



## Clearing the Air: An Update on Youth Vaping



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### About This Presentation




**Dr. Kathy Lofy**




**I. Health Effects of Vaping**




**II. Youth Vaping Epidemic**




**III. Vaping-Associated Lung Injury**



**Lacy Fehrenbach**



**IV. Recent Policy Actions: Washington State**



**V. Proposed Policy Actions: State and Federal**

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### Question for the Viewers

Are there currently any regulations in place on the sale or use of e-cigarettes and other vaping products in your state?

- A. Yes
- B. No
- C. Some are being developed
- D. I'm not sure

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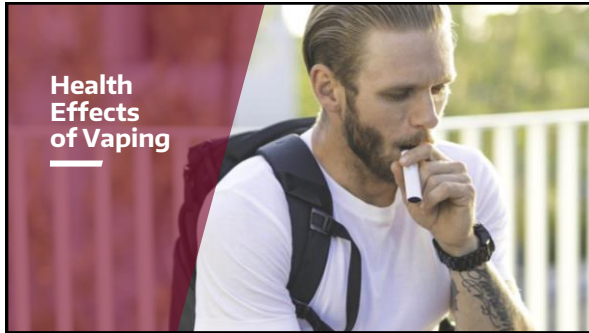
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### Components of Vapor Products

- Nicotine, marijuana, other drugs
- Propylene glycol, glycerol, other carrier agents
- Flavoring chemicals, terpenes
- Others such as particulate matter, volatile organic compounds, heavy metals, formaldehyde, pesticides, ???

Source: National Academies of Sciences, Engineering and Medicine, Public Health Consequences of E-Cigarettes, 2018.  
E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General, 2016  
CDC, 2018. Accessed [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/about-e-cigarettes.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html)

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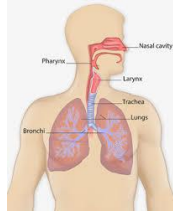
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### Effects of Vaping on Pulmonary System

- **Nasal epithelia:** downregulation of immune genes; inhibition of ciliary beating
- **Bronchial epithelia:** altered protein expression; cellular toxicity; increased cytokine secretion; altered gene expression
- **Alveoli:** impaired vasoconstriction, impaired gas exchange
- **Sputum:** altered sputum proteins; impaired macrophage function



Source: Jeffrey E Gotts et al. BMJ 2019;364:bmj.k2275

### Effects of E-Cigarettes on People Who Currently Smoke

- Completely substituting e-cigarettes for combustible cigarettes reduces exposure to many toxicants and carcinogens present in combustible cigarettes
- E-cigarettes expose users to different chemicals; long term health effects unknown
- Dual use of cigarettes and e-cigarettes does not necessarily reduce exposure to toxic substances; even a few cigarettes a day can be dangerous
- Studies on effectiveness of E-cigarettes as smoking cessation aid remain mixed

Source: National Academies of Sciences, Engineering and Medicine. Public Health Consequences of E-Cigarettes, 2018.  
Goniewicz ML et al. JAMA Network Open. 2018; (https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2718096)  
Tobacco Control 2005;14(5):515-20

### Youth Vaping Epidemic



### Increase in Vaping Among Youth

While youth **smoking** in Washington continues to decline, **vaping** among youth has surged:

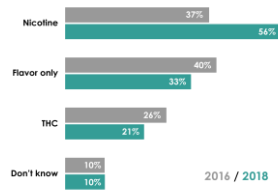


Source: Washington State Healthy Youth Survey

### Substance Use in E-Cigarettes

**Substances Reported Used in E-cigarettes by 10th graders:**

Healthy Youth Survey



Source: Washington State Health Youth Survey  
Tobacco Control 2019;28:115-116.

### 2019 National Youth E-Cigarette Use

- **27%** of high school students reported using e-cigarettes
- **More than 1/3** of high school students who vape report vaping on 20 or more of the past 30 days
- **64%** of high school students who vape report only using e-cigarettes
- **59%** of high school students who vape report JUUL as usual brand
- **72%** of high school students who only use e-cigarettes report using flavored e-cigarettes.
- Current use of menthol or mint flavored e-cigarettes increased **from 16% in 2016 to 57% in 2019** of high school students who only use e-cigarettes

Source: <https://jamanetwork.com/journals/jama/fullarticle/2755265?resultClick=1>




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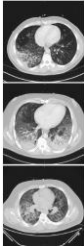
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### Vaping-Associated Lung Injury (VALI)



- Common symptoms include cough, shortness of breath, chest pain, nausea, vomiting and/or fever
  - Progress over days or weeks
- Can lead to respiratory failure
- Abnormal findings on chest x-ray or CT scan
- Suspected cause is a chemical exposure

MMWR 2019;68:784-786

Source: Centers for Disease Control ([https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html))

Correspondence: Pathophysiology of Vaping-Associated Lung Injury. N Engl J Med October 3, 2019.

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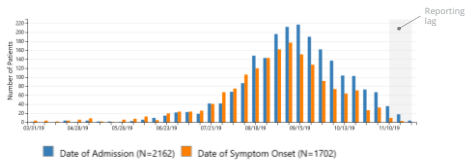
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### Vaping-Associated Lung Injury (VALI)

2,291 VALI cases reported nationally, including 48 deaths as of December 4, 2019:



The bar chart shows the number of cases reported by region (Y-axis, 0 to 250) over time (X-axis, October 1, 2019, to December 4, 2019). Blue bars represent the Date of Admission (N=2162) and orange bars represent the Date of Symptom Onset (N=1702). A shaded gray area at the end of the timeline indicates a reporting lag.

Source: Centers for Disease Control ([https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html))

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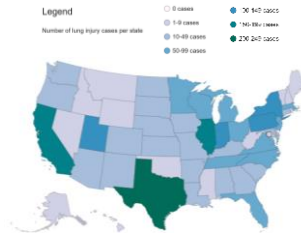
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## Vaping-Associated Lung Injury Reported to CDC\*

- 68% are male
- 77% of patients are under 35 years old
- ~83% reported using THC-containing products
- ~61% reported using nicotine-containing products
- THC-containing products playing a major role
- ~13% reported only using nicotine-containing products



\*Note: Case counts as of Dec. 4, 2019; Characteristics as of Nov. 5, 2019

Source: Centers for Disease Control ([https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html))

## Vaping-Associated Lung Injury Reported in Washington\*

- 19 cases reported
  - 58% male
  - 47% < 30 years old
- Of 18 cases with data:
  - 44% reported using THC-containing products
  - 61% reported using nicotine-containing products
  - 33% reported only using nicotine-containing products
  - 6% used other product
  - 17% unknown



\*Note: Data as of December 5, 2019

Source: Department of Health

## Vitamin E Acetate

- Form of Vitamin E
- Used in variety of consumer products including skin care and dietary supplements
- Usually does not cause harm when ingested or applied to skin
- When inhaled, previous research shows it may interfere with normal lung functioning
- Has been used as additive in THC-containing e-liquids

$\alpha$ -tocopheryl acetate ( $C_{31}H_{52}O_3$ )



## Vitamin E Acetate Associated With Lung Injury

### According to recent CDC and FDA evidence:

- 49% of THC products sampled show Vitamin E acetate
- Concentration of Vitamin E acetate in subset of THC-containing products was significant: 23% – 88%
- When vapor products with THC were linked to cases, the proportion of THC-containing products with Vitamin E acetate was higher: 77%
- Direct evidence of Vitamin E acetate at the primary site of injury was found in **29 of 29 lung samples** from patients in 10 states

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## What We Don't Know: Vitamin E Acetate and Lung Injury

- Cause of lung injury not yet proven
  - No confirmed biological mechanism(s) of action of Vitamin E acetate
  - Comparing Vitamin E acetate results from VALI patient samples to controls is underway
  - Animal studies could provide further evidence
- Vitamin E acetate findings do not rule out that other substances may be contributing to these injuries
- The diversity of patients, patterns of product use and products used may indicate multiple causes of these injuries

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### Question for the Viewers

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How would you rate your state's response to the vaping epidemic?

- A. Exceptional
- B. Sufficient
- C. Insufficient
- D. I'm not sure

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### Engrossed House Bill 1074: Tobacco and Vapor Products – Legal age for Sales

**21 IT'S THE LAW**



Effective January 1, 2020, it will be illegal to sell tobacco and vapor products to anyone under 21.




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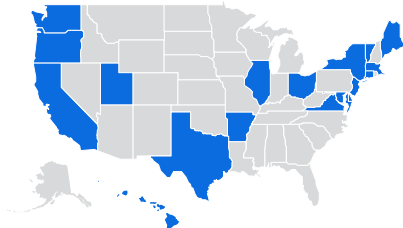
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### Tobacco/Vapor 21 Laws

■ States with TV21 laws



Source: <https://www.tobaccoinstitute.org/what-we-do/case-study-21> and <https://www.publichealthlawcenter.org/news/2019/09/13/21-laws-2020>

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## Washington ESSHB 1873: Vapor Product Tax

### Tax

- Accessible containers >5mL = \$0.09/mL
- All other products = \$0.27/mL

### Revenue

- Cancer research
- Public Health services

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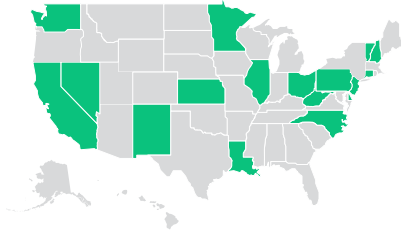
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## e-Cigarette Taxes

- States that tax e-cigarettes



Source: <https://www.publichealthlawcenter.org/wp-content/uploads/2019/09/State-Taxing-E-cigarettes-September-13-2019.pdf> as of September 15, 2019

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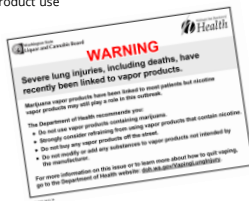
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## Public Health Response: Washington State

- Investigating and reporting cases
  - Reviewing medical records & talking with providers
  - Interviewing patients about their vapor product use
- Partnering with FDA and CDC to test vapor products from cases
- Communicating risks to public
  - Sending alerts to healthcare providers asking them to report suspected cases and sharing clinical guidance with them
  - Collaborating with Liquor and Cannabis Board to distribute warning materials and keep cannabis licensees and vapor retailers informed of the outbreak findings




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Governor's Executive Order 19-03

- State Board of Health
  - Emergency rule to ban flavored products
- Department of Health
  - Ban cause of outbreak (in collaboration with LCB)
  - Consumer warnings
  - Ingredient disclosure
  - Provider reporting
  - Education campaign
- Legislation
  - Two bills; one for nicotine and one for marijuana

Source: [https://www.governor.wa.gov/sites/default/files/news\\_order/19-026-20-%20State%20Board%20of%20Health%20Public%20Health%20Order%2019-03.pdf](https://www.governor.wa.gov/sites/default/files/news_order/19-026-20-%20State%20Board%20of%20Health%20Public%20Health%20Order%2019-03.pdf)

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Board of Health



- Ban on all flavored vapor products, including THC:  
**October 10, 2019**
- Ban on all products containing vitamin E acetate:  
**November 20, 2019**

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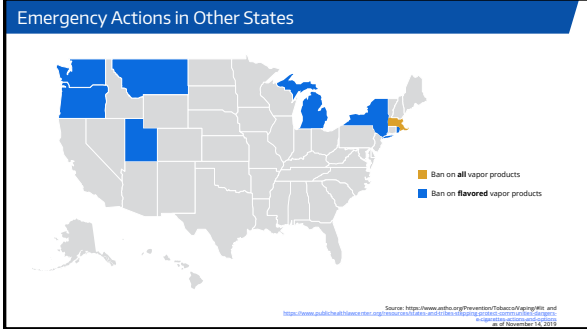
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### Proposed Washington State Legislation

#### Non-Cannabis Vapor Products

Some items policy makers are considering:

- Flavored vapor product ban
- Nicotine limits for vapor products
- Vapor product container size restrictions
- Ingredient disclosure
- Authority to ban product/require warning
- New DOH authority on vapor product labels
- New limits on marketing vapor products to youth
- Cessation support

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## Proposed Washington State Legislation

### Cannabis Vapor Products

Some items policy makers are considering:

- Flavored vapor product ban
- Ingredient disclosure/lab testing of vapor products
- Authority to ban product/require warning

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## Federal Considerations



- Tobacco/Vape 21
- Flavor ban
- Preventing Online Sales of E-Cigarettes to Children

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## Taking Action

What **you** can do:

- Support those who are trying to quit tobacco or vapor products
- Learn what is happening locally to address youth vaping and VALI
- Engage with your local, tribal, state or federal policymakers

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## Quitting Resources

### State Tobacco Quitline

WASHINGTON STATE TOBACCO QUITLINE  
**1-800-QUIT-NOW**  
 1-800-784-8669 | quitline.com

### 2Morrow App

[doh.wa.gov/quit](http://doh.wa.gov/quit)




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## Resources

- Lewis N, McCaffrey K, Sage K, et al. E-cigarette Use, or Vaping, Practices and Characteristics Among Persons with Associated Lung Injury — Utah, April–October 2019. MMWR Morb Mortal Wkly Rep 2019; 68:953–956. DOI: <http://dx.doi.org/10.15585/mmwr.mm6842e1>
- CDC Website [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html)
- Public Health Law Center <https://www.publichealthlawcenter.org/topics/commercial-tobacco-control>
- National Campaign for Tobacco Free Kids <https://www.tobaccofreekids.org/us-resources>
- Truth Initiative <https://truthinitiative.org/>
- YouthNow <https://www.youthnow.me/>

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## QUESTIONS?




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