

The Adolescent Vaping Epidemic

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Disclosure

- I have no relevant financial relationships with the manufacturer(s) of any commercial products(s) and/or provider of commercial services discussed in this CME activity
- I do not intend to discuss an unapproved/investigative use of a commercial product/device in my presentation.

Acknowledgements

- Forrest Batz, PharmD, Board of Directors, Hawaii Public Health Institute
- Brian A. King, PhD, MPH, Deputy Director for Research Translation, Office on Smoking & Health, Centers for Disease Control
- Tobacco Prevention Toolkit, Division of Adolescent Medicine, Stanford University
- Julius B. Richmond Center of Excellence & Section on Tobacco Control, American Academy of Pediatrics

Outline

- 1) Overview of e-cigarettes, vaping devices, JUUL
- 2) What are the risks?
- 3) How is it an epidemic?
- 4) What can we do as pediatricians?

Section 1: Overview of e-cigarettes, vaping devices, JUUL

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- Components of e-cigarette solutions generally include nicotine, flavoring chemicals, and other additives (including those unknown and/or unadvertised to the user).
 - There are no federal quality standards to ensure the accuracy of e-cigarette constituents as advertised or labeled

Electronic Smoking Devices (ESDs)

Cig-a-Like
E-cigarettes came onto the market around 2007. Most delivered nicotine and were disposable.

Variations
Variations on the first e-cigarettes included products like e-hookah and rechargeable versions.

Vape Pens
These have batteries that can reach higher temperatures, have refillable e-liquid cartridges, and allow users to regulate the frequency of inhalations.

Mods
Large size, modifiable e-cigarettes allow for more aerosol, nicotine, and other chemicals to be breathed into the lungs, at a faster rate.

Pod-Based
These e-cigarettes are shaped like USBs and contain pods with higher amounts of nicotine than previous generations.

HARVARD SCHOOLS OF PUBLIC HEALTH & MEDICINE | Center for Health Decision Science

Volcano Vape Pen

The LAVATUBE Kit is the culmination of exhaustive research and development. The LAVATUBE v2.5 takes your vaping experience to the highest possible level. The LAVATUBE is VOLCANO's most powerful and customizable e-Cigarette and the most advanced device currently on the market.

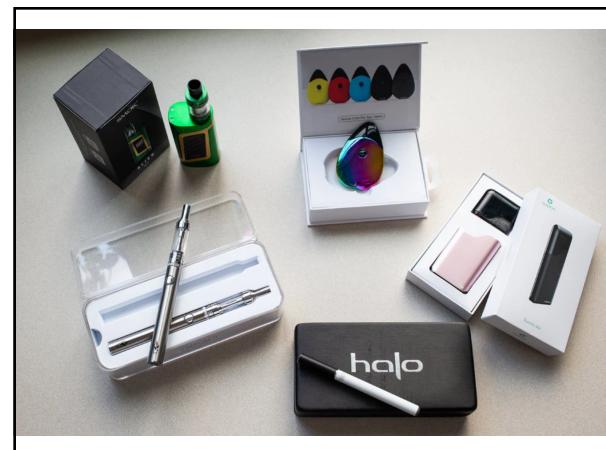
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Vape Pen

tubetank

Heating coils

Power unit
Controller
Battery
LCD screen



Juul and Similar Products

Juul

KandyPen's Rubi

MLV's Phix

MYLE

ITG Brands' myblu

Altria's MarkTen Elite

More nicotine delivery devices

Trap RX by Mig Vapor
Uses refillable pods

Suorin Air

Suorin Drop
Refillable pods
Can vape while charging

SMOK Infinix

Aspire Breeze 2

More nicotine delivery devices



JUUL charging on a laptop USB drive



Terminology

- Young people often will say no if you ask if they use “e-cigarettes”.
- Revise your questions to ask if they vape or JUUL

Section 1: Summary

- Recognize the all forms of nicotine delivery—currently JUUL and similar products are most popular.
- Revise your questions. “Do you smoke or use e-cigarettes” might not work anymore. Ask if they vape or JUUL.

Section 2: Risks of electronic nicotine devices

Nicotine



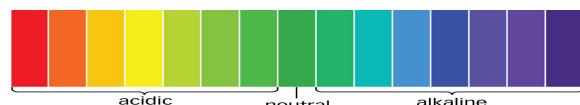
- Highly addictive substance
- Causes changes in brain chemistry – stimulates pleasure centers, alters normal brain function
- As nicotine levels in brain drop, brain craves nicotine to feel pleasure and relieve feelings of anxiety and stress (withdrawal)

Nicotine: salts vs base

nicotine salts	nicotine base
	
59 mg nicotine per mL pods not intended for refill	0 - 36 mg nicotine per mL refillable tank

Nicotine salts allow particularly high levels of nicotine to be inhaled more easily and with less irritation than free base nicotine



 Nicotine Salts 

 Benzoic Acid 

 Free Base Nicotine 

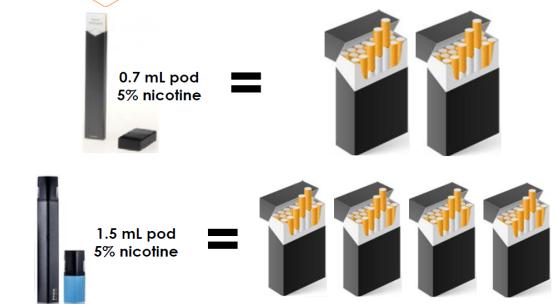
Pod-Based ESDs

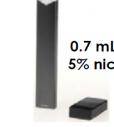


Electronic smoking device
0.7 mL per pod
Pre-filled e-juice pods
USB charger

Pod-Based ESD Nicotine Delivery



 0.7 mL pod 5% nicotine = 

 1.5 mL pod 5% nicotine = 

Nicotine

- Highly addictive
- Excess amounts can be lethal.
- Adversely affects brain development until mid-20s**
 - Slows cognitive and behavioral development. Associated with problems with mood, attention, and learning.
 - Makes it harder to control impulses.
- Increases heart rate variability. Increases risk of heart disease, aortic aneurysms.
- Increases insulin resistance
- Associated with peptic ulcers.
- JUUL can deliver nicotine 2.7 times faster than other e-cigarettes, increasing the risk of addiction

Ingestion vs. Inhalation

Propylene glycol, vegetable glycerine and other e-juice ingredients may be approved as safe for use in foods... **NOT** approved as safe for **inhaling**



Consuming Digestive Tract 

Breathing In Respiratory Tract 

The Solvent—Propylene Glycol The Solutes—Flavoring Agents

- These things are FDA-approved, so they should be safe, right? Depends on how they enter the body:
 - Propylene glycol and some flavoring agents have been FDA-approved for **ingestion**
 - They have been found to be irritants when **inhaled**.
- The contents of e-cigarettes are not regulated—what is promised on the package may not be what's inside:
 - Some ingredients can be carcinogenic
 - Metals such as tin, nickel, and lead have been found

It's Aerosol not Water Vapor



Vape aerosol- mixture of many different tiny chemical droplets and particles suspended in the air, some present in e-juice, others produced during e-cig heating process



Evaporated water

WHAT'S IN A "VAPE" CLOUD?

NICOTINE TOBACCO-SPECIFIC NITROSAMINES
FORMALDEHYDE CARCINOGENS BENZENE
ACETALDEHYDE

AMERICAN LUNG ASSOCIATION.

Raid® Concentrated Deep Reach Fogger

Penetrates Deeper To Kill More Hidden Bugs!
3 FOGGERS
• Larger Foggers Disperse
• Last Longer Than Smaller Foggers
• More Liquid & Heat
• More Effective
• PRECAUCIÓN

FLAVORS

- ✓ 88% of youth who use ESDs **use flavored e-juice**¹
- ✓ **More rewarding** (work harder at task leading to flavored vs unflavored ESD reward)²
- ✓ **Increase ESD use** (users puff flavored ESDs twice as often as unflavored over same time period)²
- ✓ **Longer inhalations** (longer puff duration with sweet flavor vs nicotine flavor)³

1. McMillen R, et al. Adolescent Use of Different E-cigarette Products. *Pediatrics*. 2018;142(4):e20180260.
2. Audrain-McGovern J, et al. The impact of flavoring on the rewarding and reinforcing value of e-cigarettes with nicotine among young adult smokers. *Drug Alcohol Depend*. 2016;166():263-267.
3. St. Helen G, et al. Impact of e-liquid flavors on e-cigarette vaping behavior. *Drug Alcohol Depend*. 2018;189:42-48.

FLAVORS

Among ESD users, if *flavors did not exist*:

- ✓ 78% of youth would NOT use
- ✓ 74% of 18-24 yo would NOT use

Harrell MB, et al. Flavored tobacco product use among youth and young adults: What if flavors didn't exist. *Tob Reg Sci*. 2017;3(2):168-173.



Section 2: Risks of electronic nicotine devices

Flavourings significantly affect inhalation toxicity of aerosol generated from electronic nicotine delivery systems (ENDS).

Leigh NJ, Lawton RI, Hershberger PA, et al
Tobacco Control 2016;25:ii81-ii87.

Certain e-cigarette flavors can irritate the airways:

- Benzaldehyde—cherry flavored liquids
- Cinnamaldehyde—cinnamon flavor
- Diacetyl—buttery flavor
 - Can cause “popcorn lung”—bronchiolitis obliterans
 - Supposedly phased out by “reputable” manufacturers

Section 2: Risks of electronic nicotine devices

Formation of flavorant-propylene Glycol Adducts With Novel Toxicological Properties in Chemically Unstable E-Cigarette Liquids

Hanno C Erythropel, Sairam V Jabbal, Tamara M DeWinter, Melissa Mendizabal, Paul T Anastas, Sven E Jordt, Julie B Zimmerman. *Nicotine & Tobacco Research*, 18 October, 2018
Duke University and Yale's Tobacco Center of Regulatory Science

- When certain flavors are mixed with propylene glycol, they produce acetals that **irritate airways and lungs**.
 - Flavor aldehydes included benzaldehyde, cinnamaldehyde, citral, ethylvanillin, and vanillin
 - Propylene glycol is the most common e-liquid solvent
 - Acetals remained stable in physiological aqueous solution, with half-lives above 36 hours, suggesting they persist when inhaled by the user.
 - Acetals activated aldehyde-sensitive TRPA1 irritant receptors and aldehyde-insensitive TRPV1 irritant receptors

Adolescent Exposure to Toxic Volatile Organic Chemicals From E-Cigarettes

Mark L Rubinstein, Kevin Delucchi, Neal L Benowitz, Danielle E. Ramo
Pediatrics. April 2018, VOLUME 141 / ISSUE 4

- Urine was analyzed for metabolites of a panel of 8 VOCs that are toxic environmental or tobacco smoke constituents: benzene, 1,3-butadiene, ethylene oxide, acrylonitrile, acrolein, propylene oxide, acrylamide, and crotonaldehyde.
- The participants were 16.4 years old on average.
- Adolescent e-cigarette-only users had levels of 5 VOC toxicants detected in their urine in quantities up to 3 times greater than in matched controls, including metabolites of **acrylonitrile**, acrolein, **propylene oxide**, **acrylamide**, and **crotonaldehyde**. (known carcinogens boldfaced)
- Levels of toxicant exposure in dual users were up to 3 times higher than in those who used only e-cigarettes.
- The use of fruit-flavored products produced significantly higher levels of the metabolites of acrylonitrile

Association of Noncigarette Tobacco Product Use With Future Cigarette Smoking Among Youth in the Population Assessment of Tobacco and Health (PATH) Study, 2013-2015

Shannon Lea Watkins, PhD¹; Stanton A. Glantz, PhD²; Benjamin W. Chaffee, DDS, PhD³
JAMA Pediatr. 2018;172(2):181-187. doi:10.1001/jamapediatrics.2017.4173

- Approximately 90% of adult smokers first tried a cigarette by 18 years of age
- Population Assessment of Tobacco and Health (PATH) = nationally representative longitudinal cohort of 13,651 US youth ages 12-17 years at baseline with follow-up 1 year later.
- Cigarette ever use at follow-up was higher among youths who had ever used e-cigarettes (78 [19.1%]), hookah (60 [18.3%]), noncigarette combustible tobacco (45 [19.2%]), or smokeless tobacco (29 [18.8%]).
- The odds of past 30-day cigarette use at follow-up were approximately **twice as high among users of e-cigarettes** (odds ratio [OR], 1.92), hookah (OR, 1.92), noncigarette combustible tobacco (OR, 1.78), and smokeless tobacco (OR, 2.07).
- Youths who had tried more than 1 type of tobacco product had 3.81 greater adjusted odds of past 30-day cigarette smoking

Association Between Initial Use of e-Cigarettes and Subsequent Cigarette Smoking Among Adolescents and Young Adults: A Systematic Review and Meta-analysis

Samir Soneji, PhD^{1,2}; Jessica L. Barrington-Trimis, PhD³; Thomas A. Miller, PhD⁴; et al
JAMA Pediatr. 2017;171(8):788-797. doi:10.1001/jamapediatrics.2017.1488

- Question** Is there an association between e-cigarette use and cigarette smoking among adolescents and young adults?
- Finding** A systematic review and meta-analysis showed strong and consistent evidence of an association between initial e-cigarette use and subsequent cigarette smoking initiation, as well as between past 30-day e-cigarette use and subsequent past 30-day cigarette smoking.
- Summary:** This meta-analysis of 9 longitudinal studies found that e-cigarette use by never-smoking adolescents was associated with approximately **4 times greater odds of future cigarette smoking**.

E-cigarettes as a “cessation aid”?

Category	Number of Persons
Adult Age 18+ Who Current Adult Cig. Smokers Who Quit For 7 or More Years	46,200
Adult Age 18+ Who Started Smoking and Eventually Became Daily Cig. Smokers at Age 18 or Older	85,200
Adult Young Adults Who Started Cig. Smoking and Eventually Became Daily Cig. Smokers at Age 18 or Older	82,900

- Statistical risk model. Samir Soneji, et al. Dartmouth-Hitchcock Norris Cotton Cancer Center, Lebanon, N.H. **Quantifying population-level health benefits and harms of e-cigarette use in the United States**
- In a single year, 2,070 adult smokers would successfully quit using e-cigarettes
- But the model also estimated that e-cigarette use among non-smoking teens and young adults would lead to 168,000 new smokers.
- So for every 1 adult that quits, 81 young people become future smokers

HONOLULU StarAdvertiser
July 17, 2017 | 77 | Check Traffic

Hawaii News
E-cigarettes tied to asthma in isle youth

By Kristen Loria
Posted July 17, 2017
July 17, 2017

ASSOCIATED PRESS
More teens who try e-cigarettes than the real thing, according to the government's annual drug use survey.
Hawaiian teens who use e-cigarettes are more likely to have asthma, according to the latest research by the University of Hawaii.

Section 2: Summary

- Nicotine is highly addictive and has significant impacts on the brain, especially for those under age 25 years.
- 90% of smokers initiate use before age 18.
- Using e-cigarettes and other nicotine products increase the odds of smoking regular cigarettes by **2-4 times**
- Each JUUL pod has as much nicotine as 1-2 packs of cigarettes
- Polyethylene glycol and flavorings can irritate the lungs and negatively impact health

Surgeon General Warns Youth Vaping Is Now an 'Epidemic'

December 18, 2018 - 10:08 PM ET

ROB STEIN

Surgeon General Jerome Adams told reporters that recent evidence, including cases of severe vaping-related lung injuries, are needed to reduce youth e-cigarette use.

U.S. Surgeon General Jerome Adams: "I am officially declaring e-cigarette use among youth an epidemic in the United States. Now is the time to take action. We need to protect our young people from all tobacco products, including e-cigarettes."



U.S. Surgeon General Dr. Jerome Adams said Tuesday that recent evidence, including cases of severe vaping-related lung injuries, are needed to reduce youth e-cigarette use.

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Section 3: The Vaping Epidemic

THE WALL STREET JOURNAL
"Schools and Parents Fight a Juul E-Cigarette Epidemic"

MILWAUKEE JOURNAL SENTINEL
"JUULing is the New Teen Vaping Fad Taking Over School Bathrooms"

The New York Times
"I Can't Stop: Schools Struggle With Vaping Explosion"

CNN
"Vaping Now An Epidemic Among US High Schoolers"

TobaccoFreeKids.org

HAWAII NEWS NOW NEWS LIVESTREAM WEATHER SPORTS HI NOW SUNRISE K5 TV GUIDE

Teen vaping on the rise — at schools and on street

By Jim Mendoza | March 16, 2017 at 8:58 PM HST · Updated August 12 at 11:25 AM

HONOLULU (HawaiiNewsNow) - Pick a popular spot for teens and you're likely to see them: E-cigarettes, being passed around like a bag of chips.

A 2015 state survey estimated that roughly 1 in 4 Hawaii teens used e-cigarettes, slightly higher than the national average.

But their use is believed to have grown since then, judging by what's happening on and near Hawaii high school campuses.

"I started vaping since I was seventh grade," said a 10th grade student who Hawaii News Now is not identifying.

A friend of his did as well.

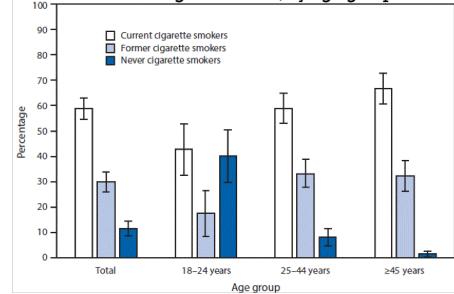
"I stopped for an entire year. Then more and more people started vaping," the second student said. "I'll just go back into that too."

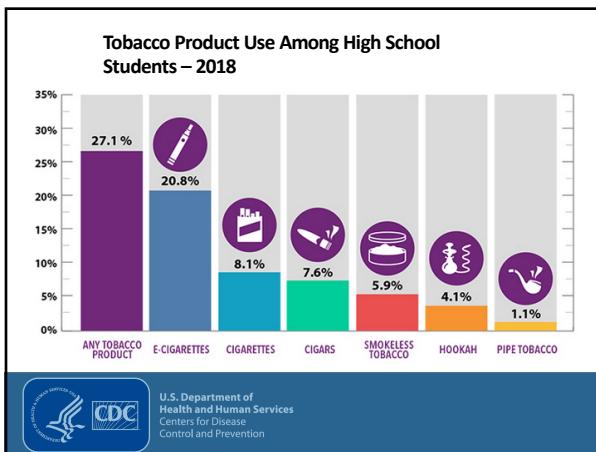
Their attitude appears to be an indication of what's happening with teens across the state -- ones who attend both public and private schools. Many admit to vaping -- the inhaling and exhaling of vapor produced by an e-cigarette -- on school property.

- According to one national survey, 3.6 million middle and high school students used e-cigarettes in 2018.
- Another found that the rise in vaping from 2017 to 2018 was the sharpest for any substance the researchers had investigated in the project's 44-year history.

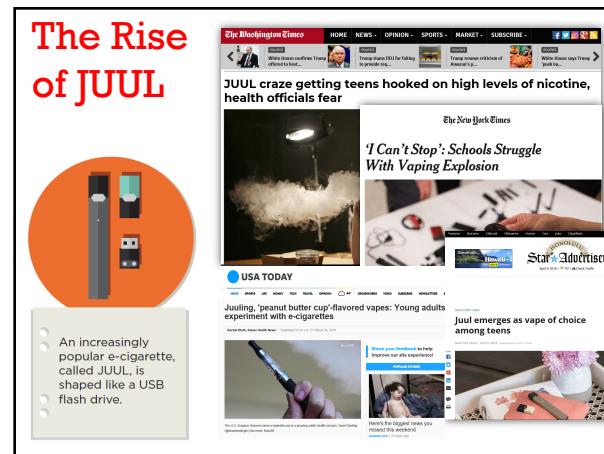
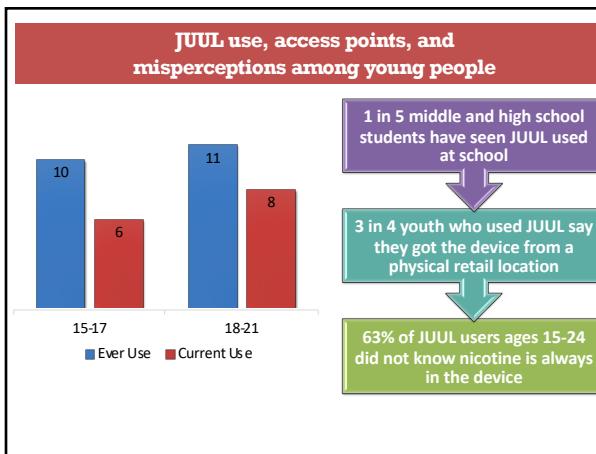
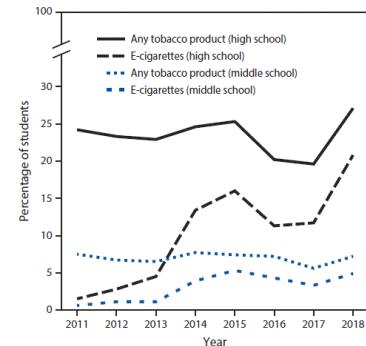
A Majority of Adult E-cigarette Users Also Smoke Conventional Cigarettes

Cigarette smoking status among current adult e-cigarette users, by age group





Current Use of E-cigarettes and Any Tobacco Product Among Middle and High School Students— NYTS, US, 2011–2018



C2 Los Angeles Times LATIMES.COM/BUSINESS

BUSINESS BEAT

FDA renews concerns over teen vaping

Agency head says comments by Altria, just as it's at odds with part of its campaign to reduce youth e-cigarette use.

By ANNA KARPAS

Tobacco giant Altria Group Inc.'s efforts to gain a foothold in the e-cigarette market are fueling concerns that the regulator signed off on products that may be less safe than those it was aiming for, and smokers are concerned that the agency's focus on youth vaping may be too little, too late.

Altria said it has taken steps to address the concerns, but the agency has not yet responded to the comments. Just last week, the contractor that Altria uses to monitor its products has made no addressable changes to its practices in response to an epidemic of youth vaping.

FDA Commissioner Scott Gottlieb told the company Friday and another top official about "public statements that were very vague" when they made to the agency that it had addressed the issue by making Youth vaping rates fall after Altria's recent reorganization over whether the company is committed to reducing youth vaping.

TOBACCO giant Altria's \$2.8-billion stake in a vaping start-up, Juul Labs Inc., has raised concerns from the FDA commissioner over whether the company is committed to reducing youth vaping.

Photo: AP Photo/Jae C. Hong

A10 TUESDAY, DECEMBER 18, 2018 WSCE Los Angeles Times LATIMES.COM

THE NATION

Vaping takes off with high school students

The U.S. Food and Drug Administration has declared students' e-cigarette use a public health threat.

By KAREN KARPAS

The proportion of U.S. high school seniors using tobacco products nearly doubled in the last year, with 1 in 6 using a cigarette or e-cigarette, according to a national survey of teenagers by the Centers for Disease Control and Prevention.

"I have no reason to be concerned that the level of use is shifting in the near term, and we are not seeing any new trends," said Gottlieb, who last month announced the total number of high school seniors who use tobacco products rose by 13 million between 2007 and 2016.

"These numbers are driven solely by nicotine vaping," he said.

The figures are based on a nationwide survey of eighth-grade students that "Juuling" is synonymous with vaping.

The prevalence of nicotine vaping among middle schoolers, as well, with nearly 1 in 6 using the electronic cigarettes, which reported Monday in the *New England Journal of Medicine*.

The survey suggested that the total number of high school seniors who use tobacco products rose from 3.5% last year to 6.1% this year.

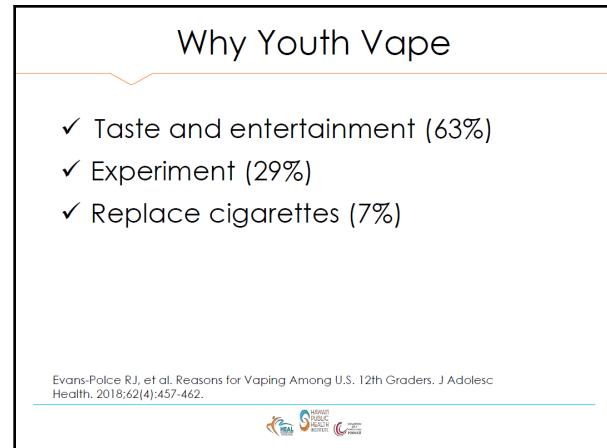
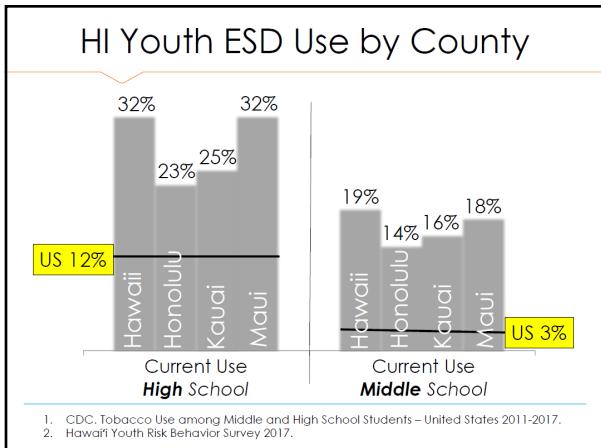
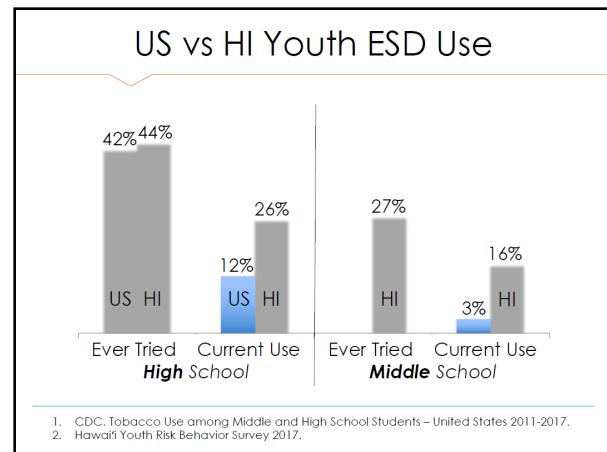
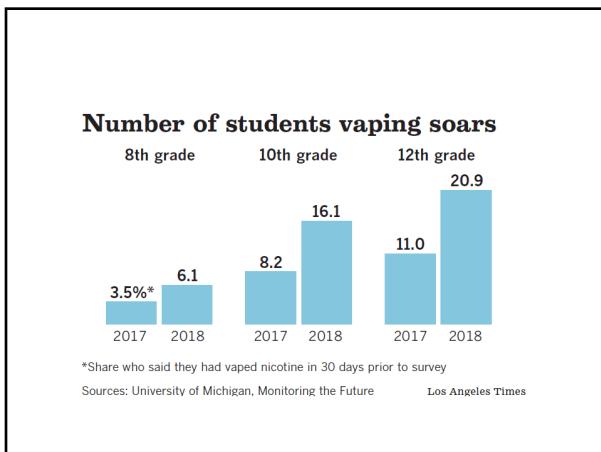
The survey also asked about vaping of liquids that contain THC, the main psychoactive ingredient in marijuana. The survey found that exposure to nicotine vaping can interfere with brain development, particularly in the areas of attention, learning and impulse control.

In addition, the U.S. surgeon general's office said that exposure to nicotine vaping can lead to other health risks.

"Elds who are vaping are exposing themselves to many different types of health risks and are going to be," Gottlieb said. "We will find out more about what those health risks are going to be."

The use of any kind of nicotine product, including e-cigarettes, cigars and smokeless tobacco, increased across the board. In 2018, 20.3% of eighth-grade students, 6.1% of ninth-graders and 6% of tenth-graders reported recent use of e-cigarettes or vapes.

Last month, after a visit



Section 3: Summary

- 26% of high school students in Hawaii currently use e-cigarettes
- 16% of middle school students in Hawaii currently use e-cigarettes
- National and state numbers have dramatically increased over the past few years
- Hawaii youth vape more than U.S. average.
- Bonus fact: JUUL has 72% of the e-cig market



Section 4: Actionable interventions

Cessation strategies:**Things that work for regular adult cigarette smokers**

- Behavioral therapies
 - motivational interviewing
 - Cognitive behavioral therapy
- Pharmacotherapy—FDA-approved only in adults
 - nicotine replacement therapy
 - Bupropion
 - Varenicline (Chantix)
- Other interventions
 - brief advice from a health care worker
 - telephone helplines
 - automated text messaging
 - printed self-help materials
 - Apps on mobile devices
 - social media-based cessation

Section 4: Actionable interventions

Vaping and teenagers—motivational interviewing

- Teenagers may not see vaping as hazardous.
- Many even do not realize there is nicotine in the device
- Parents' negative reactions can lead to teen defensiveness and avoidance of discussion.
- Engage them in conversation and see what they know about nicotine and addiction
- Involve them in looking at research on the long-term harms of vaping
- Allow them to decide they would like to quit for their own good—internally motivated; rather than an outside force (parent) making them quit (or at least say they are doing so).

Section 4: Actionable interventions

Cognitive behavioral therapy

- Redirect thoughts when they get cravings
- Talk therapy can address underlying anxiety or depression
 - Anxiety and depression cause stress which may trigger teens to vape or smoke.

Nicotine Replacement Therapy

- OTC for adults, but must be prescribed for those under 18.
- Comes as a patch, gum, lozenge
- Decreases nicotine withdrawal symptoms
- Helps address nicotine cravings
- *Unfortunately the nicotine dose with e-cigarettes is highly variable so harder to match the same nicotine dose*
- Some physicians have prescribed NRT patches off-label for older teenagers if they are heavily addicted yet motivated to quit

Bupropion

- Not labeled for use in those <18 years
- Black box warning for antidepressants: increased risk of suicidal thinking and behavior in those <24 years being treated for depression.
- randomized, double-blind, placebo-controlled trial with bupropion SR 150 mg QD and 150mg BID, age 14-17—had higher initial quit rates for the BID group, but unsustainable for long term, plus had one suicide attempt
- Inpatient program with NRT with placebo or bupropion 150mg—55% of those on bupropion compared to 19% in placebo group were quit at 90 days.
- Summary—research inconclusive and black box warning for increased suicidality is a concern

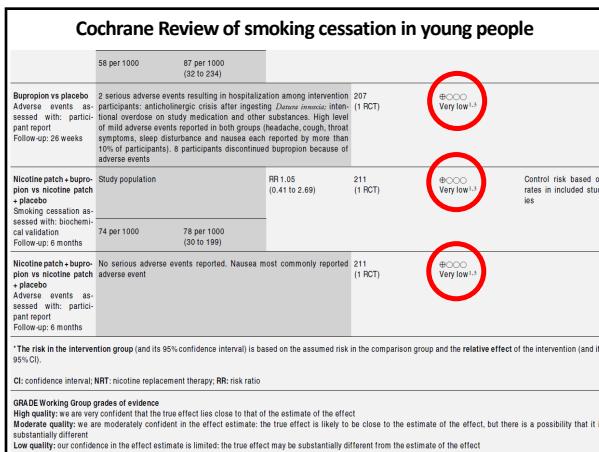
Cochrane Review of smoking cessation in young people

Pharmacological interventions compared to placebo for smoking cessation in young people				
Patient or population: young people Setting: schools; community Intervention: pharmacological interventions Comparison: placebo	Anticipated absolute effects* (95% CI)	Relative effect (95% CI)	n of participants (studies)	Quality of the evidence (GRADE)
NRT vs placebo Smoking cessation assessed by biochemical validation Follow-up: range 6 months to 12 months	Risk with placebo Study population 59 per 1000 59 per 1000 (28 to 153)	Risk with pharmacological interventions RR 1.11 (0.48 to 2.58)	385 (2 RCTs)	⊕⊕⊕ Very low ^{1,2}
NRT vs placebo Adverse events assessed with: participant report Follow-up: range 6 months to 12 months	No serious adverse events reported. NRT associated with increase in some mild adverse events: sore throat; hiccups; erythema; pruritis; shoulder/arm pain; headache; cough; abdominal dreams; and muscle pain. In the patch studies, successful quitters in NRT group reported a lower level of insomnia than those in the control group		385 (2 RCTs)	⊕⊕⊕ Very low ^{1,2}
Bupropion vs placebo Smoking cessation assessed with: biochemical validation Follow-up: 26 weeks	Study population RR 1.49 (0.55 to 4.02)		207 (1 RCT)	⊕⊕⊕ Very low ^{1,2}

Both studies included single forms of NRT (patch or gum). Evidence of significant subgroup differences based on NRT type. Control risk based on rates in included studies.

Both studies included single forms of NRT (patch or gum).

Control risk based on rates in included studies.



Cochrane Review of smoking cessation in young people

- “Taken together, these comparisons demonstrate that adult interventions whose effectiveness is well established cannot be assumed to be equally successful in younger age groups.”
- “Group counselling interventions and behavioural interventions designed using complex theoretical models appear to show the most promise.”
- “There remains little evidence on effectiveness of pharmacotherapies in this age group”

FDA in Brief: FDA updates label for Chantix with data underscoring it's not effective in children 16 and younger

FDA in Brief

February 22, 2019

Media Inquiries

Michael Feinbaum
240-402-9548

Tobacco products pose serious dangers to the health of teens and adolescents. Many methods that help adults quit smoking, including medications, have not been found to be effective for youth. Today's labeling changes for one such drug intended to help adult smokers quit cigarettes underscore the finding that current drug therapies for smoking

FDA updates label for Chantix with data underscoring it's not effective in children 16 and younger

February 22, 2019

- Chantix** (varenicline) is not recommended for patients 16 years of age or younger because its efficacy in this population has not been demonstrated.
- originally approved in 2006 for use in adults
- A placebo-controlled study that examined two weight-adjusted doses of varenicline in pediatric patients, age 12 to 16 years (some patients age 17–19 years were also included) found that use of **varenicline did not significantly increase abstinence rates**.
 - While the pediatric population was defined as ages 16 and under at the time the studies were required, young adults ages 17–19 were permitted to participate; however, the study was not powered to evaluate an effect in the young adults.
- The most common adverse reactions associated with Chantix are **nausea, sleep disturbance, constipation, flatulence and vomiting**.
- Other adverse reactions have been identified during post-approval use of Chantix and are included in the label: **neuropsychiatric** adverse events, seizures, accidental injury, cardiovascular events, somnambulism, angioedema and hypersensitivity reactions. Increased alcohol effects have been reported as well.

Section 4: Actionable interventions

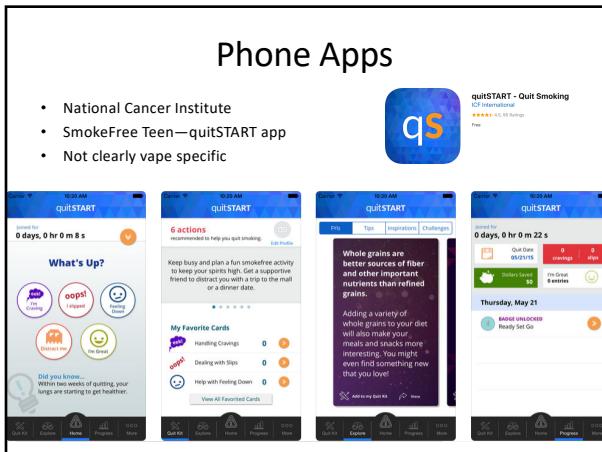
Non-pharmacologic methods

- Sports and exercise
 - Physical exercise added to a teen cessation program improved quit rates, especially in males
- Yoga, deep breathing, meditation
- Tobacco Quitline 1-800-QUIT-NOW (784-8669)
- Social-media based cessation support
- Parental support
- Peer support—quit as a group
- Education about vaping for students, teachers, counselor, school administrators, parents

Text messaging

The Truth Initiative

- thisisquitting.com**
- Text "QUIT" to (202) 804-9884**
- The content of the messages is different based on your age (<13, 13-17, 18-24, >24, or a parent)



Section 4: Summary

- Cognitive Behavioral Therapy and Motivational Interviewing can help
- Not good evidence to use NRT, bupropion, or Chantix in adolescents
- Things that help: exercise, texting/apps, parental support

Mahalo!