

Chasing the Vape Cloud

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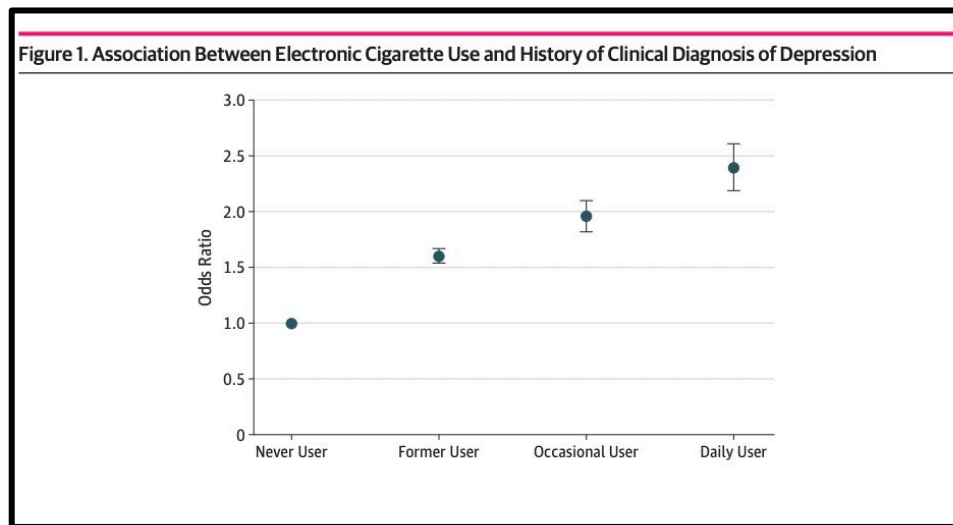
I have no disclosures

Objectives

- Introduction to the clinical effects of nicotine and the various Electronic Nicotine Delivery Systems (ENDS)
- Overview of trends in youth vaping
- Role of providers in prevention and management of adolescent vaping

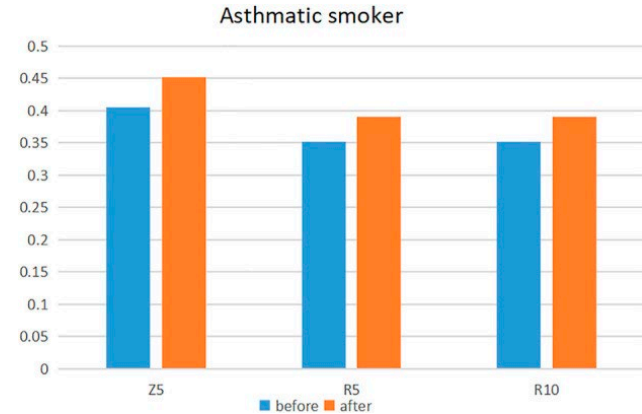
Nicotine and the young brain

- Promotes the feeling of “At ease” by releasing DA in gratification centers of the brain
- Nicotine disrupts the formation of brain circuits that control attention and learning
- Vaping is associated with higher levels of ADHD symptoms and other substance use disorders
- Nicotine vaping can double the odds of having depression and increase stress levels.



Nicotine and the lungs

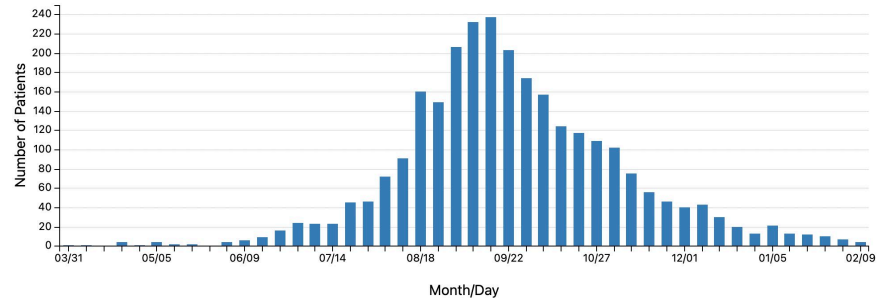
- Increased odds of chronic cough and asthma diagnoses- Bronchiolitis Obliterans or “popcorn lung”
- Diacetyl linked to small airway inflammation
- Vaping induced lipoid pneumonia
- Primary spontaneous pneumothorax
- Second-hand vapor contains nicotine, ultrafine particles, benzene and diacetyl



Changes in flow resistance in asthmatic smokers before and after e-cigarette use

E-Cigarette Vaping Associated Lung Injury(EVALI)

Dates of symptom onset and hospital admission for patients with lung injury associated with e-cigarette use, or vaping — United States, March 31, 2019–February 15, 2020



Numbers do not sum to 2,807 due to missing admission dates.

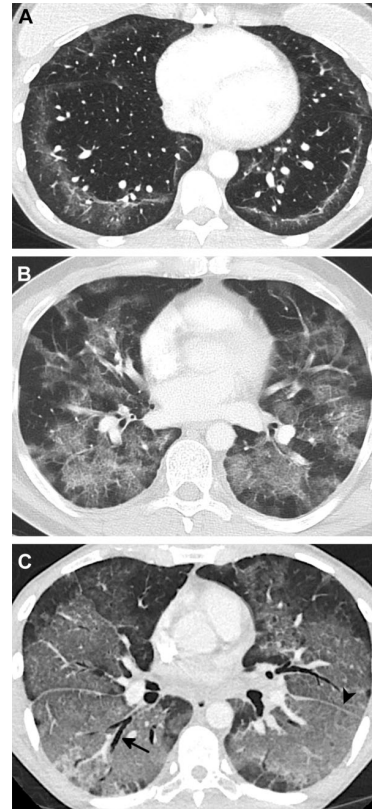
**August 2019: Cases of EVALI-associated with
Vitamin E acetate**

Chest CT findings in EVALI

A: Lower-lobe predominant organizing pneumonia (OP) pattern subpleural bands of ground-glass opacity (GGO)

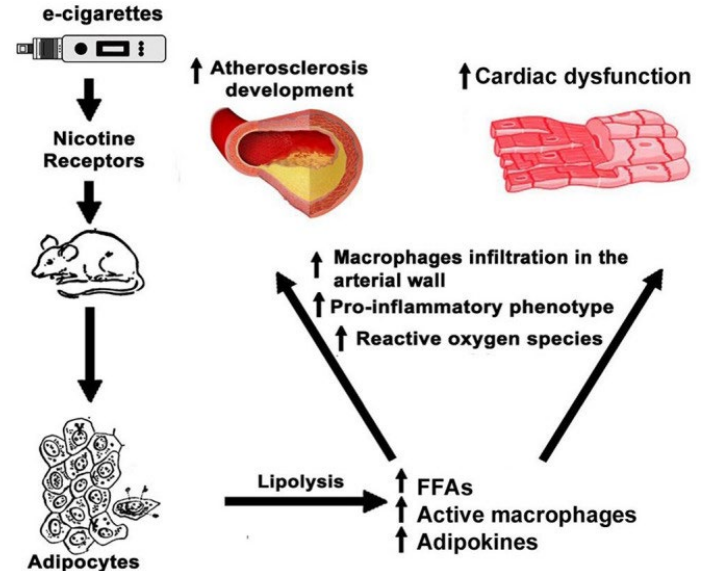
B: Diffuse GGO OP pattern: Subpleural and lobular sparing.

C: Severe injury with diffuse GGO with diffuse alveolar damage pattern.



Cardiovascular system effects

- Carbonyl compounds: Increased risk of blood clot and atherosclerosis
- Increased risk of myocardial ischemia, arrhythmias, cardiac tissue remodeling.
- Higher average systolic and diastolic blood pressure

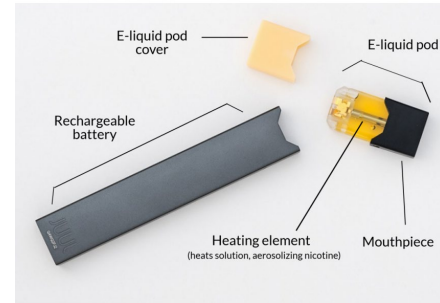


What is an E-cigarette?

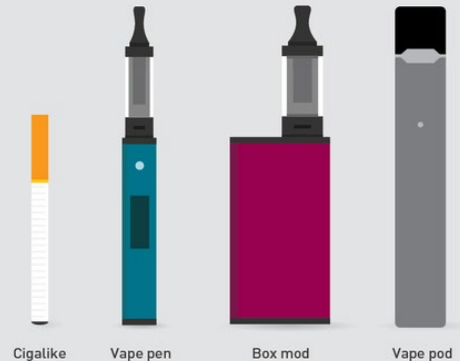
- E-cigarettes are electronic devices that heat liquid and produce an aerosol

Consists of:

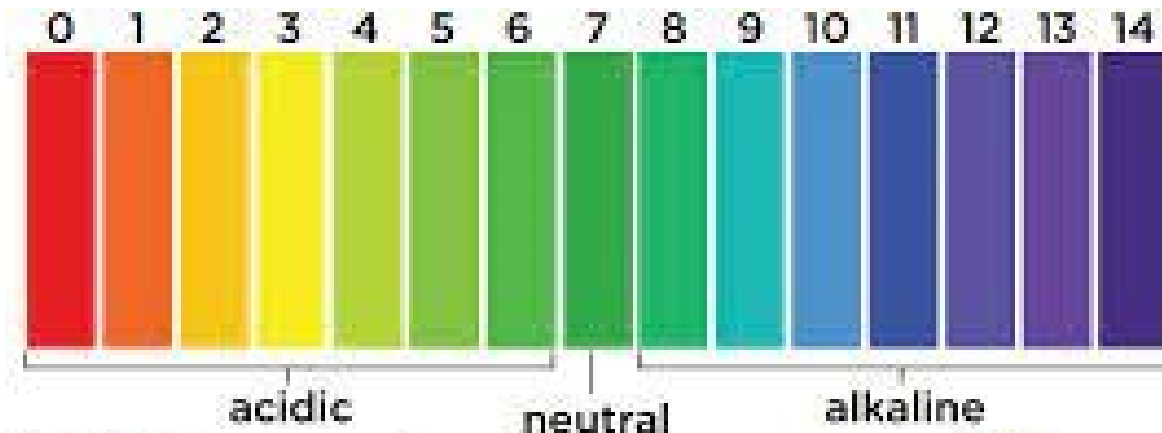
- Battery- providing the necessary power to heat the e-liquid. It is typically a small
- Atomizer- Acts as the heating element, responsible for converting the e-liquid into vapor.
- E-liquid- or vape juice, is a solution comprising propylene glycol (PG), vegetable glycerin (VG), flavorings, and optionally nicotine.



Evolution of the e-cigarette



Source: <https://www.ruthlessvapor.com/blogs/ruthless-e-liquid/nicotine-salt-devices-vape-pods>



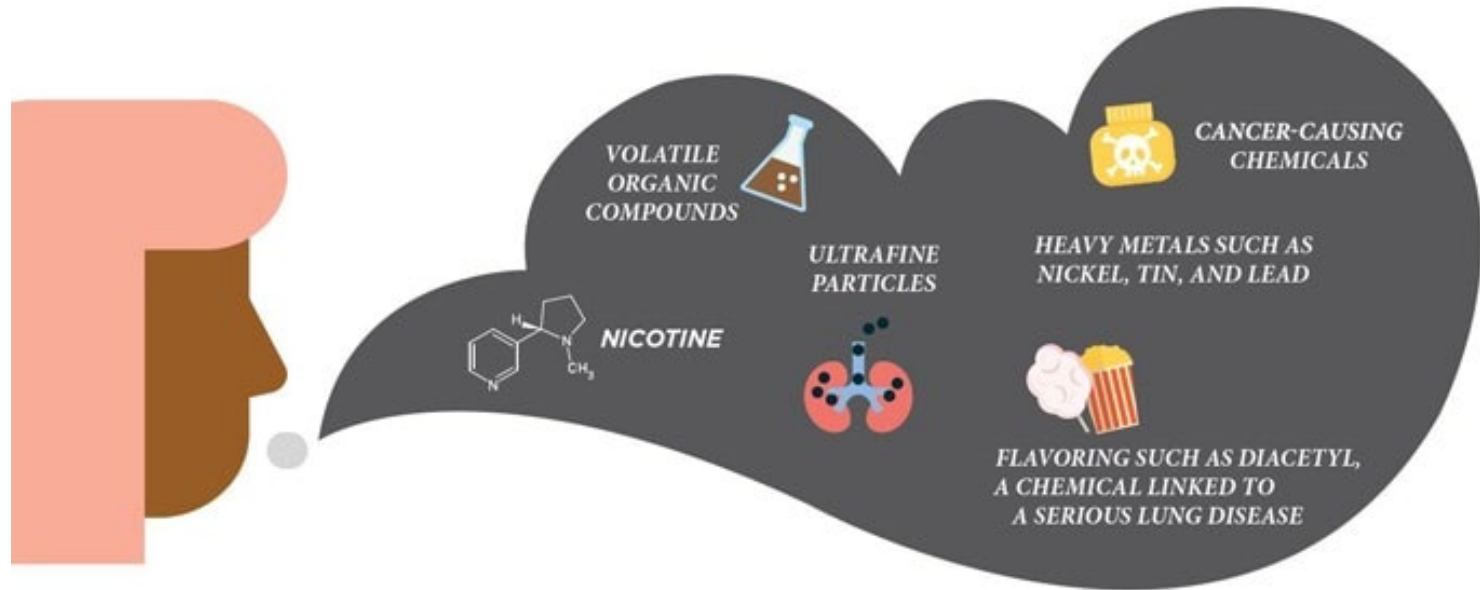
Less throat irritation with nicotine salts in E-cigarettes



FLAVORING



NOT just harmless “water vapor”



Types and terminology



Trends in youth vaping

Magnitude of problem among youth

E-cigarettes came in market around 2007

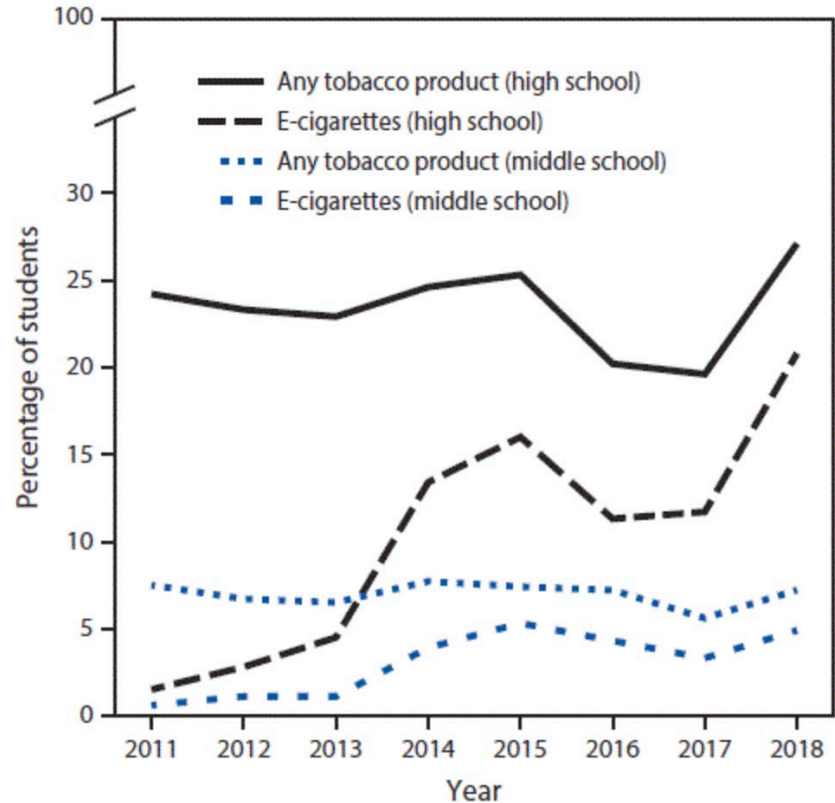
In 2018, more than 3.6 million U.S. youth, including 1 in 5 high school students and 1 in 20 middle school students were using e-cigarettes

2007

2014

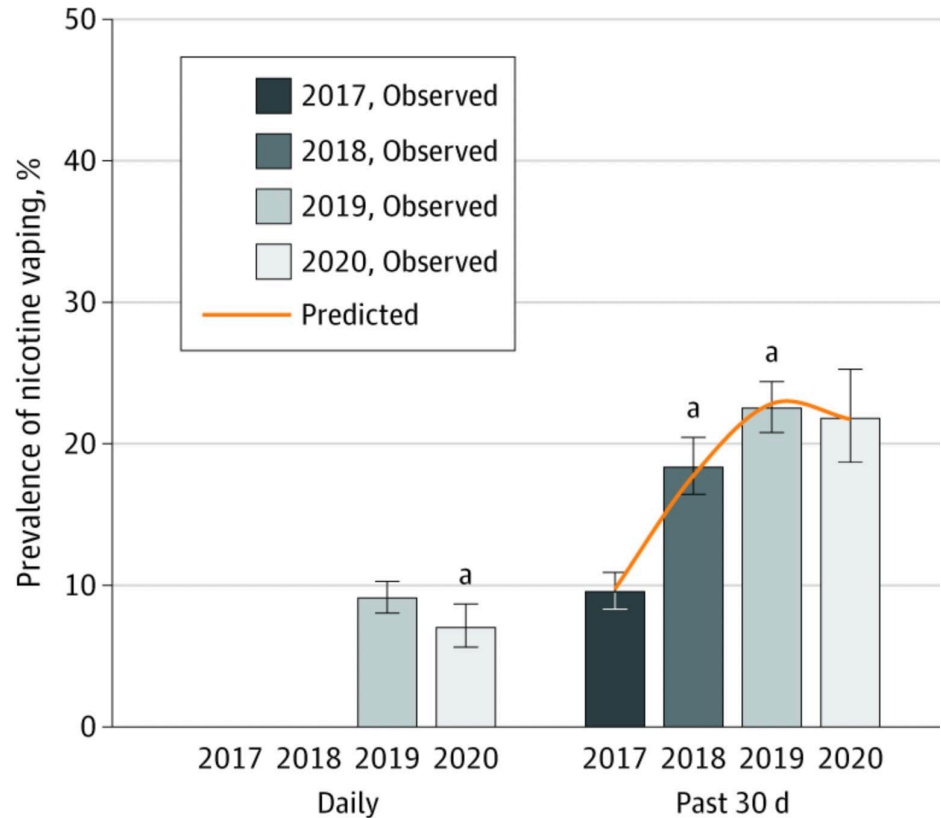
2018

Since 2014, E-cigarettes have been the most commonly used tobacco product among youth



Trends in Use and Perceptions of Nicotine Vaping Among US Youth

Increasing US adolescent nicotine vaping trends from 2017 to 2019 halted in 2020



NYTS
2023

More than **2.1 million**
youth currently use e-cigarettes,

with a **decline** in high school students currently using e-cigarettes in 2022-2023

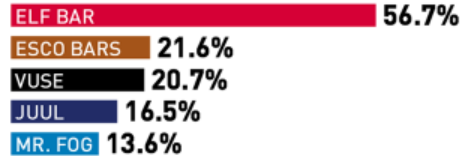
Among youth who reported current use of e-cigarettes:

More than **1 in 4**



use e-cigarettes daily

The most popular brands include disposable and cartridge-based products, and the most commonly reported products were:



Almost
9 out of 10



use flavored e-cigarettes

10%(1.56 million) high school students and
4.6%(550,000) middle school children still report current
use of E-cigarettes

NYTS
2023

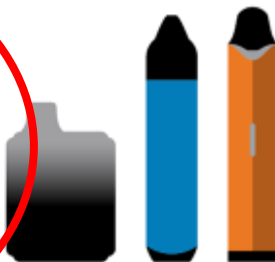
10% of students
reported current use of any tobacco product

Among those who currently use a tobacco product:

E-Cigarettes

were the most popular
product for the

10th year in a row

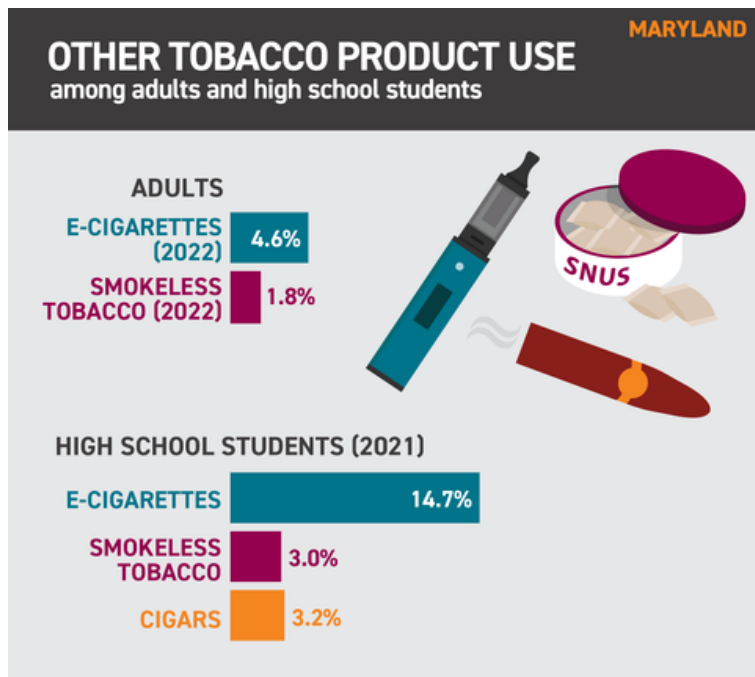


**Cigarette
and Cigar**

use remain at an all-time low



Tobacco Use in Maryland



	Maryland	Nationally
Electronic Vape Product	14.7%	18%
Chewing tobacco, snuff or dip	3%	2.5%
Cigars, cigarillos, little cigars	3.2%	3.1%

Screening for E- cigarette Use in Clinical Practice

Ask Questions early

- Ask about tobacco use, smoking and E-cigarette use at every visit: AAP Bright Futures recommends risk assessment begin at 11 years old
- Make asking consistent
- Take baby steps
- Anticipate escape, reluctance
- Use electronic templates to add in clinic workflow

December 11, 1991

The New Vital Sign Assessing and Documenting Smoking Status

Michael C. Fiore, MD, MPH

» [Author Affiliations](#)

JAMA. 1991;266(22):3183-3184. doi:10.1001/jama.1991.03470220099036

E-cigarette counseling and treatment

Approach while talking to adolescents

- Validate autonomy and provide respect
- Ask parent/siblings to step out of the room and emphasize confidentiality
- Get the story, find something to talk about within that story
- Stay patient, positive and encouraging
- Set follow up appointment

Questions: Open ended

Do you or your friends smoke or vape products like cigarettes/E cigarettes/hookah/JUUL or dip?

When did you start and why? How much do you use?

What brands/type of device do you like and why?

What is your vaping routine during the day or night?

What type of cartridges or liquids do you put in your vape? Do they contain nicotine? Tetrahydrocannabinol (THC)?



Past history and quit attempts

- *Have you tried quitting on your own? What happens if you stop vaping?*

Timing of the past attempts and details on what was tried



Additional important history

Psychiatric
history if any

Other substance
abuse history

Information on
other smokers in
the household

Understanding the “Why”?





Messages that may resonate with teens

- Impact of vaping on breathing and athletic performance
 - Expense of e-cigarette products
 - Tobacco Industry's history of deceitful marketing practices to attract teen users
 - Reasons for not using combustible cigarettes and linking that to e-cigarette use
-

Resources for Teens

- 1-800-QUIT-NOW
- Smokefree Teen: <https://teen.smokefree.gov>
- The Real Cost
- This is Quitting
- N-O-T: Not on Tobacco
- My Life My Quit
- Text “DITCHVAPE” to 88709



Educating parents about E-cigarettes

Pediatricians should be prepared to help parents identify and understand e-cigarettes

Encourage parents to talk to their children about e-cigarettes

Providers can educate parents on:

- What is an E-cigarette
- Adolescents' unique susceptibility to nicotine addiction
- Health effects of e-cigarette use
- How to talk with their teens about e-cigarettes

Recommendations for parents who use Tobacco

- Never smoke or use e-cigarettes in the house, car, or places that children and adolescents spend time
- Talk with your doctor about ways to help you quit tobacco products
- Talk to your children about the dangers of tobacco and e-cigarettes and make sure you can identify them
- If you are an e-cigarette user, always keep e-cigarettes and liquid nicotine locked and out of reach of children and adolescents

Resources for Parents

- [BecomeAnEX.org](https://www.becomeanex.org): Parents of young children who vape can get support
- E-cigarettes@surgeongeneral.gov
- [The Vape Talk](#): Conversation guide from American Lung Association
- Parents against Vaping E-Cigarettes(PAVe)



Nicotine Replacement Therapy

- Helps to gain control over compulsion to smoke
- Addresses withdrawal to nicotine
- National guidelines encourage NRT use in regular teenage smokers, though not in occasional smokers
- Nicotine replacement therapy is recommended for adolescents under 18 years seeking to quit smoking or vaping but data is limited
- Works best when coupled with behavior therapy
- Varenicline and Bupropion are not FDA approved under 18 years of age

Nicotine Patch

- Helps prevent craving- provides tonic delivery of nicotine
- Start at high dose of 21mg/day and then step down over 8-10 weeks
- Most common side effect is local irritation of skin
- Typical duration of treatment is 3-6 months
- Re-apply daily, rotate site daily.
- Do not remove patch if there is urge to smoke/vape



Nicotine gum and lozenges

- Used for breakthrough cravings
- Available in 2mg and 4mg formulations
- Should be chewed and parked on side of the mouth
- Can use 1-2 pieces per hour when used along with patch
- Lozenge can have chalky after-taste



Key Points

- The evidence base for nicotine vaping cessation among adolescents is limited
- Screening should be early and frequent
- In addition to nicotine addiction, other factors like social influences, beliefs, underestimation of risk, and easy access to products plays important role in teen vaping
- The decision to use pharmacotherapy should be individualized and should be administered in addition to cognitive-behavioral counseling and support.

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Thank You

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