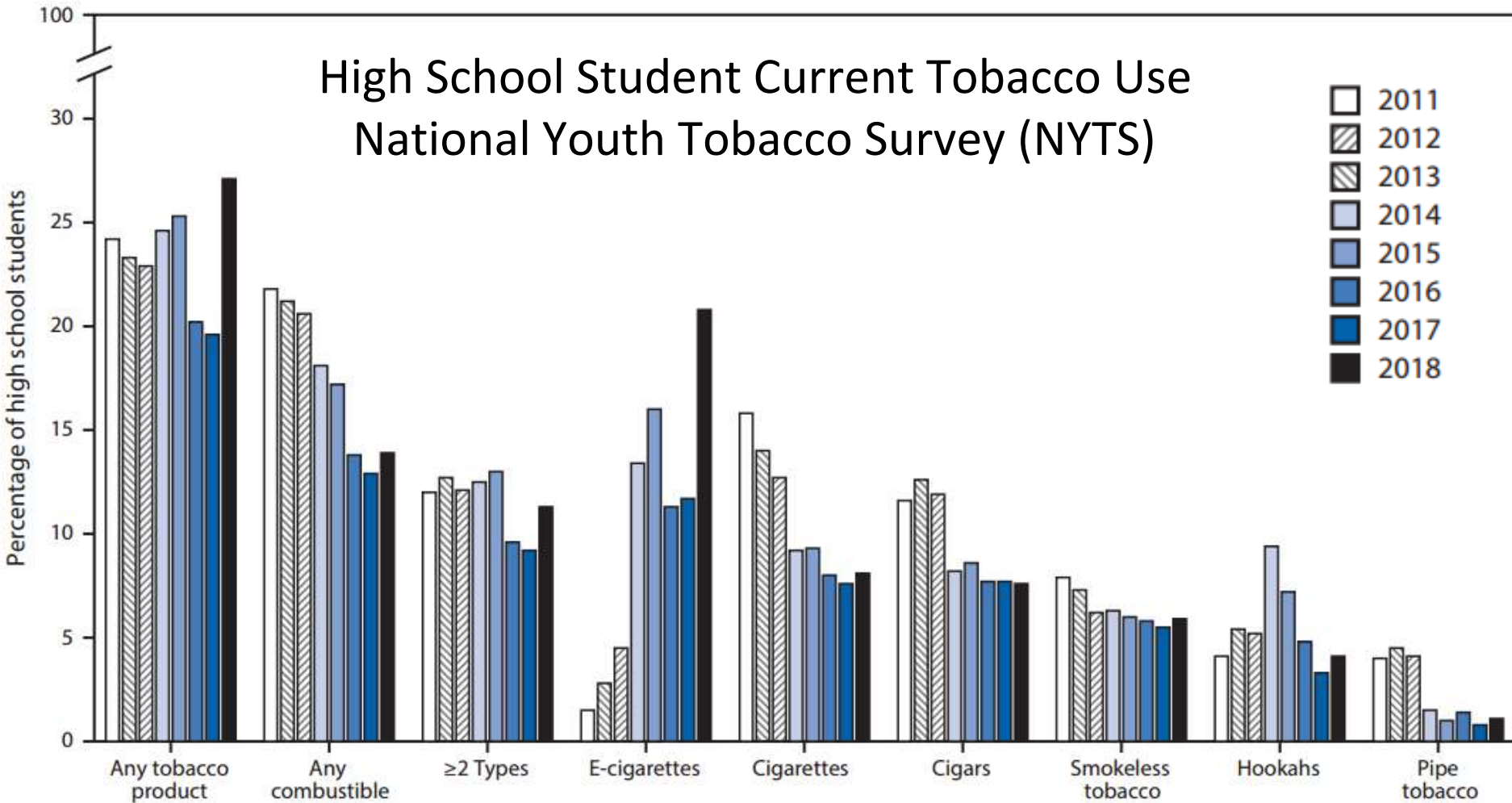


James

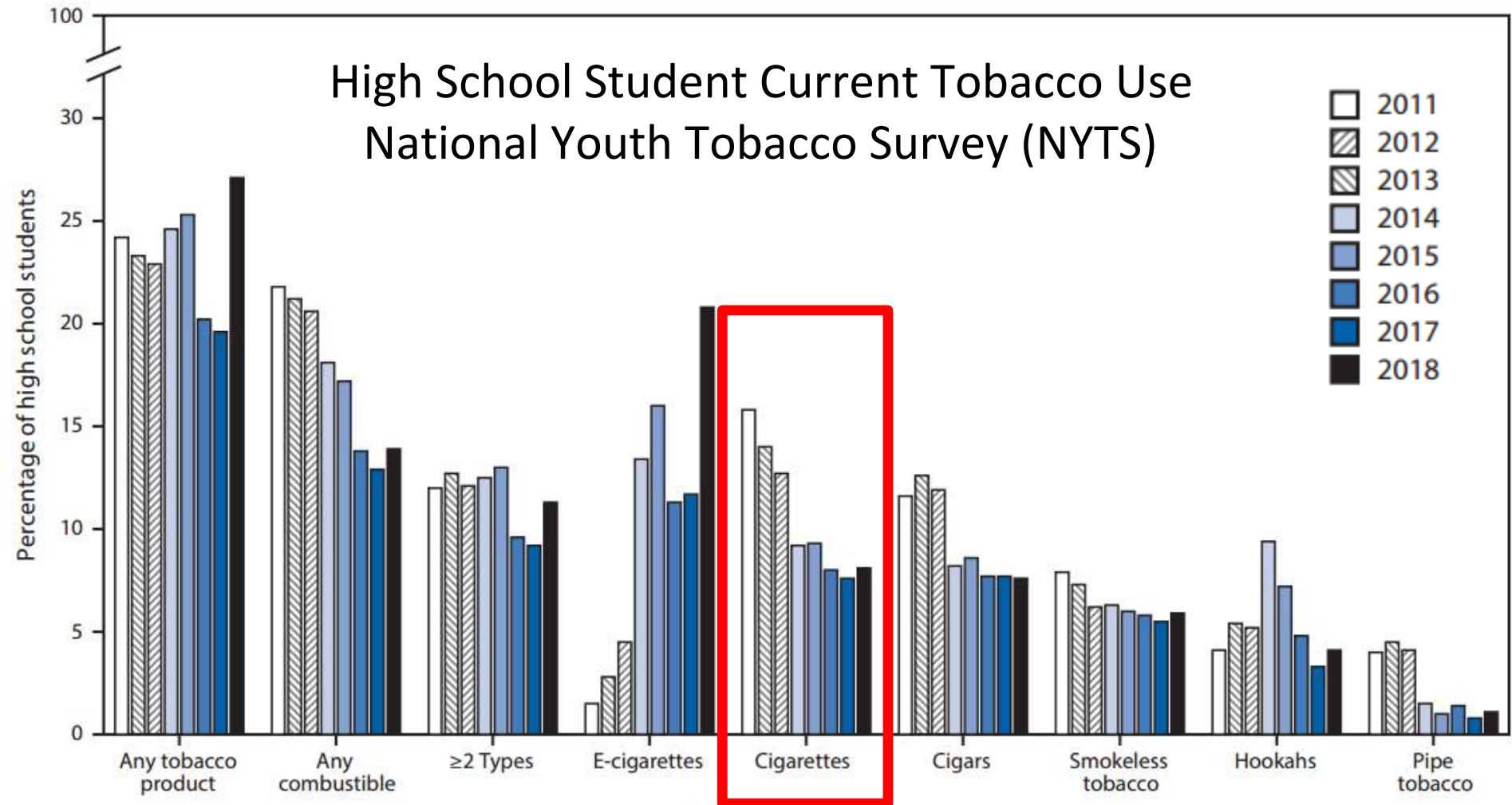
- James, age 16, for yearly physical
- Hx significant for well-controlled asthma
- HEADSS: has been vaping for 9 months; mostly Juul
- Some friends use smokeless tobacco, a few smoke cigars



High School Student Current Tobacco Use National Youth Tobacco Survey (NYTS)

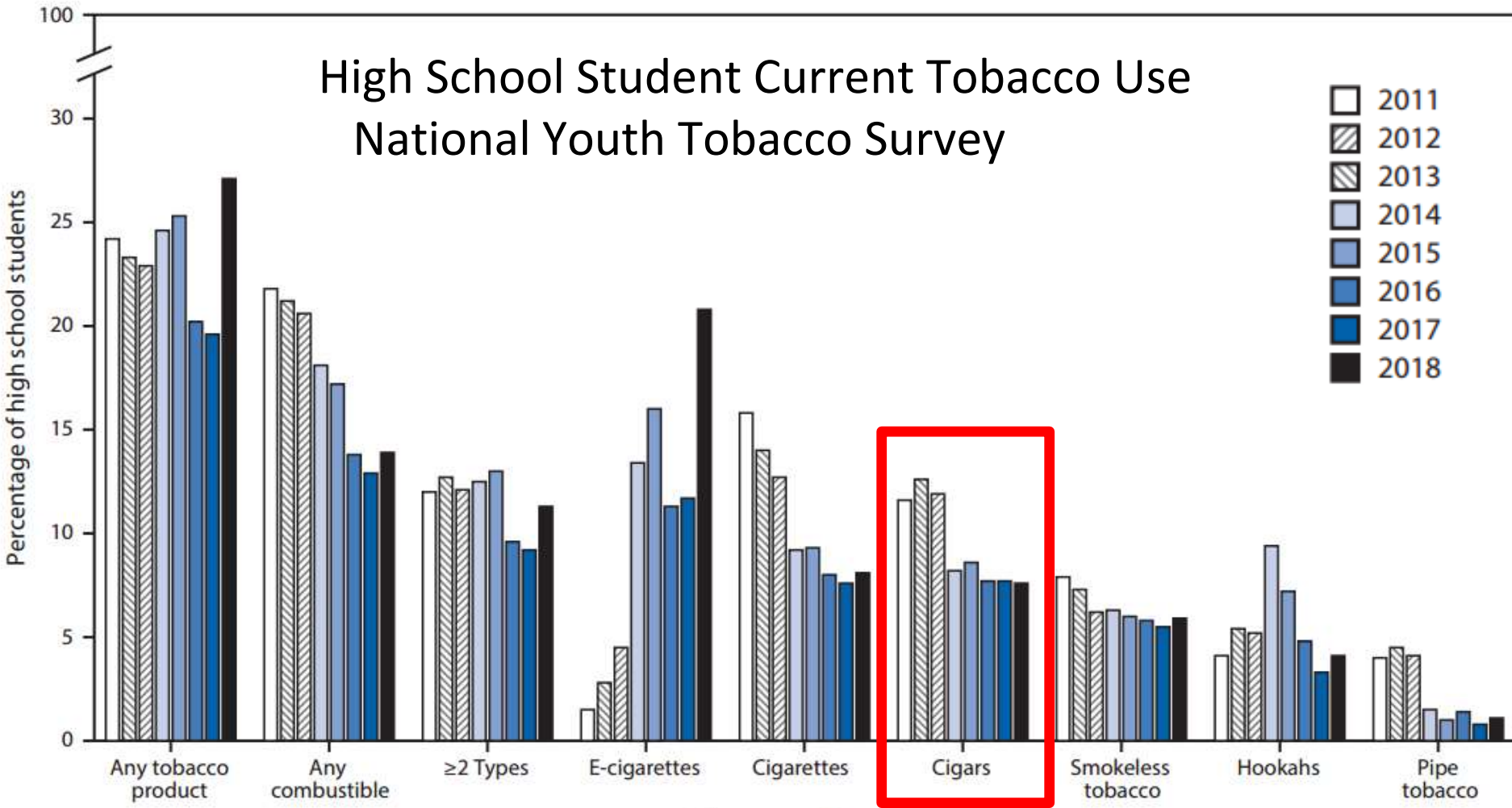


High School Student Current Tobacco Use National Youth Tobacco Survey (NYTS)



High School Student Current Tobacco Use National Youth Tobacco Survey

- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- 2017
- 2018

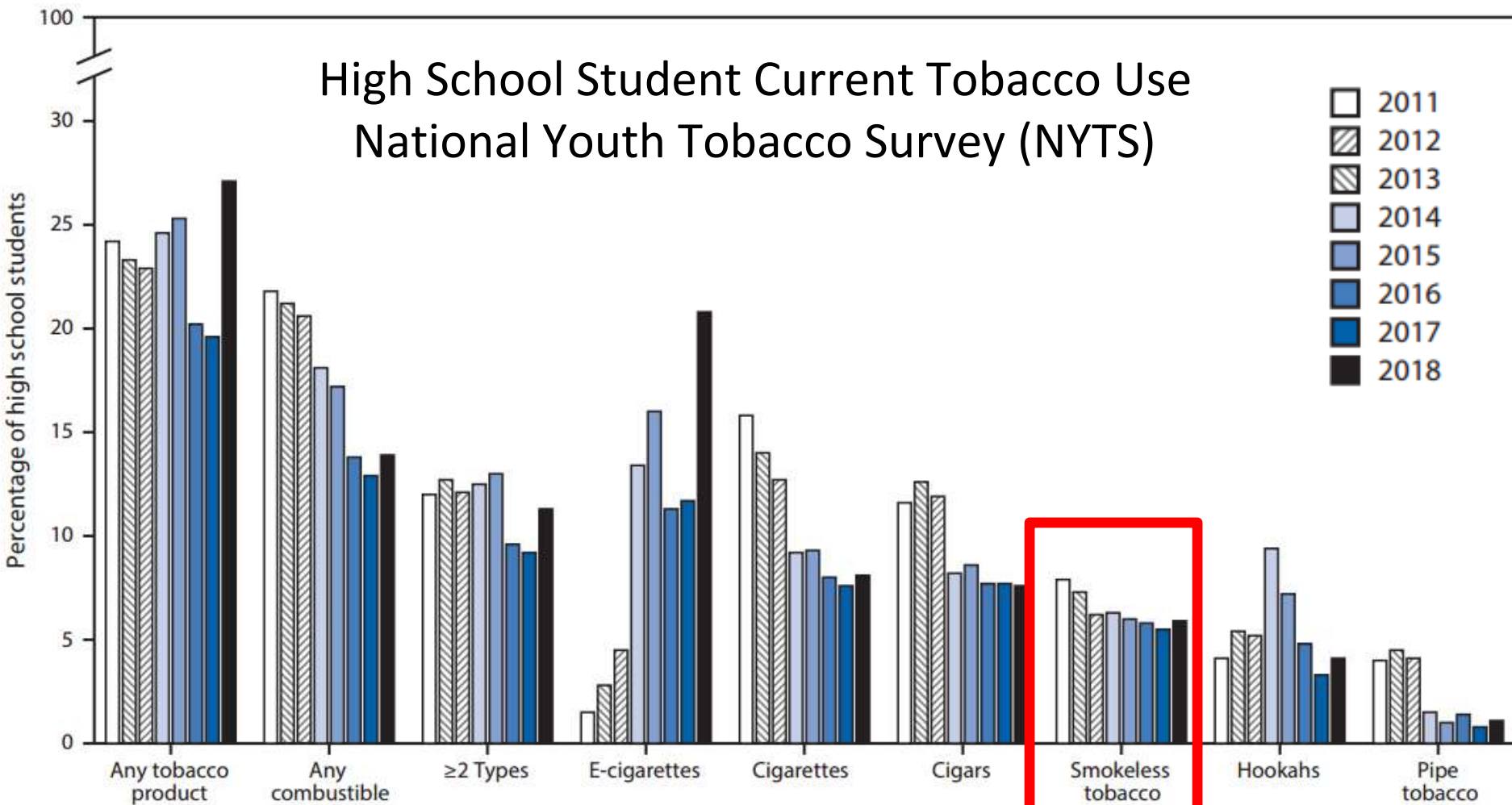
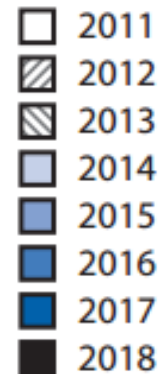


Cigars

- 7.6% of hs students smoked cigars in past 30 days
- In 30 states, cigar smoking is more prevalent than smoking among hs boys
- Flavors attract teens to use cigars
- Loopholes in language defining “little cigars” allow for marketing and less taxation of cigars



High School Student Current Tobacco Use National Youth Tobacco Survey (NYTS)

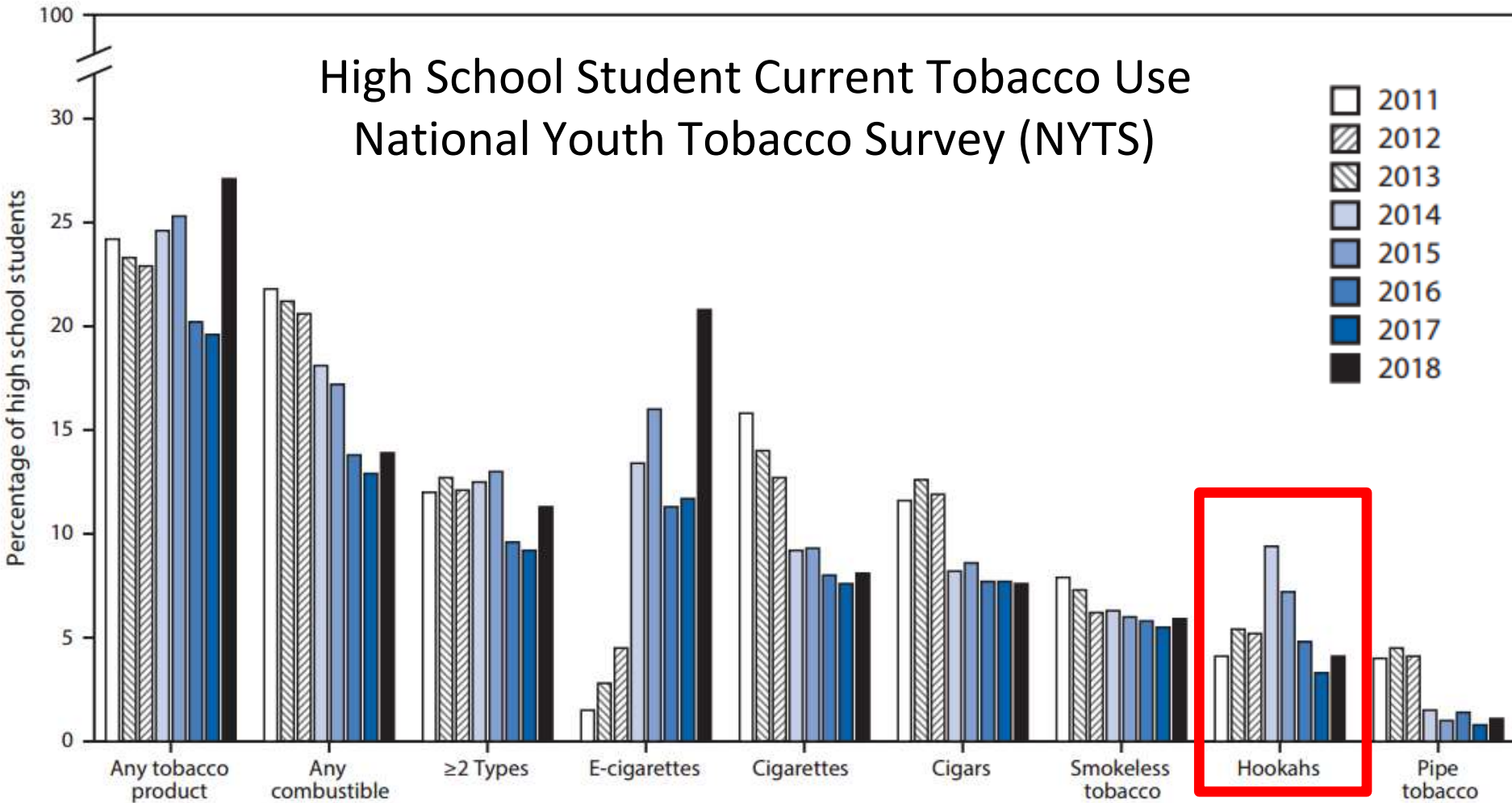


Smokeless Tobacco

- Current smokeless tobacco use (8.4%) among hs boys is comparable to cigarette use (8.8%)
- 29% of current ms users are frequent users
- Hs athletes use smokeless tobacco at higher rates than non-athletes – may be as high as 17.4% among male hs athletes
- Health harms include nicotine addiction, carcinogens, increased risk of progressing to smoking



High School Student Current Tobacco Use National Youth Tobacco Survey (NYTS)



Hookah

- AKA narghile, argileh, shisha, hubble-bubble, goza
- As harmful as smoking
- Flavored hookah appeals to youth
- May have increased risk of progressing to smoking

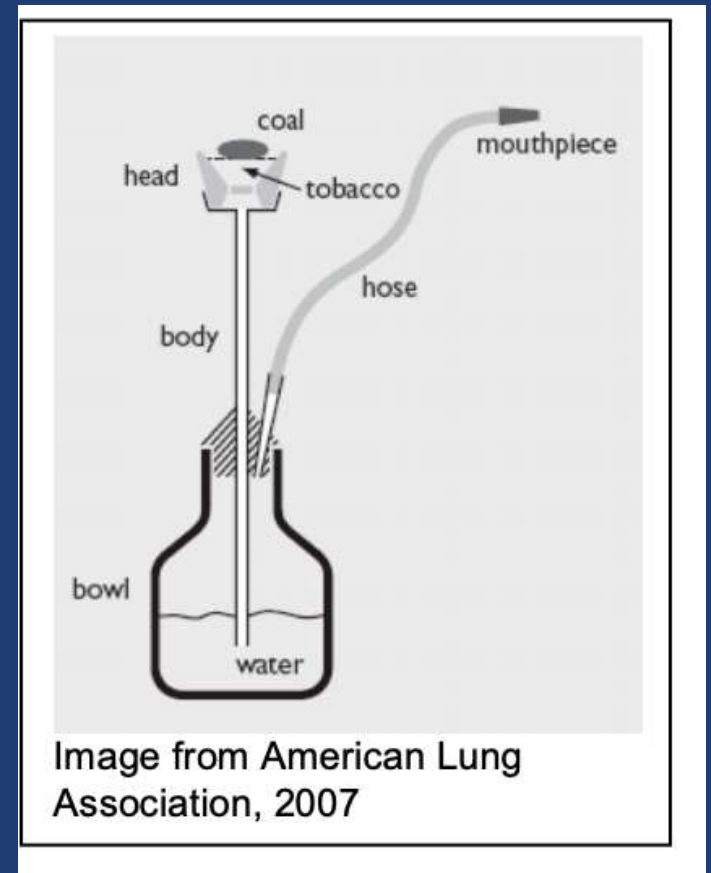
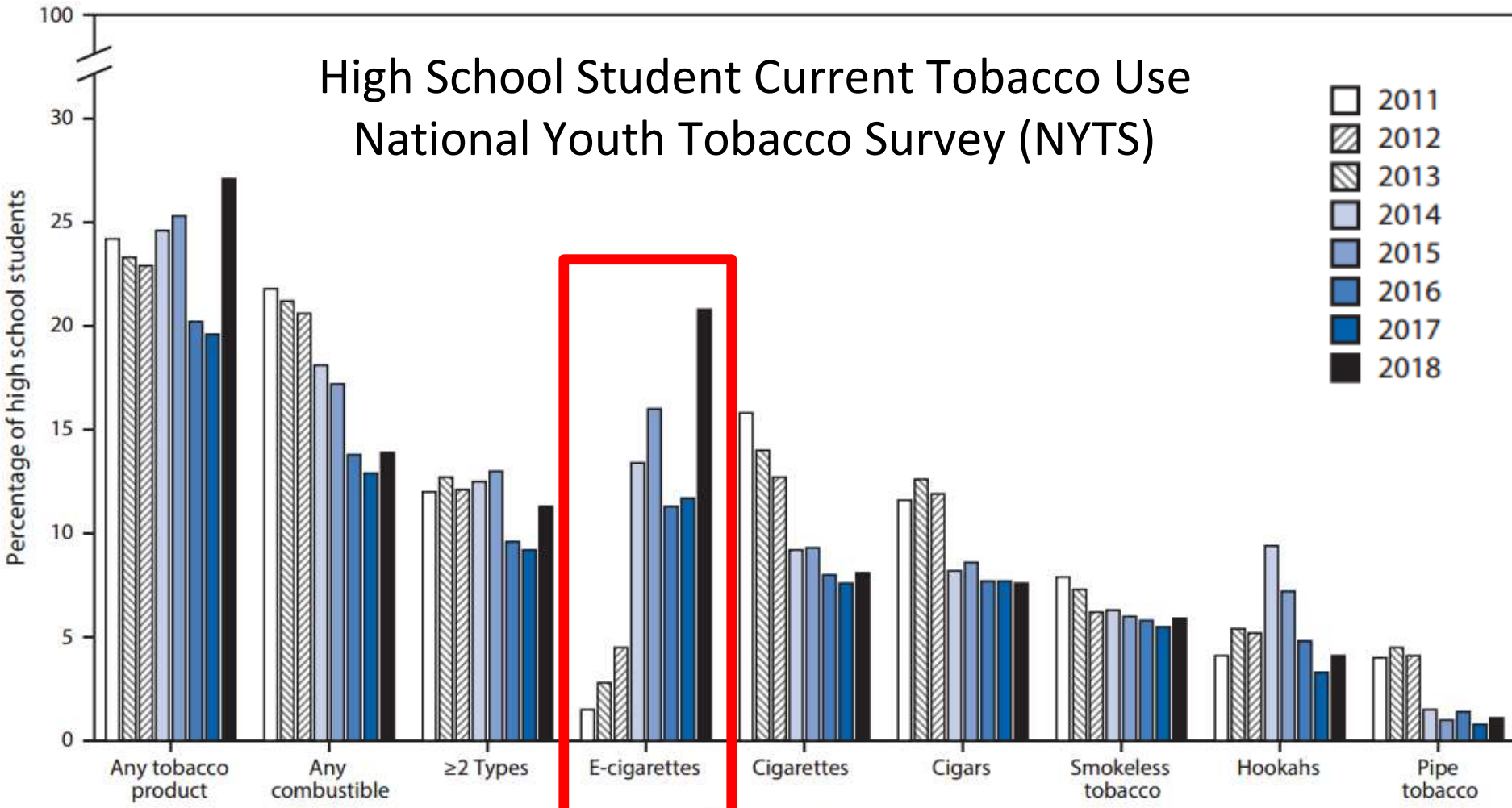
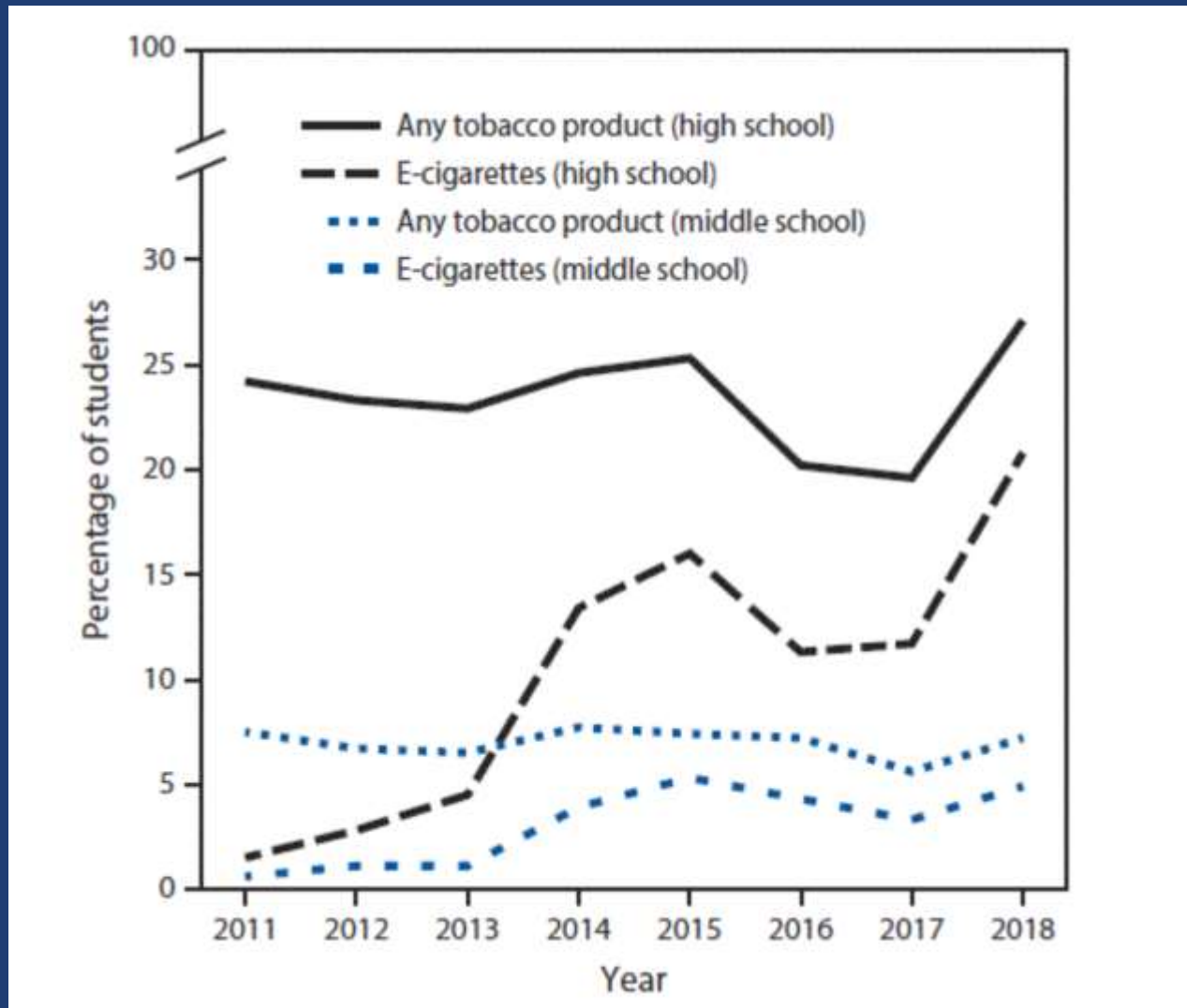


Image from American Lung Association, 2007

High School Student Current Tobacco Use National Youth Tobacco Survey (NYTS)



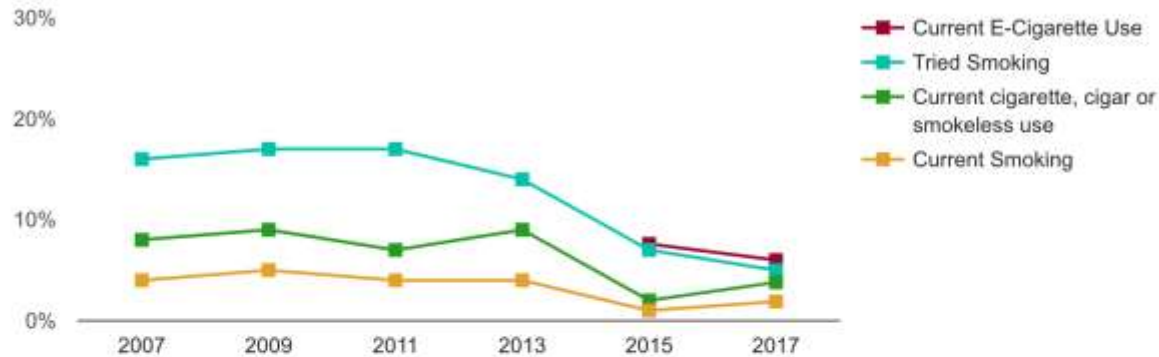
MS Students' E-Cigarette use 2011-18



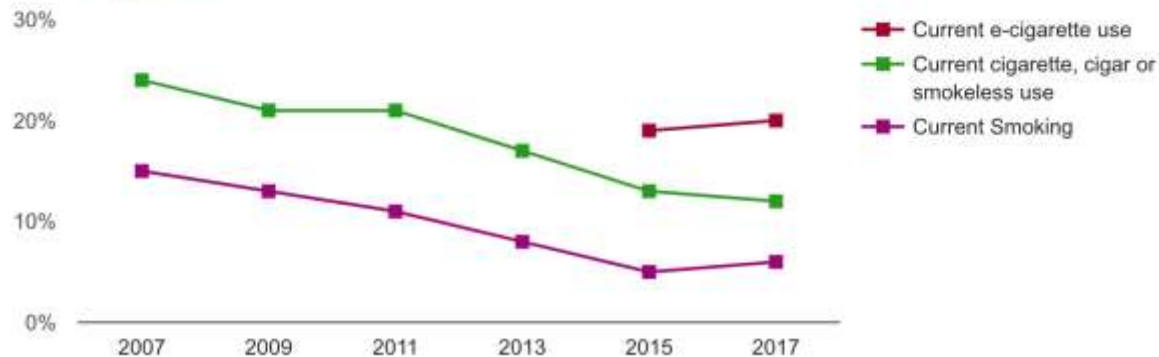
E-cigarette use Rhode Island

Tobacco Usage

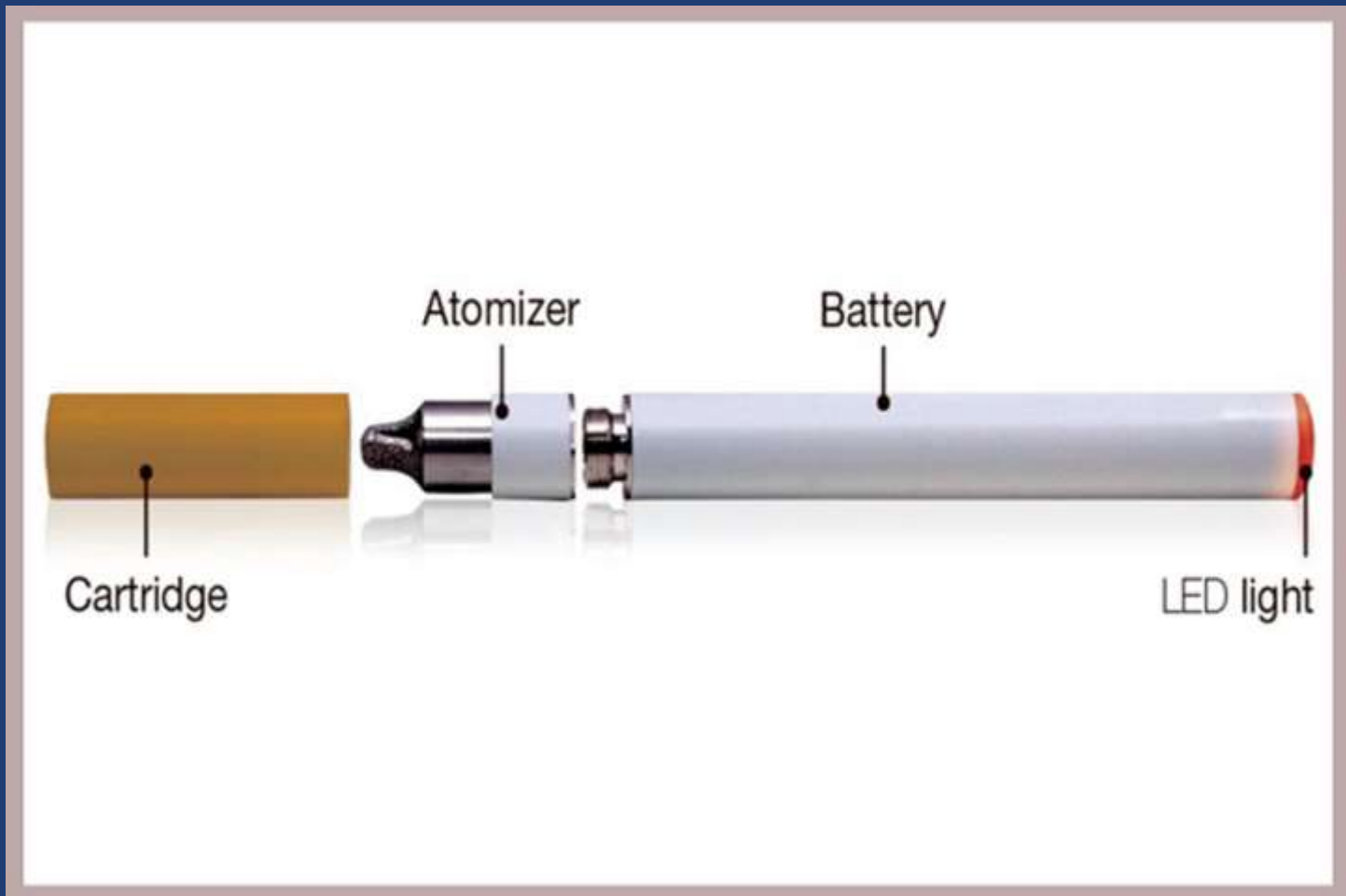
Middle School



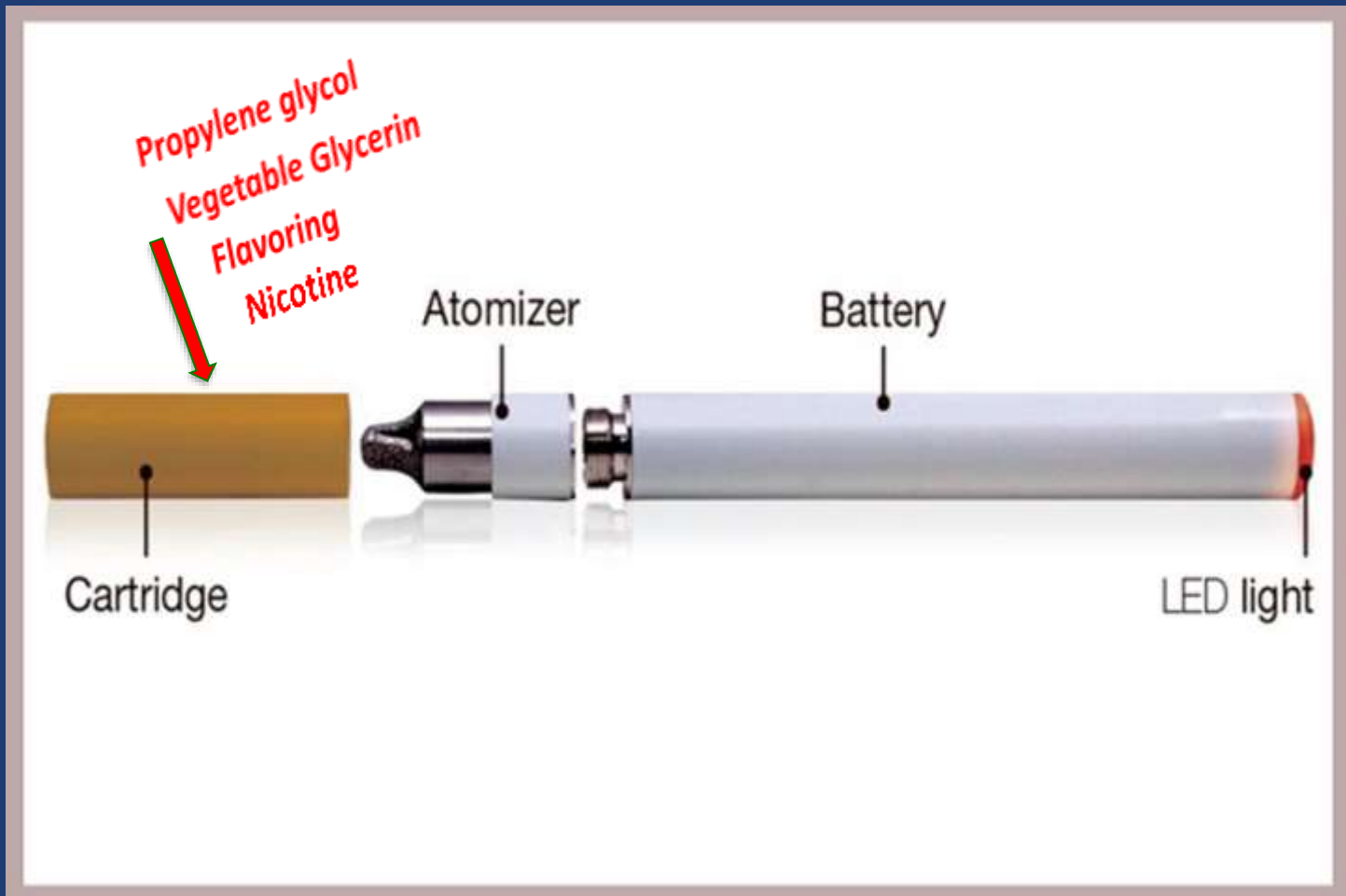
High School



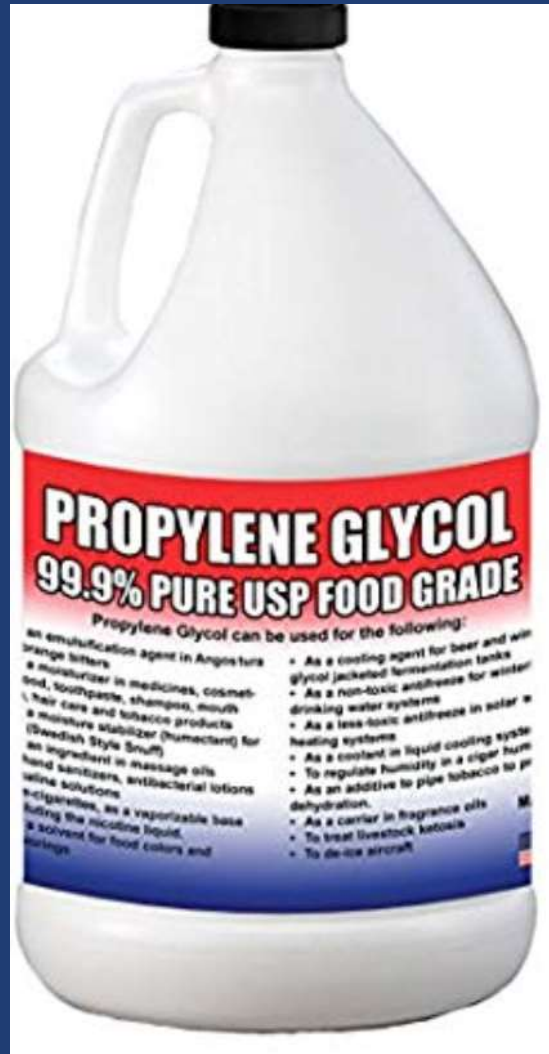
E-cigarette Anatomy



E-cigarette Anatomy



GRAS??

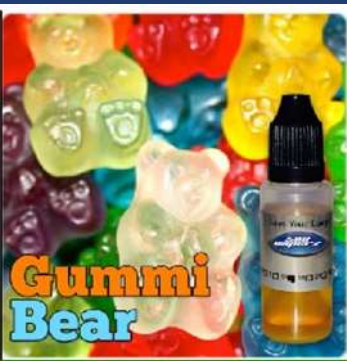




Ocean Frizzcake



Quality e-liquid
30 ML
Bubble gum



Gummi Bear

e-Liquid Beer
 10ml eLiquid

CIGARETTE

- x high (24mg)
- high (16mg)
- med (11mg)
- low (6mg)
- non (0mg)

Dear Player

DESERT MOON VAPORS

GIN AND TONIC



Death by Chocolate
Chocolate
(75 images)



Love Your Lungs
Banana Split
Ice Cream
(96 images)



Lovely Bubbly
Candy
(259 images)



Cookies
(83 images)



-EPIC CLOUDS-
MAX VG LIQUIDS
Donuts
(90 images)



Cupcakes
(43 images)



Honey Nut
Breakfast
(85 images)



e-Liquid
CIGARETTE
Mint
(58 images)



ROOT BEER
Soda Pops/Beverages
(138 images)



LIQUID STATE
Flavor Varieties
(290 images)



TOOLY WICKED
ELECTRONIC CIGARETTES & E-SMOOKING LIQUIDS
eJuice Companies
(244 images)

OVER 15,000 FLAVORS!!

Fruit and Candy Flavors

- Fruit and candy flavors are preferred and perceived as less harmful¹
- Use of flavors significantly correlated with greater risk of dual and poly tobacco use, relative to single product use²



¹Soneji et al, Public Health Reports 2019

²Mantey et al, Addictive Behaviors, 2019

Toxicity with Flavors

- Different toxicant profiles, many yet to be determined
 - Menthol
 - Diacetyl
 - Cinnamaldehyde
 - Benzaldehyde
 - Furfural
 - 2,3-Pentanedione



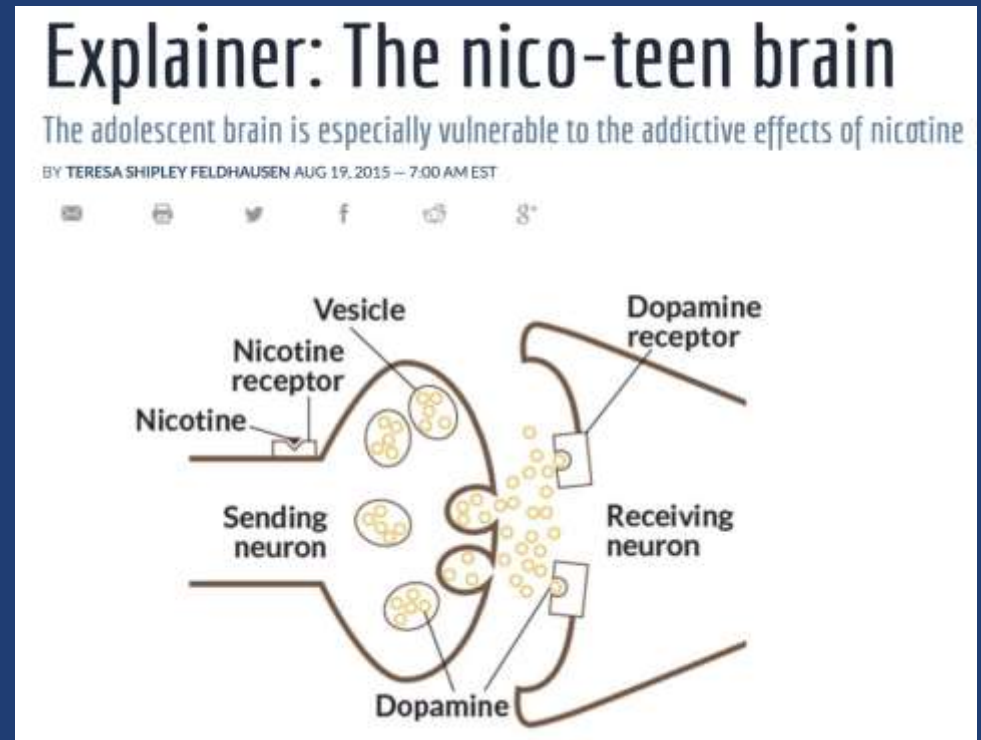
What is nicotine?

- Nicotine is considered a toxin
- Primary psychoactive ingredient in tobacco
- Commercially available almost exclusively from the *Nicotiana tabacum*, commonly known as the tobacco plant



Nicotine is addictive!

WITHDRAWAL:
Irritability,
frustration,
anger,
increased appetite,
tremors,
depression,
insomnia,
anxiety,
difficulty concentrating



Pods



“Incredibly easy to use”

“Fairly cheap”

“Nicotine salts – an all-new delivery method that allows for higher concentrations of nicotine without sacrificing smoothness or flavor. In fact, a 24mg mixture of nicotine in a vape pen will almost surely provide an unpleasant vaping experience for the newbie. That same newbie could try a 50mg mixture of nicotine salts and not even bat an eye. Such is the joy of nicotine salts.”



Cotinine in pod users as high or higher than smokers

Table 1 Nicotine levels in the pod products and urine cotinine concentrations detected in 22 surveyed patients (aged 13–21 years) who reported pods use within 7 days prior to the clinic visit

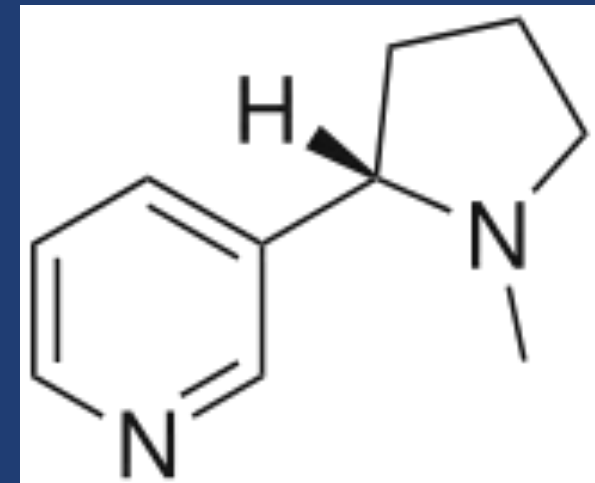
Brand name of pod system	Number of patients who reported using the pod product (single brand/in combination with other pod products)	Nicotine concentration in a pod (mg/mL)	Nicotine yields in 10 puffs (mg)	Type of nicotine salt	Median urinary cotinine concentration in exclusive users (ng/mL)
Juul	10/6	56.2	0.83	Benzoate	135.1
Bo	3/6	37.9	0.85	Levulinate	508.4
Phix	2/3	48.0	0.77	Benzoate	906.4
Sourin (refilled with BlowSauce e-liquid)	0/2	21.8	0.26	Benzoate	N/A*

*All users of Sourin brand reported using multiple products.

→ Median cotinine concentration = 244.8 ng/mL (IQR 8.4-1,255.8)

→ Cigarette median cotinine concentration = 155.2 ng/mL (IQR 68.8-579.2) (Benowitz)

JUUL: Why so popular?



Then and Now

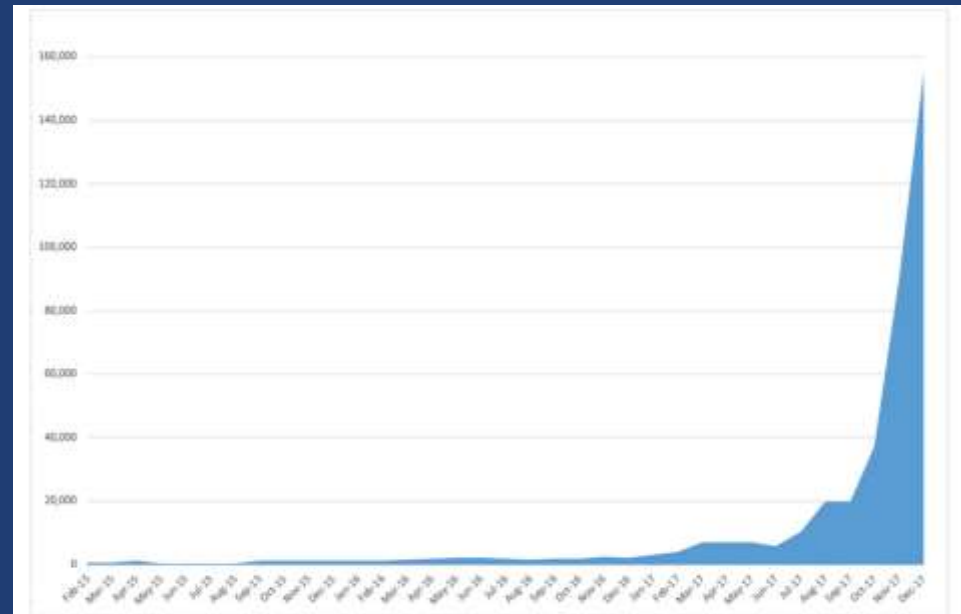
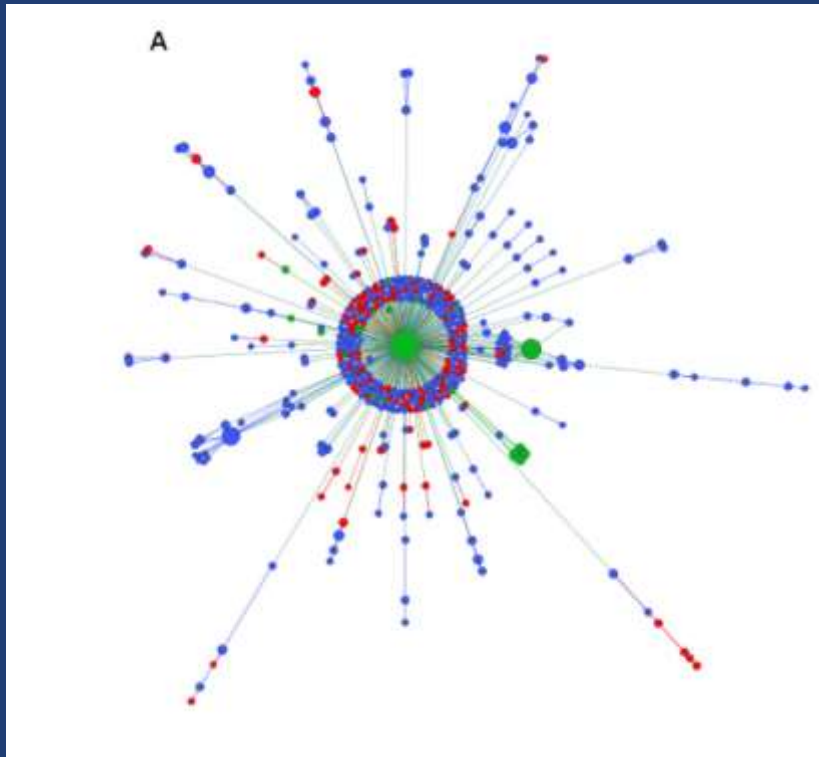


SRITA



Courtesy of Susan Walley, MD

JUUL: Spreading the word via Twitter



Number of JUUL-related tweets on twitter 2015-2017.

JUUL: Spreading the word via Twitter

Table. Predicted Age Category of Twitter Users Following @JUULvapor Who Were Classified as Individuals

Model	Individual Accounts, No. (%) (n = 9077)
3-Age category, y	
13-17	4078 (44.9)
18-24	3957 (43.6)
≥25	1042 (11.5)
2-Age category, y	
13-20	7313 (80.6)
≥21	1764 (19.4)

Teens: Perception

- 73% believed e-cigs less harmful than cigarettes
- 47% believed that e-cigs less addictive than cigarettes
- 19% believed aerosol from e-cigs is water
- 23% believed e-cigs aren't a tobacco product
- 41% believed e-cigs for cessation
- 43% believed e-cigs were safer than cigarettes
- E-cig users had significantly more favorable attitudes towards them

Amrock *et al*, Pediatrics, 2016

Gorukanti *et al*, Prev Med. 2017

Parker. Et al, Pediatrics, 2018

Vaping → Smoking



James

- James, age 16, for yearly physical
- Hx significant for well-controlled asthma
- HEADSS: has been vaping for 9 months; mostly Juul
- Some friends use smokeless tobacco, a few smoke cigars



Meta-analysis: Four-fold increase in cigarette smoking initiation among teens

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)	8.80 (2.37-32.69)
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	31.8	5.6	7.78 (6.15-9.84)	1.75 (1.10-2.78)
Total	30.4	7.9	5.12 (4.41-5.95)	3.62 (2.42-5.41)

Heterogeneity: $\tau^2 = 0.15$; $Q_6 = 15.04$; $P = .02$; $I^2 = 60\%$
 Test for overall effect: $z = 6.25$; $P < .001$

E-cigarettes are recruiting teen smokers

- Ever use of e-cigarettes strongly associated with subsequent initiation
- Higher nicotine e-cigarettes were more likely to progress to cigarettes



Conner et al, Tob Control, 2017

Goldenson et al , JAMA Pediatr, 2017

Watkins et al, JAMA Pediatr, 2018

E-Cigarettes: a one way door to cigarette use

- Kids who used e-cigarettes were more likely to be smoking cigarettes at the next time they were observed, but...
- Kids who smoked cigarettes were not more likely to be smoking e-cigarettes at a later time



Cigarette experimenters using e-cigs were more likely to progress to smoking

- Among adolescent cigarette experimenters, using e-cigarettes was positively and independently associated with progression to current established smoking



Nicotine addiction?

- Morean, 2018: Associated with dependence symptoms:
 - Longer duration of use
 - More frequent vaping
 - Nicotine use
 - Current cigarette smoking
- Vogel, 2019:
 - Dependence measures correlated with cotinine levels



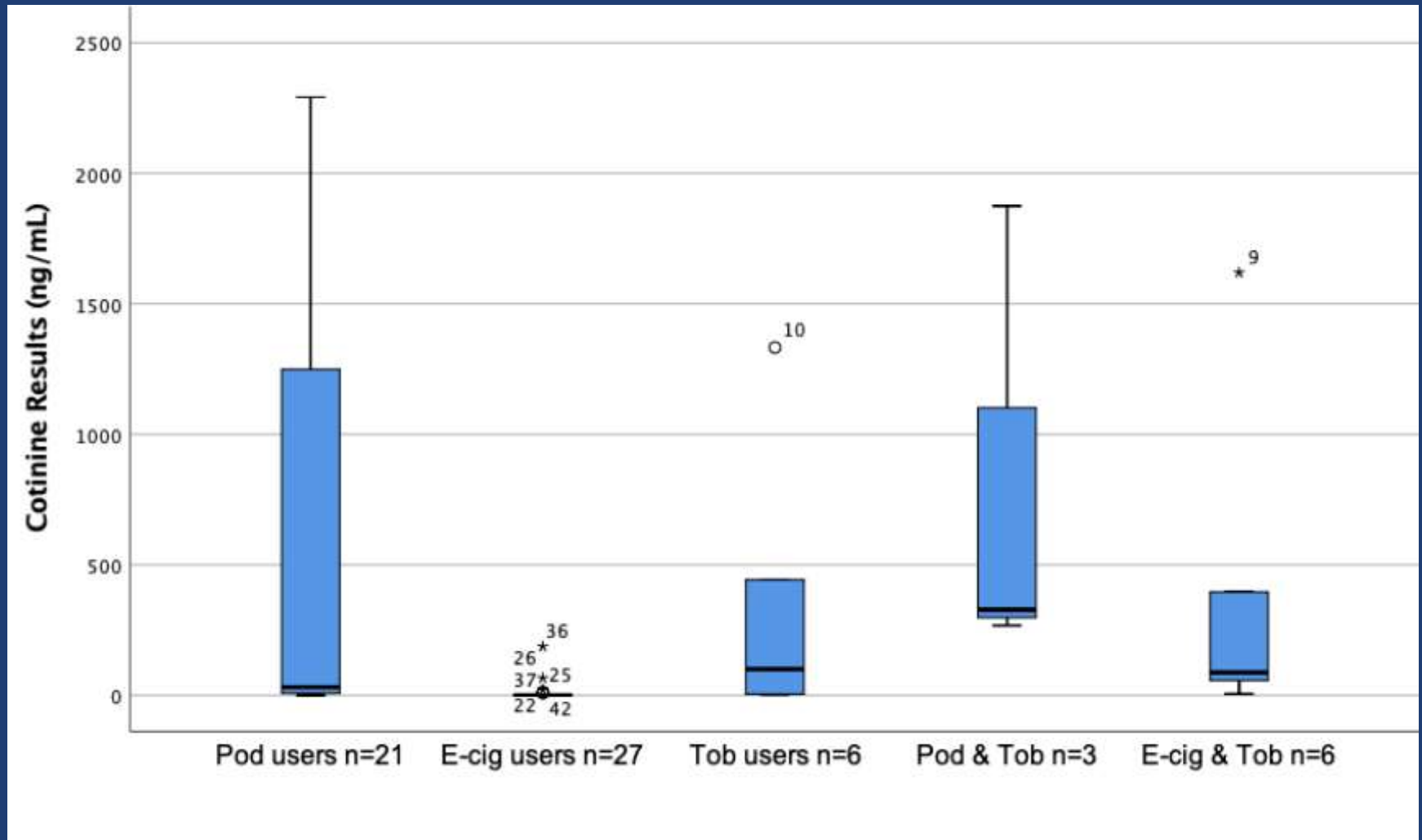
Pod users used more frequently than other e-cigarette users

- “Use a lot”
 - 67% are pod users
- “Use sometimes”
 - 37% pod users
 - 44% e-cig users
- Used a few times or not anymore
 - 19% pod users
 - 52% e-cig users
- Past day use
 - 77% of pod users
 - 30% of e-cig users
 - 43% of dual users

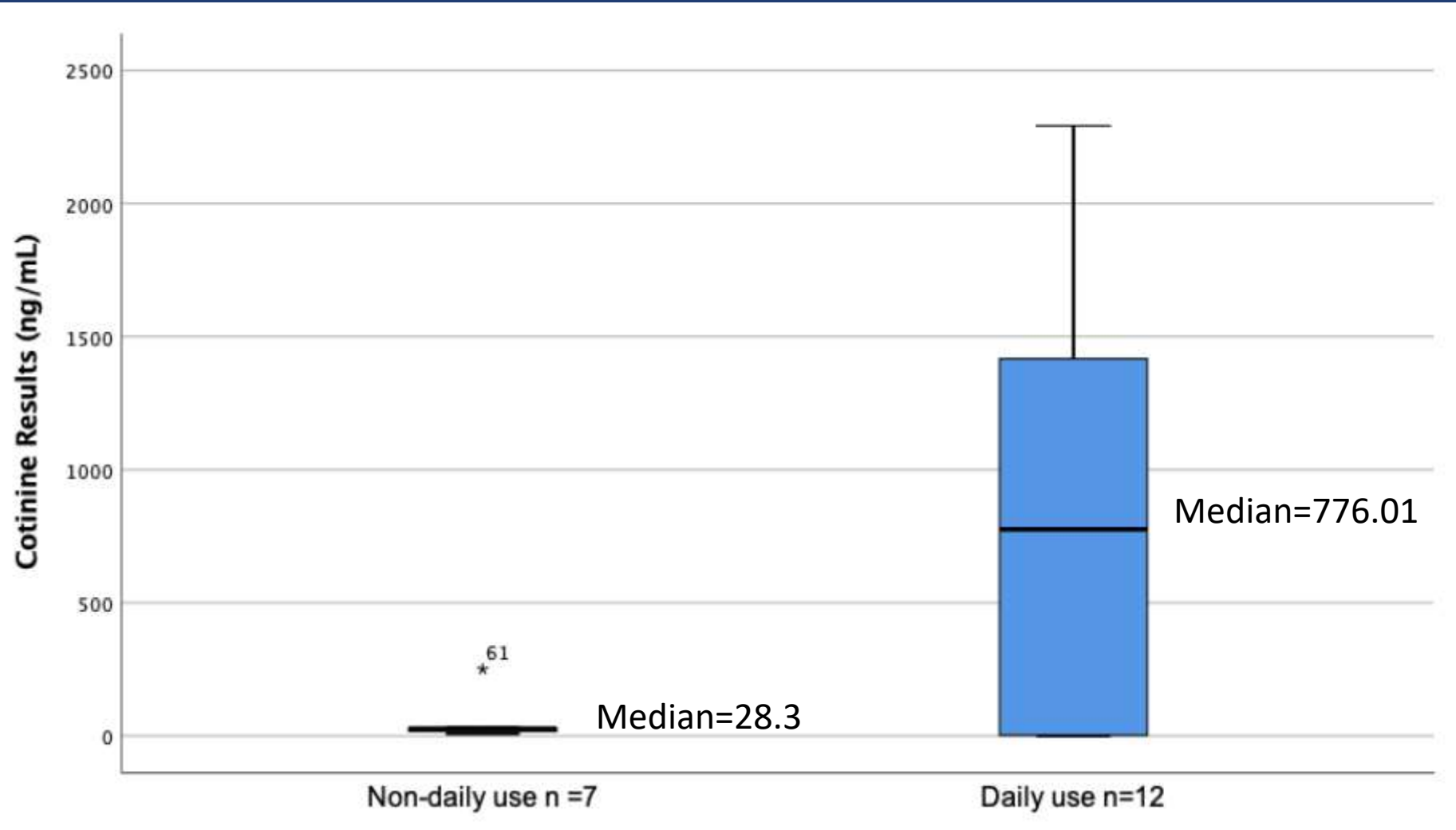
More pod users were daily users

- Daily use
 - 63% of pod users
 - 11% of e-cig users
 - 33% of tobacco users
 - 50% of dual users

Cotinine is highest in pod users, comparable to smokers and dual users



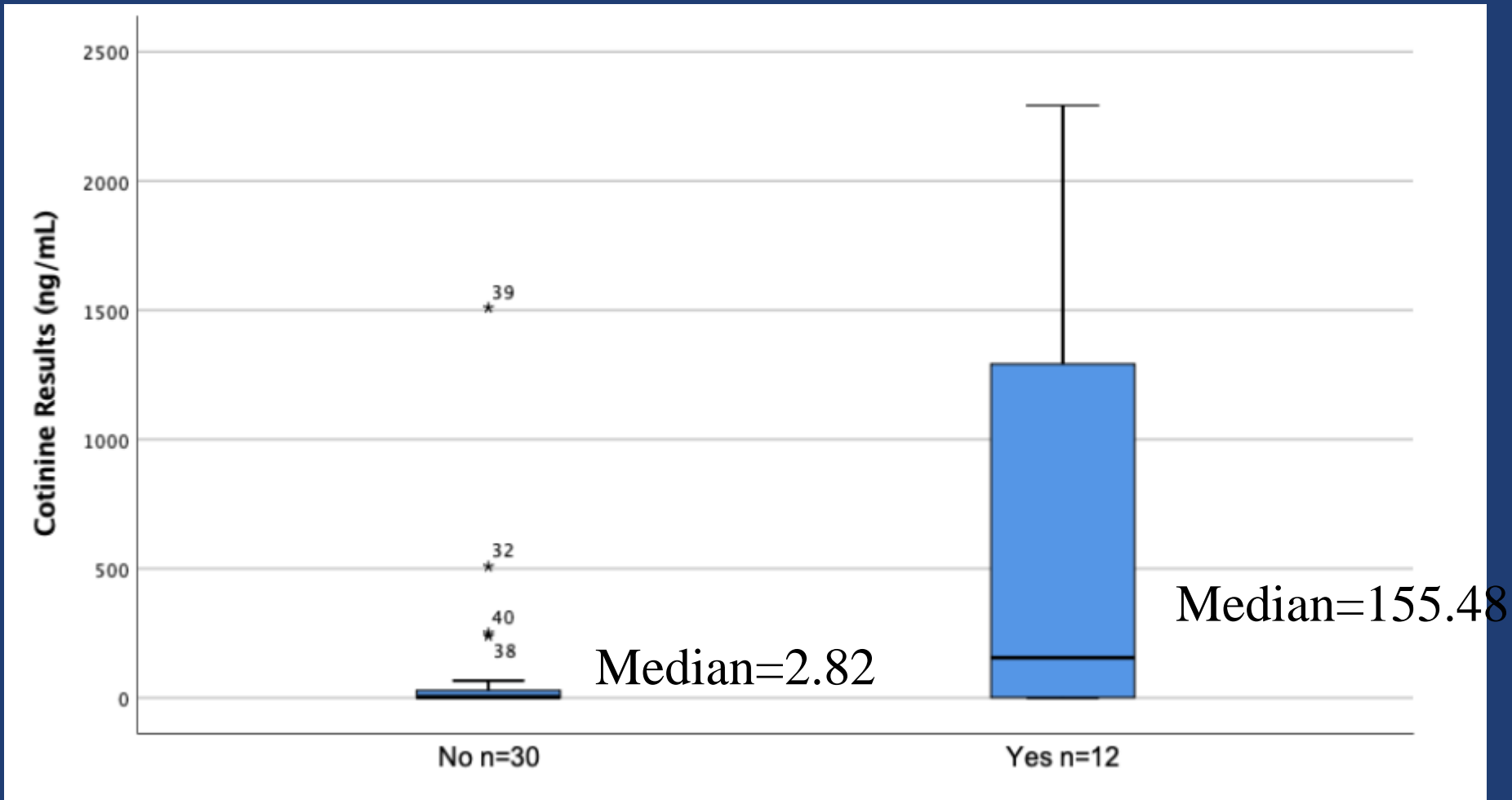
Cotinine is higher in daily vs. non-daily pod users



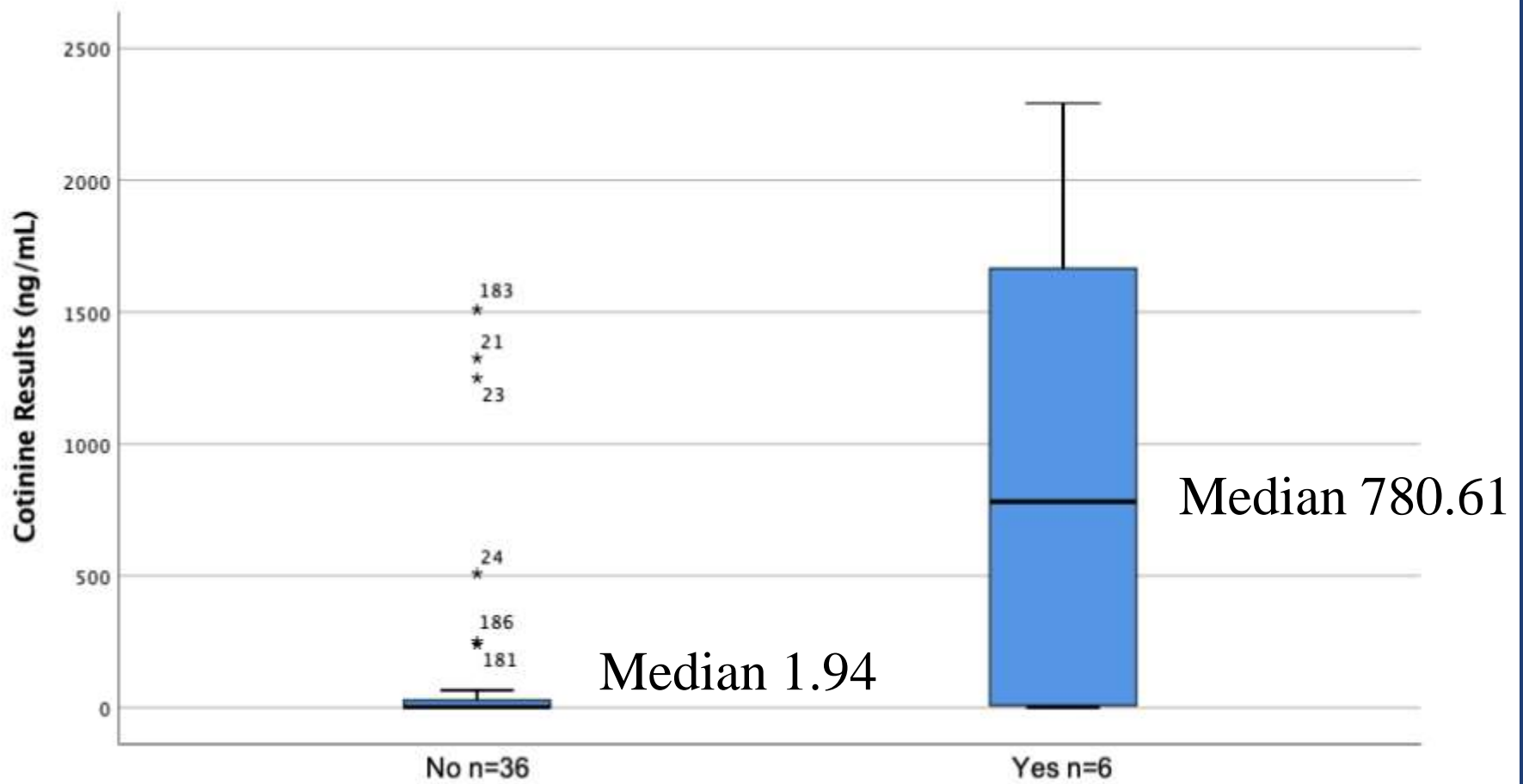
Dependence

	Total (%)	Pod users (%)	E-cig users (%)	p
Desire interrupts thinking	3/42 (7)	3/20 (15)	0/22 (0)	.06
Need to vape again	2/42 (5)	2/20 (10)	0/22 (0)	.13
Irritable without	5/42 (12)	4/20 (20)	1/22 (5)	.122
Stressed without	6/42 (14)	4/20 (20)	2/22 (9)	.32
Vape on awakening	6/42 (14)	6/20 (29)	0/22 (0)	.006

“Yes” on dependence questions → Higher cotinine



Vaping upon awakening → Higher cotinine



Tobacco Dependence Treatment

The 5 As

- ASK (important to ask the right questions)
- ADVISE (to not use any of these products)
- ASSESS (products, patterns of use, comorbidities)
- ASSIST (MI, nicotine replacement)
- ARRANGE (follow up, other forms of assistance)

Tobacco Dependence Treatment

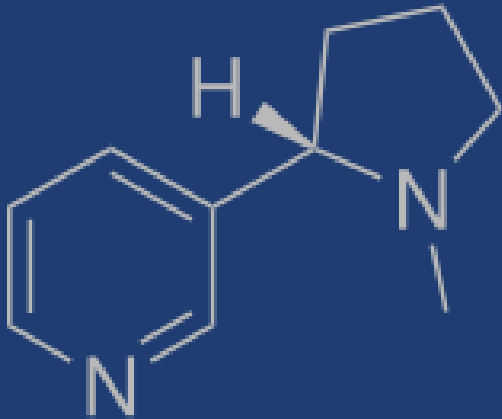
Ask

- ASK (important to ask the right questions)
 - Juul?
 - How often?
 - When last?
 - In school?
 - In the morning?

Tobacco Dependence Treatment

Advise and Educate

- ADVISE (to not use any of these products)



Tobacco Dependence Treatment Assess

- ASSESS (products, patterns of use, comorbidities)



Tobacco Dependence Treatment Assist

- ASSIST (MI, nicotine replacement)



Truth Initiative: This is Quitting

QUIT ANYTHING



This is Quitting features:



Real quitters, revealed

Rage tweets and brag blogs straight from people trying to quit and stay quit. Inspiration, commiseration, all the feels. We couldn't make this stuff up.



Texts you actually want to get

Set your quit date and get advice tailored to your quit status. Not ready yet? We've got texts for that, too. Be anonymous. Your quitting secrets are safe with us.



Tons of training tools

Whether you need 1 try or 50 to take smoking or vaping down, we've got you covered. Our coaching crew, [truthity exercises](#), and punching bags are open 24/7.

Curb the urge to vape

- **Delay** – urges usually last a few minutes
- **Drink Water** – or other low-cal drink
- **Do something else** – exercise, project with hands
- **Deep Breathe** – relaxation techniques
- **Discuss** – get help from a friend, or quit line, quit app, text to quit



Dealing with other teens who vape...

- Ask a friend or relative to quit with you
- Ask others not to vape around you
- Leave the room when others vape
- Keep hands and mouth busy



Tommy

- New patient, Tommy, age 1 week
- Mother cut back smoking from 1 pack/day to 3 cigs/day
- Father stopped smoking but is now vaping instead

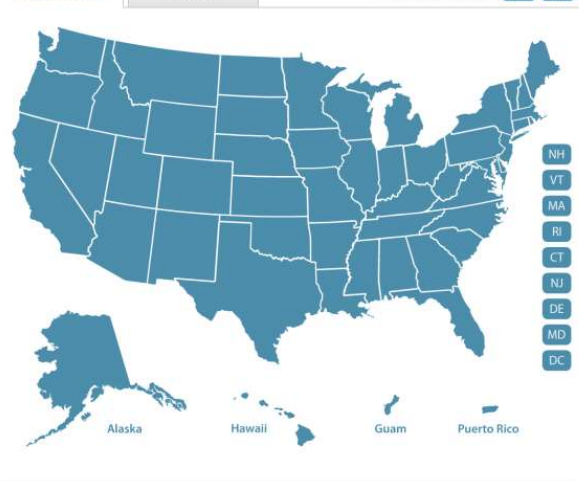


Tobacco Dependence Treatment Arrange

1-800-QUIT-NOW

It's free. It's personalized.
It's up to you.

United States | Canada | Print all profiles in [USA](#) [CAN](#)



Looking for data about quitlines?
Each year NAQC collects information from quitlines across [North America](#). Survey topics include the types of services offered, financing, and utilization of services. This survey data is available on our [Quitline Facts](#) page.

You can also view summarized content from all the quitline profiles included in the map above. Choose one of the following topics:

- Free and Discounted Cessation Medication
- Quitline Administration and Financing
- Web-Based Services
- Specialized Material
- Service Providers



Health Care Provider

English [DK](#) Español

[Home](#) | [Just Looking](#) | [Enroll Now](#)

Hello, [Sign In](#) or [Enroll today](#).

Taking your first steps
toward becoming
tobacco free.

Help me decide

How do you feel about quitting?

Choose:

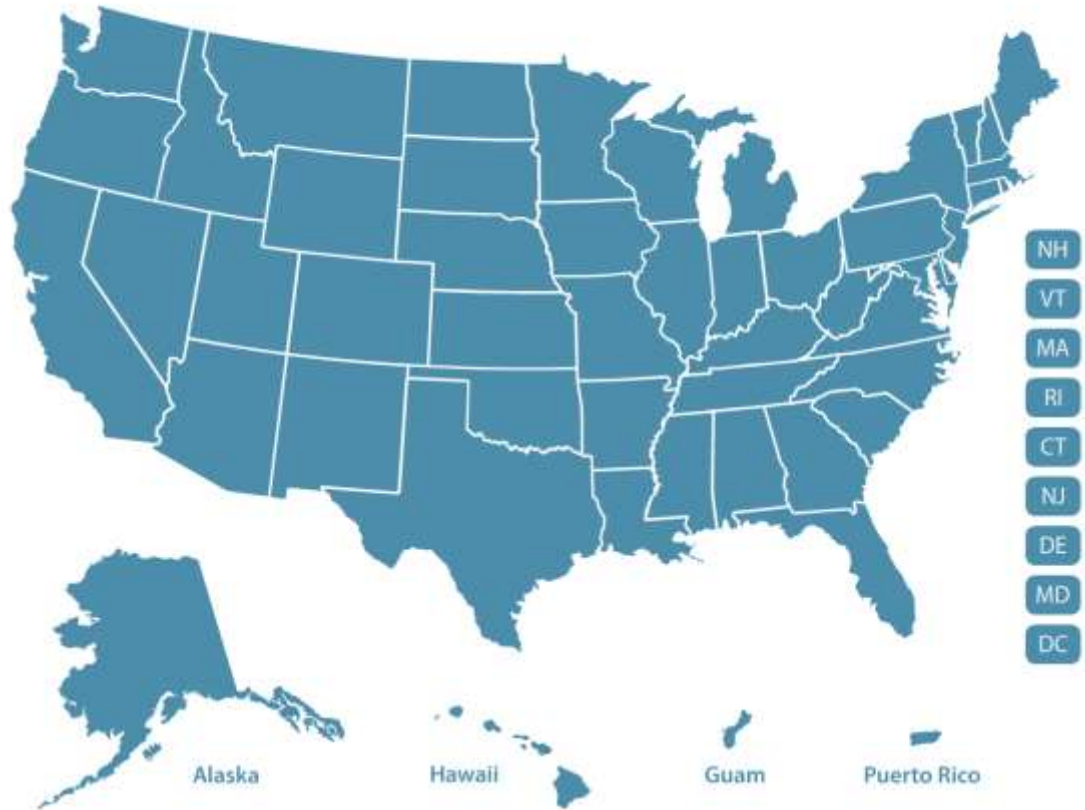


QUITWORKSSM-RI

United States

Canada

Print all profiles in [USA](#) [CAN](#)



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- [Specialized Material](#)
- [Service Providers](#)

Quitline: Rhode Island Smokers' Helpline

Began Operations: April 2002

Website: <https://ri.quitlogix.org/en-us/>**Standard Hours of Operation**

Monday: 07:00 AM - 01:00 AM
 Tuesday: 07:00 AM - 01:00 AM
 Wednesday: 07:00 AM - 01:00 AM
 Thursday: 07:00 AM - 01:00 AM
 Friday: 07:00 AM - 01:00 AM
 Saturday: 07:00 AM - 01:00 AM
 Sunday: 07:00 AM - 01:00 AM
 Closed on: Thanksgiving day, Christmas day

Telephone Numbers

Line	Phone Number	Language/Subject
1	1-800-784-8669	English/Spanish
2	1-800-879-8678	English/Spanish
3	1-800-833-5256	Spanish

Supported Languages

Counseling offered in: English, Spanish, Arabic
 Third-party counseling: Mandarin, Cantonese, Korean, Vietnamese, French, Russian, Language Line services with translation in over 140 languages
 Deaf/Hard of hearing: [Video](#) relay interpreter

**ENROLL IN ONLINE
CESSATION SERVICES**

Services Offered**Phone Counseling****Types:**

- brief intervention single-session
 multi-session (client-initiated) multi-session (counselor-initiated)
 Text Msg to cell phone (two-way) Text Msg to cell phone (one-way)

Length of standard first session: 45 min

Length of standard follow-up session: 20 min

Counseling session topics:

- tobacco history developing a quit plan
 setting a quit date withdrawal symptoms
 relapse prevention weight gain
 use of cessation medication stress management
 other

Web-Based Services

- quitline information cessation information
 self-help tools automated e-mail messages
 interactive counseling chat rooms

Cessation Medications**Free Medications**

- patch gum
 lozenge nasal spray
 inhaler varenicline
 bupropion

Discounted Medications

- patch gum
 lozenge nasal spray
 inhaler varenicline
 bupropion

Distribution Methods

- voucher by mail

Other Services

- voicemail with callbacks recorded self-help messages
 referral to other health services mailed info or self-help resources

Eligibility Criteria**To receive counseling:** Resident of state**To receive medication:** Resident of state, Age 18+, No medical conditions preventing use**Specialized Materials****Specialized Materials**

- youth, under 18 youth, 18-25
 older tobacco users, 55+ smokeless tobacco users
 pregnant tobacco users multiple addictions
 racial/ethnic populations lesbian, gay, bisexual or transgender
 chronic health conditions low socioeconomic status or Medicaid



BRIEF

Schools try new strategies to reduce vaping, e-cigarette use



CNY SCHOOL REMOVES BATHROOM DOORS TO DISCOURAGE VAPING AND BULLYING

How to help schools with vaping

- Education about vaping and nicotine
- Ensure the school district has a 100% tobacco-free policy, which includes outdoor spaces and non-school hours
- Discuss local resources and strategies to address youth nicotine addiction
- Work with students, parents, students, community leaders and elected officials on solutions to promote health, not merely punish students

Resources: Addressing Vaping in Schools

- Stanford Tobacco Prevention Toolkit
- Public Health Law Center Model Policy for a Tobacco-free Environment in Minnesota's K-12 Schools
- Minnesota Department of Health Toolkit: Addressing Student Use of E-cigarettes and Vaping Products
- Massachusetts Toolkit for Schools : Addressing Student Use of E-Cigarettes and other Vaping Products



475+ Cities & Counties in **29** States



Local flavor bans

- Barrington
- Central Falls
- Johnston
- Middletown
- Providence
- Woonsocket

REGULATION & LEGISLATION

Court Upholds Providence, R.I., Flavor, Coupon Bans

Plaintiffs argued infringement of First Amendment free speech

Dec. 14, 2012

PROVIDENCE, R.I. -- A federal district judge upheld two [city](#) ordinances in Providence, R.I., that ban the sale of certain flavored tobacco products and the acceptance and redemption of coupons, according to a report from the National Association of Tobacco Outlets.

Barrington's tobacco ban: 'You have to start somewhere'

New law: People must be 21 to buy tobacco in Barrington



Barrington's new tobacco ordinance restricts the sale of tobacco products to specialty [electronic](#) smoking shops, such as the Ecig Shed on Maple Avenue.

RICHARD W. DIONNE JR.

Copyright © 2013 Woonsocket, November 14, 2013

FLAVORED TOBACCO, LEGISLATION, RETAIL

MIDDLETOWN, R.I. ADOPTS FLAVORED TOBACCO RESTRICTIONS REQUIRES TOBACCO RETAILER LICENSES

By Patrick Lagreid [@phxcigarguy](#) · On June 22, 2017:



AAP Recommendations

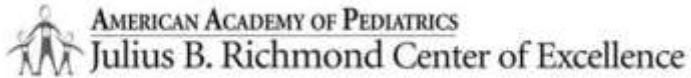
- FDA must regulate e-cigarettes; ban sales to people under 21 years old
- Ban Internet sales of e-cigarettes and e-cigarette solutions
- Reduce youth demand by banning flavors, including menthol
- Ban advertising and promotions to youth
- Apply existing tobacco control laws to e-cigarettes
- Pediatricians should screen for e-cigarette use, counsel about health effects and should not recommend e-cigarettes as a treatment option for tobacco cessation.

AAP Julius B. Richmond Center of Excellence

Mission and Goal

- To improve child health by eliminating children's exposure to secondhand smoke (SHS) and tobacco through research in clinical practice of pediatrics
- To ensure that all pediatric clinicians are aware of the consequences of SHS exposure, and that they have the skills and tools to help families and communities protect children and their families from tobacco

American Academy of Pediatrics Julius B. Richmond Center of Excellence



- Founded in 2006 through a grant from the Flight Attendant Medical Research Institute (FAMRI)
- Named in honor of Julius B. Richmond, MD
- National Center with work at federal, state, community, and practice levels
- Housed at AAP, but is a “virtual center” with scientific investigators across the US
- Funded by grants from FAMRI, NIH, Truth Initiative, Pfizer, and other sources
- Center Director: V. Fan Tait, MD FAAP, Chief Medical Officer of AAP

AAP Julius B. Richmond Center of Excellence Activities

- Research
- Policy and advocacy
- Training and education
- Communication and dissemination
- Funding opportunities
- Technical assistance to AAP State Chapters and local communities



Jessica H., 2010 AAP Art Contest Winner

Richmond Center Resources

- **AAP Section on Tobacco Control**
- **Physician Training and Educational Resources**
- **Patient/Family Resources**
- **Visiting Lectureships**
- **Webinar series** (topics: hot topics in tobacco prevention and control, communication, best practices, and point of care issues)
- **Solving the Puzzle: A Guide to Tobacco Pediatric Control** (interactive guide pediatric tobacco control)
- **State-specific Tobacco Information** (prevalence data, policies, quitline information, tobacco control report card)

Richmond Center Resources


AMERICAN ACADEMY OF PEDIATRICS
Julius B. Richmond Center of Excellence

The American Academy of Pediatrics Julius B. Richmond Center of Excellence is committed to protecting children from tobacco and secondhand smoke. Clinicians, researchers, advocates, and families all play a critical role. The Richmond Center offers tools and resources to help clinicians and communities, as well as supports research and policy development to create a healthy environment for children, adolescents, and families. The Richmond Center was named for former Surgeon General Dr. Julius B. Richmond, and was established with generous support from the Flight Attendant Medical Research Institute in 2006.

Our Mission


Our mission is to improve child health by eliminating children's exposure to tobacco and secondhand smoke.

[Learn more.](#)




Clinical

Find resources to help you ask patients and families the right questions about tobacco use and secondhand smoke exposure. [▶](#)



Education

Discover general information on tobacco use, and access fact sheets, webinars and powerpoint presentations about tobacco control. [▶](#)



IN THE NEWS

October 13, 2017
2018 AAP RCE New Investigator Grant Program currently accepting applications.

October 13, 2017
2018 Visiting Lectureship Award Program currently accepting applications.

February 16, 2017
2017 RCE New Investigator Grant Recipients and Visiting Lectureship Awardees have been selected!