The Elements & Dangers of Vaping

LifeLong Medical Care
Health Services For All Ages
a california health+ center

Brown Bag, May 3, 2024

Tobacco Treatment Training Program
EBCRP, LifeLong Medical Care

OUR PROGRAM

The Tobacco Treatment Training Program **helps behavioral health providers in Alameda County improve their tobacco use interventions through a trauma-informed and equity-focused lens.**

Contracted with Alameda County Behavioral Health Care Services (ACBH) and Alameda County Public Health (ACPH)

Provide services to behavioral health and public health providers in Alameda County.

Provide **free training and technical assistance** to healthcare staff and leadership

Program Manager – Tara Leiker, PhD
Program Coordinator – Sophia Artis

Housekeeping

Upon joining, all participants will be automatically muted. Participants are encouraged to turn their cameras on.

Please change your Zoom name to your first and last name and your organization/agency (e.g., "Jane Doe, LifeLong Medical Care").

This webinar is being recorded. The link to the recording will be shared after the training, along with a PDF of the slides.

Please use the Zoom Chat to ask questions. We will address questions during the Q&A period at the end of the training.

CONTINUING EDUCATION CREDIT

This brown bag is eligible for one (1.0) hour of continuing education credit for LMFT's, LCSW's, LPCC's, LEP's, and SUD Counseling Staff as required by the California Board of Behavioral Sciences and by the California Consortium of Addiction Programs and Professionals (CCAPP).

To receive CE credit, attendees must be present for the entirety of the training and complete the post-test, which will be provided after the Q&A section.

Attendees who do not qualify for CE credit are eligible to receive a course completion certificate, also conditional on full attendance.

Discussion

What have you heard from your patients/clients, or generally from the people around you, about vapes/e-cigarettes?

Types of Electronic Nicotine Delivery Systems (ENDS)

CIG-A-LIKES

Cig-a-likes first entered the market in 2007. These products mimic the size and shape of a tobacco cigarette and the nicotine solution is sold in pre-filled cartridges. Very often they are also disposable.

Blu Vuse Njoy

E-LIQUID

E-liquid is the flavored liquid that is used in e-cigarettes. Sometimes referred to as e-juice or vape juice, e-liquid is often available in a range of nicotine strengths and flavors.

VAPE PENS

Vape pens are larger than cig-a-likes and often have the appearance of an ink pen. These devices reach higher temperatures, can have batteries or be rechargable, and have a refillable cartridge that the user fills with a nicotine or THC solution.

MODS & TANKS

Mods and tanks are the largest devices. They have a big battery to create more aerosol which allows the user to inhale greater amounts of nicotine and chemicals at a faster rate. The devices have a refillable tank for a nicotine solution.

POD SYSTEMS

Pod-based systems are typically smaller and can often look like a USB. Pods consist of two parts: a battery and a pod filled with a nicotine solution that connects to it. The pods can be refillable or purchased pre-filled.

Juul Suorin Drop Smok Novo Vuse Alto

DISPOSABLE DEVICES

Disposable vaping devices are designed for single use. Devices come fully charged and pre-filled with nicotine solutions. When e-juice is gone, the device can be thrown away.

Puff Bar, Wave Bar, STIG
270-400 puffs

Puff Plus
800 puffs

Puff Flow
1000 puffs

Fume
1500 puffs

Flum
3000 puffs

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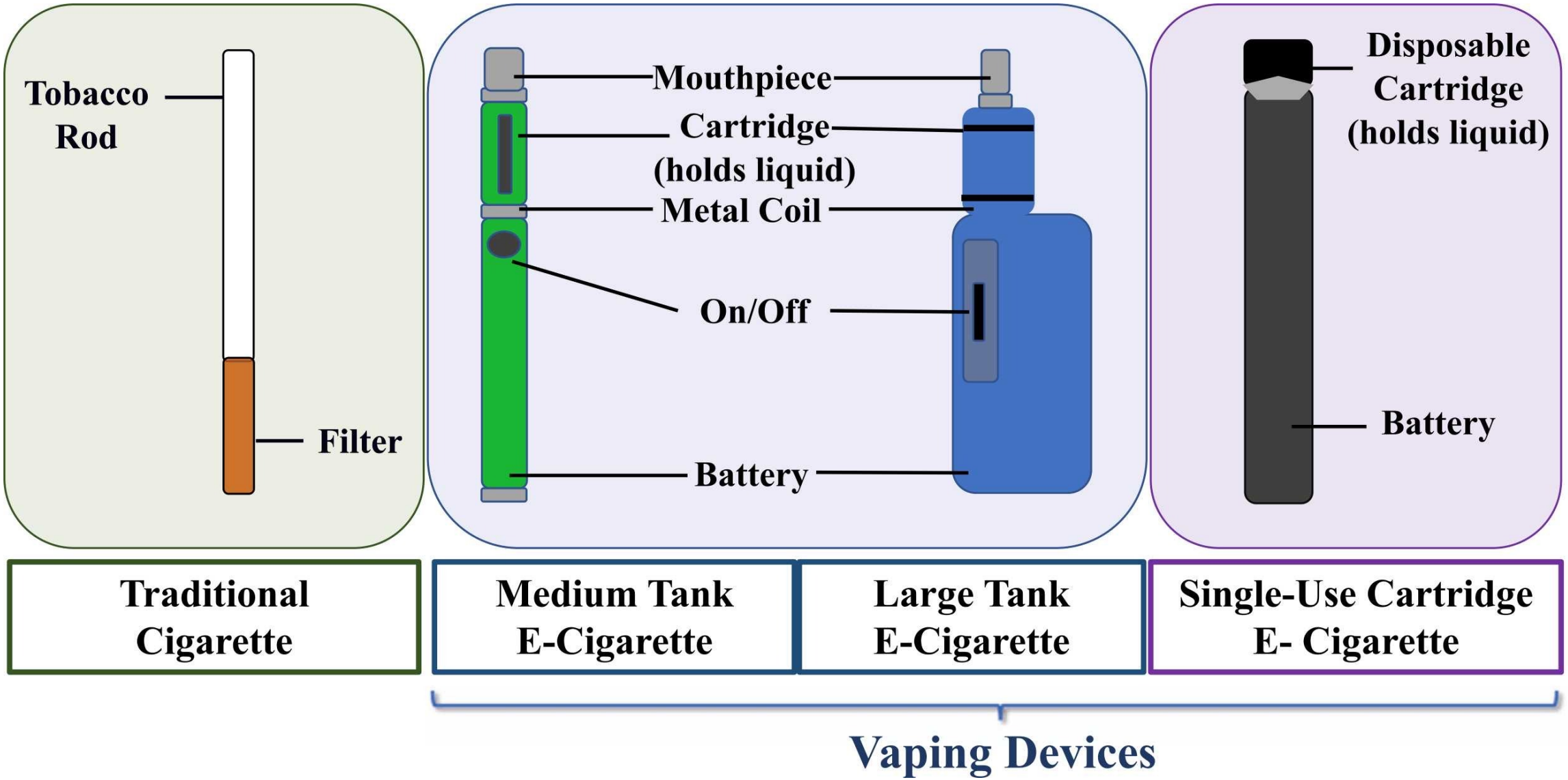
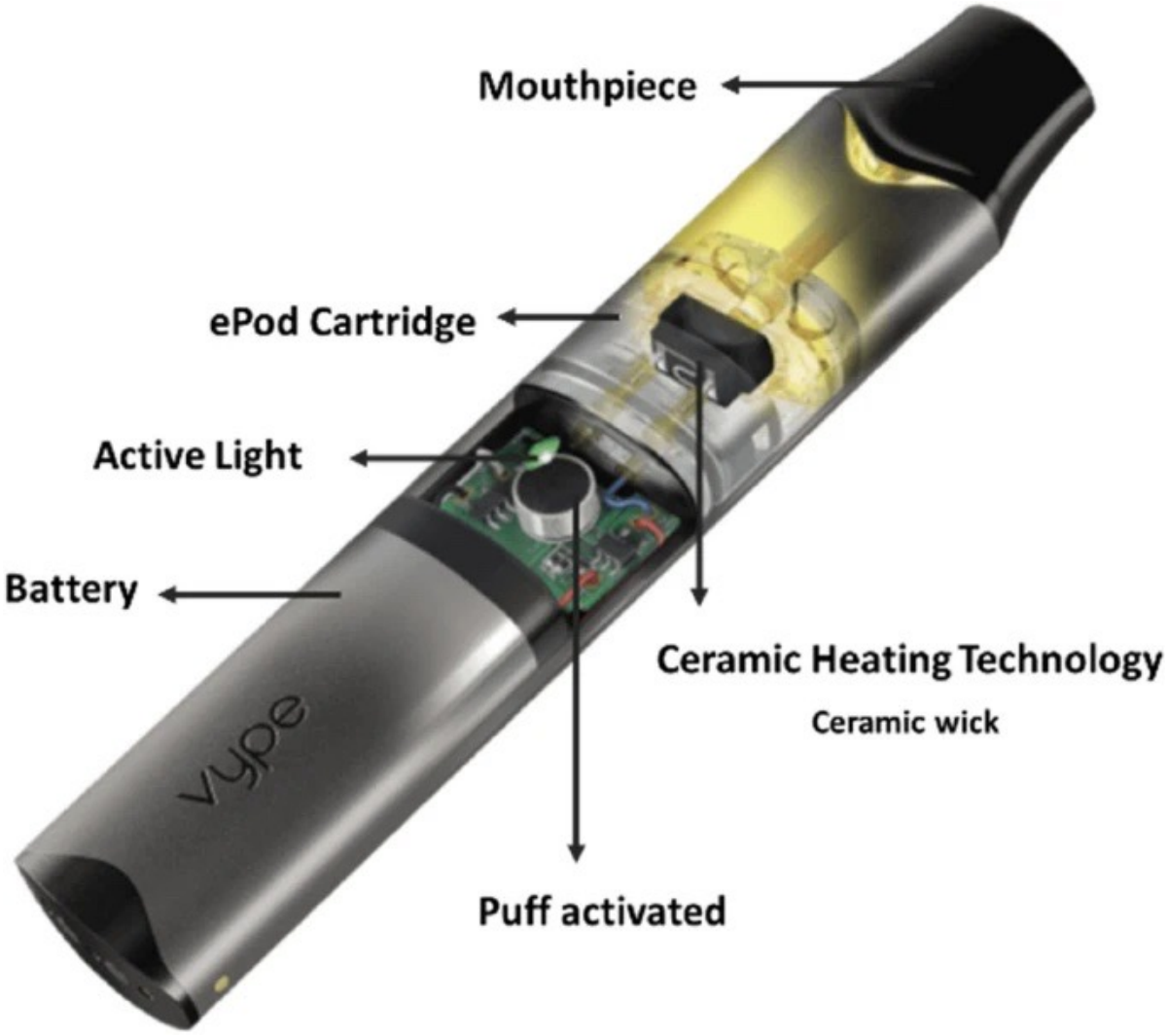
(California Youth Advocacy Network (CYAN))



(Esteban-Lopez et al., 2022)

The Anatomy of an e-Cigarette

- Battery-operated, non-combustible (no burning)
- Heats and aerosolizes e-liquid or "e-juice"



(Pinto et al., 2022)

What's in My E-Liquid?

- Researchers have found these chemicals and metals in ENDS:
  - Nicotine – the component of tobacco
  - Propylene glycol – a common additive in food; also used to make things like antifreeze, paint solvent, and artificial smoke in fog machines
  - Carcinogens- chemicals known to cause cancer, including acetaldehyde and formaldehyde
  - Acrolein – an herbicide primarily used to kill weeds, which can cause irreversible lung damage
  - Diacetyl – a chemical linked to a lung disease called bronchiolitis obliterans or "popcorn lung"
  - Diethylene glycol – a toxic chemical used in antifreeze that is linked to lung disease
  - Heavy metals such as nickel, tin, and lead
  - Cadmium – a toxic metal found in combustible cigarettes, which causes breathing problems and disease
  - Benzene – a volatile organic compound (VOC) found in car exhaust

(American Lung Association, 2023; Centers for Disease Control and Prevention (CDC), 2023)

Prop 65* Chemicals in Vapor [2]

Acetaldehyde
Formaldehyde
Isoprene
Toluene
Lead
Nickel
Nicotine
N-Nitrosonornicotine

Metals in Vapor [2]

Aluminum
Chromium
Copper
Iron
Manganese
Nickel
Lead
Antimony
Tin
Zinc

Carcinogens Found in the Urine of Vapers [9]

Acrylonitrile
Acrolein
Propylene Oxide
Acrylamide
Crotonaldehyde

Withdrawal Symptoms [6]

Cravings
Anxiety
Tingling
Nausea
Cramps
Weight Gain
Insomnia
Mood Disorders
Depression

* Proposition 65 (Prop 65) is the Safe Drinking Water and Toxic Enforcement Act of 1986, which requires the State to publish a list of chemicals known to cause cancer or birth defects or other reproductive harm

(Boston Children's Hospital)

What's in My E-Liquid?

As of 2016, the U.S. Food and Drug Administration (FDA) has had the authority to regulate ENDS as tobacco products, but...

The majority of e-cigarettes currently on the market are being sold illegally and are not regulated by the FDA (more on this later).

This means, for these products, it is entirely up to the manufacturer to honestly and accurately list the contents of their product and to exclude ingredients with adverse health effects.

Case Study: The "EVALI Outbreak"

- **EVALI = E-cigarette or vaping product use–associated lung injury**
  - Common symptoms: cough, chest pain, shortness of breath, dyspnea, abdominal pain, nausea, vomiting, diarrhea, tachycardia and tachypnea associated with pulse oximetry less than 95%
- EVALI outbreak first identified in 2019; monitored by CDC until February 2020
  - **During this period, 2,807 individuals were hospitalized with EVALI and 68 individuals died**
- Research linked EVALI to the presence of **vitamin E acetate (VEA) in the e-liquid of tetrahydrocannabinol (THC)-containing vapes**
- **Most affected individuals reported use of THC vapes, but around 20% of individuals reported using only nicotine vapes**
  - Unclear whether these patients were exposed to VEA via cannabinoid e-liquid or whether ingredients in nicotine e-liquid (like medium-chain triglycerides or MCT) can cause EVALI
- **Takeaway: It is difficult to know exactly what is in your vape and to predict the effect its ingredients could have on your body.**

(Salzman et al., 2019)

Brief Timeline of Federal Action

- 2016: **Deeming rule** extended FDA authority to ENDS and prohibited sale of ENDS products that were not commercially marketed as of 8/8/16
- In 2019, the President signed legislation amending the Federal Food, Drug, and Cosmetic Act, **raising the federal minimum age for sale of tobacco products from 18 to 21 years.**
- **Manufacturers who want to market any ENDS in the U.S. are required to submit an application to the FDA that demonstrates that the product meets an applicable standard.** This review often covers topics like:
  - The ENDS product's components, ingredients, additives, properties, and mechanism of action
  - Any available evidence regarding the health risks of the product

(Public Health Law Center, 2020; Public Health Law Center, 2024; and U.S. Food & Drug Administration)

Brief Timeline of Federal Action cont.

- **As of January 2024, the FDA had "authorized" (not approved) 23 e-cigarette models**
    - Authorization means that the FDA has allowed these products to be marketed in the U.S. **It does not mean that these products are safe or have been determined to be less harmful than cigarettes.**
- None of the authorized ENDS have been authorized as "modified risk" tobacco products (labeling them as reducing the harm or the risk of tobacco-related disease), and their companies have not applied for that designation.
- **All other e-cigarettes currently marketed and/or sold in the U.S. (approximately 850,000 products and ALL non-tobacco flavored products) are unauthorized and are being marketed illegally!**

(Public Health Law Center, 2020a; Public Health Law Center, 2024; and American Cancer Society Cancer Action Network, 2022)

Brief Timeline of Federal Action cont.

- FDA has issued marketing denial orders for all flavored e-cigarette products it has reviewed to date, including all menthol e-cigarettes.
- FDA has also taken enforcement action against retailers that are selling illegal e-cigarettes; recently, U.S. Customs and Border Protection worked with the FDA to seize illegal e-cigarettes that were being smuggled into the U.S.

(Public Health Law Center, 2020a; Public Health Law Center, 2024)

FDA regulation of ENDS will not indicate they are safe for use. ENDS would be regulated in the same manner as other tobacco products, including cigarettes. Regulation would, however, provide more clarity about the ingredients and manufacturing processes.

Spotlight: California Law on ENDS

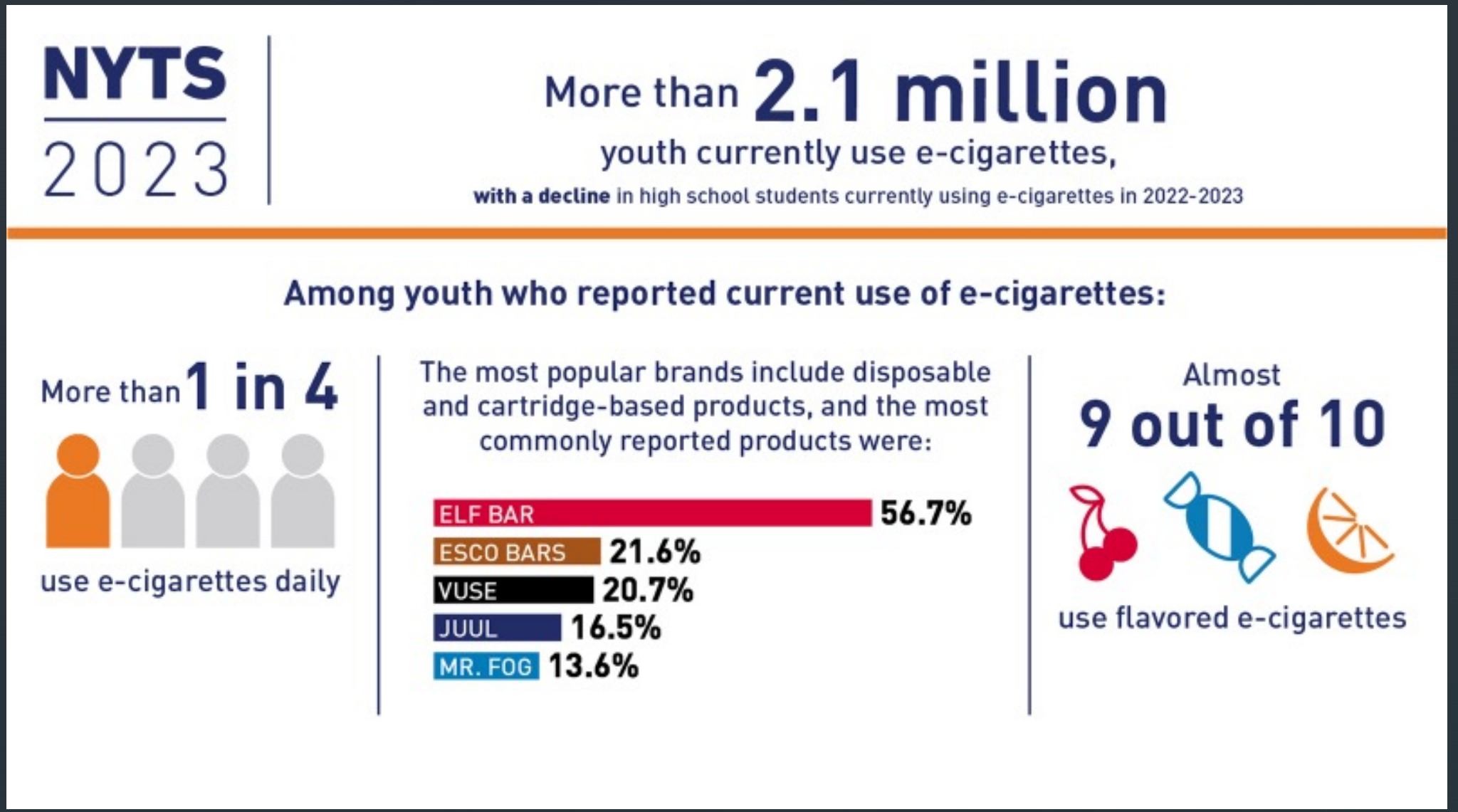
- In November 2022, voters upheld SB 793, which **prohibits tobacco retailers (or any of the retailer's agents or employees), from "selling, offering for sale, possessing with the intent to sell or offer for sale, most flavored tobacco products including flavored e-cigarettes and menthol cigarettes, as well as tobacco product flavor enhancers in retail locations."**
- On October 7, 2023, Governor Newsom signed into law AB 935, which strengthened SB 793.
- **The sale of these flavored tobacco products is prohibited in CA:**
  - Flavored e-cigarettes or vapes that deliver nicotine or another vaporized liquid, e-juice, pods, or cartridges
  - Menthol cigarettes
  - Flavored little cigars and cigarillos
  - Flavored smokeless tobacco products
  - Flavored blunt wraps
  - Flavored loose-leaf roll-your-own tobacco
  - Flavored tobacco rolling papers
  - Tobacco product flavor enhancers

(Public Health Law Center, 2020b; Public Health Law Center, 2023)

Flavor Bans

- Flavor bans originated from data showing that candy, fruit, and other food-like flavors attract young people to vaping
- Chaffee et al., 2023 found in adolescents ages 12-17 (N=2342):
  - Participants were more willing to try flavored vapes than unflavored vapes
  - Flavors enhanced willingness to use both nicotine and cannabis vape products
  - Flavors increased willingness among nicotine and cannabis users and non-users.
- As of 2023, almost 90% of youth e-cigarette users vaped flavored e-cigarettes (U.S. Food & Drug Administration, 2023)

Youth ENDS Use – National



(U.S. Food & Drug Administration, 2023)

Youth ENDS Use – National cont.

- For U.S. high school students, current overall tobacco product use declined during 2022-2023 (16.5% to 12.6%).
  - Decline primarily driven by e-cigarettes (14.1% to 10.0%)
  - Perhaps a sign that public awareness campaigns are working?
- Increase in current overall tobacco product use among middle school students (4.5% to 6.6%)
  - However, among middle school students overall, no significant change observed during 2022-2023 for any individual tobacco product type, (including e-cigarettes)

(U.S. Food & Drug Administration, 2023)

Youth ENDS Use – California

- In the 2023 California Youth Tobacco Survey (356 schools, N=41,755):
  - 21.6% of California high school respondents had ever used any tobacco; 7.3% currently used tobacco
    - Vapes were the most commonly used tobacco product among high school respondents (18.3% ever use, 5.9% current use), regardless of gender identity, race/ethnicity, and grade
    - 40.8% respondents who were currently vaping reported attempting to quit vaping in the last 12 months, and 38.8% reported intending to quit vaping in the next 30 days
    - 85.6% of respondents who reported currently using tobacco also reported using flavored tobacco products, with flavored tobacco use being highest for vapes (89.1%) out of all tobacco products

(Clodfelter et al., 2024)

Adult ENDS Use – National

- In 2022, overall adult tobacco use rose, driven by an increase in adult e-cigarette use (4.5% to 6%)
- Recent increase in overall e-cigarette use has been driven by the 18- to 24-year-old age group
- 65.5 percent of e-cigarette users in this age group ("young adults") did not smoke cigarettes previously in 2022
  - AKA – 65.5% of young adult e-cigarette users were introduced to nicotine through ENDS and did not start vaping as an alternative to smoking

(American Lung Association)

Adult ENDS Use – California

- In 2023, 22.1% of Californians reported using any tobacco product in the past 30 days.
- ENDS (**14.4%)** and cigarettes (7.1%) were the most used tobacco products.

(California Department of Public Health, 2022)

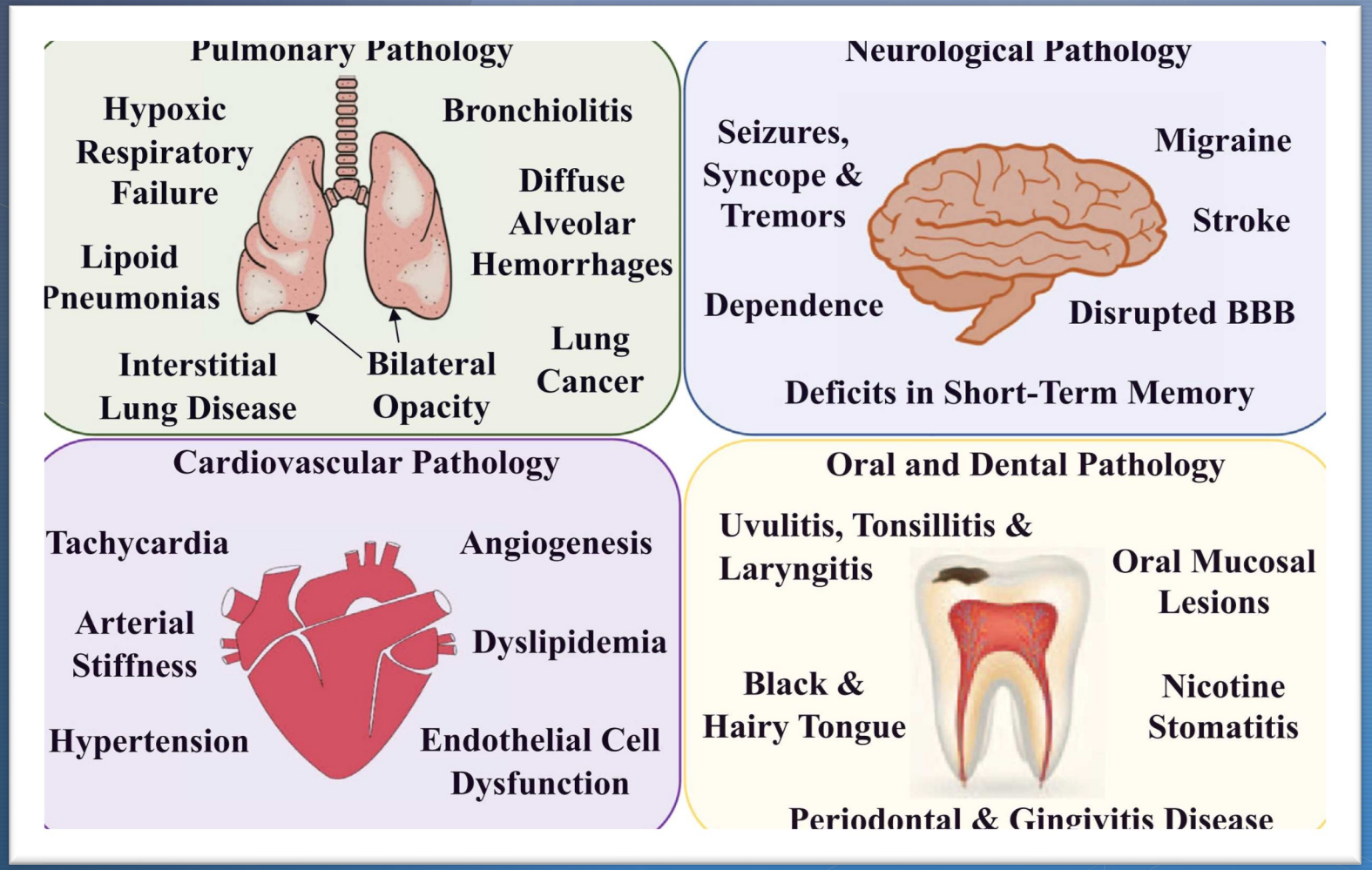
Dual Use with Cigarettes

- Many adult e-cigarette users continue to smoke cigarettes ("dual use") (Glantz et al., 2024)
  - 39.1% of U.S. ENDS users in 2018 to 2019[25]
  - 66.7% of ENDS users in Sweden in 2016[26]
  - 85.3% of ENDS users in Korea in 2013 to 2017[27]
- Using e-cigarettes alone appears to cause exposure to known tobacco-related toxicants, generally at lower levels than cigarette smoking (Goniewicz et al., 2018)
- Toxicant exposure is highest in dual users (relative to exposure in solo e-cigarette users and smokers) (Goniewicz et al., 2018)

Is vaping safer than smoking?

It might be *safer*, but it is *not safe*.

Summary of the known effects of ENDS use



(Esteban-Lopez et al., 2022)

ENDS for NRT

- Evidence regarding efficacy of ENDS as NRT is mixed
  - Two trials found that e-cigarettes containing nicotine helped smokers to quit or reduce smoking compared to placebo e-cigarettes (McRobbie et al., 2012)
  - One RCT found there to be no significant different in quit rates between ENDS and the nicotine patch (McRobbie et al., 2012)
  - Meta-analysis noted the need for further randomized controlled trails with adequate power and applicability to real-life settings (Malas et al., 2016)
  - Authors noted need for further studies with more consistent methods and products used

Recent Findings: ENDS for NRT cont.

- 2021 study (n=1600) found that daily ENDS use was associated with greater probability of smoking cessation among individuals who initially did not plan to stop smoking (Kasza et al., 2021)

- Analysis of the 2017 Population Assessment of Tobacco and Health (PATH) study cohort (3578 previous year smokers w/ recent quit attempt and 1323 recent former smokers) (Chen et al., 2022)
  - Found that, on average, use of ENDS for NRT did not improve successful quitting or prevent relapse

Recent Findings: ENDS for NRT cont.

- 2024 Cochrane review (covered 88 completed studies with a total of 27,235 participants, including 47 RCTs) (University of Massachusetts Amherst, 2024)
  - Found "high certainty" evidence that ENDS increases quit rates compared to traditional NRT

- Findings of a 2023 naturalistic RCT (N=638) suggest that unguided use of ENDS can lead to smoking cessation (Carpenter et al., 2023)

FDA-Approved NRT

- **NRT poses a lower risk of adverse effects and disease than cigarettes, e-cigarettes, and other tobacco products**
  - Delivers "clean" nicotine – nicotine without the toxic chemicals in tobacco and e-cigarette products
  - Method of delivery – not delivered through the lungs
- **NRT has a relatively low potential for addiction**
  - e-cigarettes – deliver nicotine through the lungs – reaches the brain faster = higher addictive potential
  - NRT – deliver nicotine at a more gradual rate = reaches the brain more gradually = lower addictive potential
- **Developing a recovery treatment plan with NRT may be easier**
  - Guidelines for NRT (and non-nicotinic options) are well established
  - Due to lack of reliability in ENDS contents and nicotine concentration, can be difficult to determine amount of nicotine consumed and titrate patient down

(American Academy of Pediatrics)

ENDS for NRT cont.

- **Considerations**
  - Can be appealing to smokers
  - Currently mixed data; some evidence of efficacy
  - Not FDA-approved for TUD treatment, nor USPTF recommended
  - Carry physiological risks that FDA-approved, recommended NRTs do not
- **Current Recommendations**
  - Utilize first-line pharmacotherapy > ENDS products
  - If patient insists on trial of ENDS, caution regarding dual use and discuss a plain for duration of ENDS use, titration, and planned end date
  - Monitor for ENDS dependence and respiratory/CV adverse effects

SIMILARITIES & DIFFERENCES: SMOKING vs. VAPING RECOVERY

SIMILARITIES

- Principles for management are similar: treatment for addiction to nicotine
- Behavioral counseling: tailored approaches are needed

DIFFERENCES

- High variability of nicotine concentrations achieved with vaping devices
- More difficult to assess nicotine yield with vaping
    - Smoking: 1-2 mg per cigarette; Vaping: ?
- Initial follow-up: within 48 hours of quitting; assess often; adjust, as needed
- Limited evidence to guide treatment approaches for vaping
- Medication regimens for smoking recovery are used for vaping recovery
- Likely effective; relatively little published data

Adapted from 5/7/24 Planned Presentation with Drs. Kroon & Corelli (UCSF)

RECOVERY APPROACHES for ENDS

LIMITED EVIDENCE to GUIDE TREATMENT

- Behavioral counseling
- Pharmacotherapy
  - Nicotine replacement therapy
    - If patient has switched from smoking to vaping: start with pre-vaping # cigarettes/day and TTFC to guide initial dosing
    - If user has only vaped nicotine: Estimate nicotine intake
      - ≥20 mg/day, start with 21 mg patch
      - <20 mg/day, start with 14 mg patch
      - Add short-acting NRT for break-through
    - Early follow-up to assess response and adjust dosing as needed
  - Varenicline or Bupropion SR

Adapted from 5/7/24 Planned Presentation with Drs. Kroon & Corelli (UCSF)

Therapeutic Research Center. (2019). Help patients break the e-cigarette habit. *Pharmacists Letter* (December 2019).

FDA-Approved Options

Nicotine Replacement Therapy

LONG-ACTING NRT

Patch

Wear for 24 hours at a time. Alternate sites on body to minimize skin irritation.

Dose:
If <10 cig/d, start with 14 mg/d
If >10 cig/d, start with 21 mg/d
Taper down with a regimen that is easiest for the patient.

Side Effects:
vivid dreams, contact dermatitis

SHORT-ACTING NRT – Combine with nicotine patch for best effect

Mini Lozenge

Allow to slowly dissolve. Once tingly, "park" between teeth and cheek gum or under tongue. Move around in mouth every 5 mins or so. Do not chew or swallow lozenge.

Dose:
2mg/hr. for patients who smoke their first cig >30 mins after awakening.
4 mg/hr. for patients who smoke their first cig <30 mins after awakening.

Frequency: Every 1-2 hours. Try not to wait for cravings.

Gum

Chew minimally, "park" between teeth and cheek. Rechew when tingling is gone and rotate sites. Avoid use with acidic foods.

Dose:
2mg/hr. for patients who smoke their 1st cig >30 mins after awakening.
4 mg/hr. for patients who smoke their 1st cig<30 mins after awakening.

Side Effects:
GI irritation when chewed

Nasal Spray

Can be used once to each nostril every 1-2 hours.

Side Effects:
can cause nostril irritation

Inhaler*

Take short puffs but keep air in mouth.

*Currently difficult to obtain due to manufacturer issues; may come back onto the market

Non-Nicotine Options

Varenicline (Chantix)

Nicotinic receptor partial agonist designed to decrease cravings, reduce withdrawal, and dampen nicotine-induced reward pathway.

Dose:
Take one week before tobacco recovery date 0.5mg daily x 3d. 9.5 mg BID x 3d
Then 1mg daily for 3-6 months

Side Effects:
vivid dreams, nausea

Bupropion (Wellbutrin)

Nicotinic receptor antagonist and norepinephrine & dopamine reuptake inhibitor. Designed to reduce cravings and withdrawal.

Dose:
Take one week before tobacco recovery date
150mg tablet once daily x 3 days
Then 150mg tablet twice daily for 3-6 months

Side Effects:
lowers seizure threshold, insomnia, dry mouth

Medications for Vaping – Youth

- NRT is not approved by the FDA for use in individual younger than 18 years, but it is available for off-label use with a prescription.
- American Academy of Pediatrics (AAP) endorses the use of NRT in adolescents with moderate to severe nicotine dependence who are motivated to quit.
- Severity of dependence can be determined via the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed., Criteria or screening tools like:
  - The Fagerström Test for Nicotine Dependence
  - The Heaviness of Smoking Index
  - The Hooked on Nicotine Checklist
- There is no evidence suggesting that short-term NRT is unsafe for minors with nicotine dependence
- USPSTF (United States Preventive Services Task Force) acknowledges that the use of NRT in adolescents poses a low risk of adverse effects

(Sazegar et al., 2023)

Level of Dependence Assessments

The Hooked on Nicotine Checklist

The HONC is scored by tallying the number of yes responses, from 0-10. Any score greater than zero indicates that the smoker has lost some degree of autonomy over their smoking. This indicates that nicotine addiction has begun.

	YES	NO
1) Have you ever tried to stop vaping, but couldn't?		
2) Do you vape now because it is really hard to quit?		
3) Have you ever felt like you were addicted to vaping?		
4) Do you ever have strong cravings to vape?		
5) Have you ever felt like you really needed to vape?		
6) Is it hard to keep from vaping in places where you are not supposed to, like school?		
When you tried to stop vaping...(or, when you haven't vaped for a while...)		
7) did you find it hard to concentrate because you couldn't vape?		
8) did you feel more irritable because you couldn't vape?		
9) did you feel a strong need or urge to vape?		
10) did you feel nervous, restless or anxious because you couldn't vape?		

The Four-Item E-cigarette Dependence Scale for Assessing Adolescent E-cigarette Nicotine Dependence

Instructions. Please respond to each question marking one box per row.	Never (0)	Rarely (1)	Sometimes (2)	Often (3)	Almost Always (4)
I find myself reaching for my e-cigarette without thinking about it.					
I drop everything to go out and get e-cigarettes or e-juice.					
I vape more before going into a situation where vaping is not allowed.					
When I haven't been able to vape for a few hours, the craving gets intolerable.					

To score the measure, take the mean of the item scores.

Additional Laws Related to e-Cigarettes in CA

The use of vapor products is prohibited statewide in workplaces and in many public spaces, like restaurants and bars. Some cities also ban vaping in multi-unit residences.

Vaping and smoking are prohibited outdoors on a state beach or unit of the state park system.

Vaping or smoking in a car with a minor present is prohibited.

Some jurisdictions in CA have completely banned the sale of e-cigarettes.

(CASAA, 2024)

Alameda County Behavioral Health Care Services (ACBH) – Rules for Contracted Providers –

- ALL county spaces (including vehicles) and staff shall be free of any tobacco use (including e-cigarettes), including related paraphernalia and clothing.
  - "No evidence of tobacco use at work" is encouraged.
- Programs must POST Policy and "No Tobacco Use" signs in prominent areas.
  - Compliance for tobacco-free zones (including e-cigarettes) must be implemented at 25+ feet from entrances and exits

(Adapted from Alameda County Behavioral Health Care Services, Policy No. 1901-1-1, Approved 11/10/2016)

Resources For Individuals Who Use ENDS

Contact Kick It CA for free counseling and assistance with quitting vaping

- Download the Kick It CA app for a customized recovery plan and behavior change strategies
- Text "Quit Vaping" to 66819
- Call for telephone coaching
  - English: 1-800-300-8086
  - Spanish: 1-800-600-8191
  - Chinese: 1-800-838-8917
  - Korean: 1-800-556-5564
  - Vietnamese: 1-800-778-8440

Resources For Providers

- Refer Patients to Kick It CA
- USPSTF Recommendation – Tobacco Smoking Cessation in Adults, Including Pregnant Persons: Interventions
- Update in Progress: USPSTF Recommendation– Tobacco and Nicotine Use Prevention and Cessation in Children and Adolescents: Primary Care Interventions

References

American Lung Association. (n.d.). *State of Tobacco Control: 2024 Report*. American Lung Association. https://www.lung.org/content/sotc/2024/ala-sotc-2024.pdf

Boston Children's Hospital. (n.d.). *Pediatric Environmental Health Center: E-cigarettes*. Boston Children's Hospital. https://www.childrenshospital.org/programs/pediatric-environmental-health-center/patient-resources/e-cigarettes

California Department of Public Health, California Tobacco Prevention Program. (2022, January 29). Key findings from the 2023 Online California Adult Tobacco Survey. https://www.cdph.ca.gov/Programs/CCDPHP/DCDIC/CTCB/CDPH%20Document%20Library/ResearchandEvaluation/Reports/KeyFindingsOnlineCATS2023.pdf

California Youth Advocacy Network (CYAN). (n.d.). *Tools & Materials*. CYANOnline. https://www.cyanonline.org/tools1/#fact-sheets

California's AB 935 Clarifies Enforcement for Illegal Commercial Tobacco Sales. Public Health Law Center. (2023, October 9). https://www.publichealthlawcenter.org/commentary/231009/10/9/23-californias-ab-935-clarifies-enforcement-illegal-commercial-tobacco-sales

California's Flavored Tobacco Ban (SB793). Public Health Law Center. (2020b, September). https://www.publichealthlawcenter.org/sites/default/files/resources/CA-Flavor-Tobacco-Ban-SB793.pdf

Carpenter, M. J., Wahlquist, A. E., Dahne, J., Gray, K. M., Cummings, K. M., Warren, G., Wagener, T. L., Goniewicz, M. L., & Smith, T. T. (2023). Effect of unguided e-cigarette provision on uptake, use, and smoking cessation among adults who smoke in the USA: A naturalistic, randomised, controlled clinical trial. *eClinicalMedicine*, *63*, 102142. https://doi.org/10.1016/j.eclinm.2023.102142

Centers for Disease Control and Prevention. (2023, November 2). *About electronic cigarettes (e-cigarettes)*. Centers for Disease Control and Prevention. https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html

Chaffee, B. W., Couch, E. T., Wilkinson, M. L., Donaldson, C. D., Cheng, N. F., Ameli, N., Zhang, X., & Gansky, S. A. (2023). Flavors increase adolescents' willingness to try nicotine and cannabis vape Products. *Drug and Alcohol Dependence*, *246*, 109834. https://doi.org/10.1016/j.drugalcdep.2023.109834

Chen, R., Pierce, J. P., Leas, E. C., Benmarhnia, T., Strong, D. R., White, M. M., Stone, M., Trinidad, D. R., McMenamin, S. B., & Messer, K. (2022). Effectiveness of e-cigarettes as aids for smoking cessation: Evidence from the PATH Study Cohort, 2017–2019. *Tobacco Control*, *32*(e2). https://doi.org/10.1136/tobaccocontrol-2021-056901

References

Clodfelter, R., McCarl Dutra, L., Bradfield, B., Russell, S., Levine, B., & von Jaglinsky, A. (2024, March). Results of the 2023 California Youth Tobacco Survey. RTI International.

A Closer Look at the 23 FDA Authorized E-Cigarettes. Public Health Law Center. (2024, March 5). https://www.publichealthlawcenter.org/commentary/240305/3/5/24-closer-look-23-fda-authorized-e-cigarettes

E-cigarettes help more tobacco smokers quit than traditional nicotine replacement. University of Massachusetts Amherst. (2024, January 8). https://www.umass.edu/news/article/e-cigarettes-help-more-tobacco-smokers-quit-traditional-nicotine-replacement

Esteban-Lopez, M., Perry, M. D., Garbinski, L. D., Manevski, M., Andre, M., Ceyhan, Y., Caobi, A., Paul, P., Lau, L. S., Ramelow, J., Owens, F., Souchak, J., Ales, E., & El-Hage, N. (2022). Health effects and known pathology associated with the use of e-cigarettes. *Toxicology Reports*, *9*, 1357–1368. https://doi.org/10.1016/j.toxrep.2022.06.006

FDA Regulation of Tobacco Products: Modified Risk Tobacco Products. American Cancer Society Cancer Action Network. (2022, October 12). https://www.fightcancer.org/sites/default/files/fda_regulation_of_modified_risk_tobacco_products_fact_sheet_final_10.12.22.pdf

FDA. (2023, November 2). *Results from the Annual National Youth Tobacco Survey (NYTS)*. U.S. Food and Drug Administration. https://www.fda.gov/tobacco-products/youth-and-tobacco/results-annual-national-youth-tobacco-survey

FDA. (n.d.). *Preparing and submitting a premarket tobacco product application*. U.S. Food and Drug Administration. https://www.fda.gov/tobacco-products/premarket-tobacco-product-applications/preparing-and-submitting-premarket-tobacco-product-application

Glantz, S. A., Nguyen, N., & Oliveira da Silva, A. L. (2024). Population-based disease odds for e-cigarettes and dual use versus cigarettes. *NEJM Evidence*, *3*(3). https://doi.org/10.1056/evidoa2300229

Goniewicz, M. L., Smith, D. M., Edwards, K. C., Blount, B. C., Caldwell, K. L., Feng, J., Wang, L., Christensen, C., Ambrose, B., Borek, N., van Bemmel, D., Konkel, K., Erives, G., Stanton, C. A., Lambert, E., Kimmel, H. L., Hatsukami, D., Hecht, S. S., Niaura, R. S., … Hyland, A. J. (2018). Comparison of nicotine and toxicant exposure in users of electronic cigarettes and combustible cigarettes. *JAMA Network Open*, *1*(8). https://doi.org/10.1001/jamanetworkopen.2018.5937

Kasza, K. A., Edwards, K. C., Kimmel, H. L., Anesetti-Rothermel, A., Cummings, K. M., Niaura, R. S., Sharma, A., Ellis, E. M., Jackson, R., Blanco, C., Silveira, M. L., Hatsukami, D. K., & Hyland, A. (2021). Association of e-cigarette use with discontinuation of cigarette smoking among adult smokers who were initially never planning to quit. *JAMA Network Open*, *4*(12). https://doi.org/10.1001/jamanetworkopen.2021.40880

References

Malas, M., van der Tempel, J., Schwartz, R., Minichiello, A., Lightfoot, C., Noormohamed, A., Andrews, J., Zawertailo, L., & Ferrence, R. (2016). Electronic cigarettes for Smoking Cessation: A systematic review. *Nicotine & Tobacco Research*, *18*(10), 1926–1936. https://doi.org/10.1093/ntr/ntw119

McRobbie, H., Bullen, C., & Hajek, P. (2012). Electronic cigarettes for smoking cessation and reduction. *Cochrane Database of Systematic Reviews*. https://doi.org/10.1002/14651858.cd010216

Nicotine Replacement Therapy and Adolescent Patients. American Academy of Pediatrics. (n.d.). https://www.aap.org/en/patient-care/tobacco-control-and-prevention/youth-tobacco-cessation/nicotine-replacement-therapy-and-adolescent-patients/

Pinto, M. I., Thissen, J., Hermes, N., Cunningham, A., Digard, H., & Murphy, J. (2022). Chemical characterisation of the vapour emitted by an e-cigarette using a ceramic wick-based technology. *Scientific Reports*, *12*(1). https://doi.org/10.1038/s41598-022-19761-w

A Quick Recap: What's Going on with the Premarket Review Process? Public Health Law Center. (2020a, May 16). https://www.publichealthlawcenter.org/commentary/220118/quick-recap-whats-going-premarket-review-process

Salzman, G. A., Alqawasma, M., & Asad, H. (2019). Vaping Associated Lung Injury (EVALI): An Explosive United States Epidemic. *Missouri Medicine*, *116*(6).

Sazegar, P., Martinez, A. N., & Varallo, M. D. (2023, May 15). *Smoking Cessation in Adolescents*. American Family Physician. https://www.aafp.org/pubs/afp/issues/2023/0500/letter-smoking-cessation-adolescents.html

Vaping laws in California + calls to action. CASAA. (2024, March 14). https://casaa.org/get-involved/state-locator/california/

What's in an e-cigarette? American Lung Association. (2023, May 31). https://www.lung.org/quit-smoking/e-cigarettes-vaping/whats-in-an-e-cigarette