

California Thoracic Society (CTS) Policy Statement and Resource Guide on Vaping / E-cigarettes

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Written by: Laura E. Crotty Alexander MD, UCSD.

Submitted by: CTS Clinical Practice Committee

Approved by: CTS Board of Directors

Endorsed by:

Summary:

1. As of 12/3/2019, over 2291 cases and 48 deaths due to E-Cigarette or Vaping Associated Pulmonary Illness EVALI/VAPI have been [reported](#).
2. The specific causes of the VAPI epidemic are not yet known. Vaping of THC may be responsible. All EVALI patients have reported a history of using e-cigarette, or vaping, products and at this point, vaping THC is considered to be extremely dangerous.
3. No e-cigarette use or vaping product has been proven to be safe.
4. Vaping of nicotine is not an approved smoking cessation tool and should not be recommended as such.
5. It is imperative that the public be educated about the potential for acute life threatening disease due to [vaping](#). In particular, parents and families must be educated about the importance of not vaping around children, and not vaping in an area where children will come into contact with the surfaces exposed (houses and cars in particular).

California Thoracic Society (CTS) recommendations:

The CTS does not support the use of any tobacco products, including e-cigarettes, due to their potential to cause acute and chronic diseases affecting the lungs and other organs.

While the CTS does not support the use of any recreational vaping devices, we recognize that these devices may continue to be available; therefore, we recommend:

1. Banning the sale of flavored e-liquids used in vaping. In particular, fruit-flavored, sweet and/or mint flavors should be banned as they

specifically target children, teenagers, young adults, women and certain ethnicities.

2. Banning the use of e-cigarettes in all public areas consistent with the existing ban on smoking in public areas.
3. E-liquid concentrations of nicotine or nicotinic salts should be limited to < 10 mg/mL (JUUL pods contain 59 mg/mL nicotinic salts and thus are potentially extremely addictive. Australia does not allow nicotine within e-liquids, while the U.K. limits nicotine to < 20 mg/mL).
4. Banning the sale of all e-cigarette products to individuals under 21 years of age, consistent with the existing ban on tobacco cigarettes in this population
5. All aerosols (vapor) from e-cigarette devices should undergo in-depth safety and toxicology testing prior to entering the market, to limit systemic toxicity or long-term adverse health consequences.

E-cigarettes have been available in California for over 12 years, with usage rates substantially increasing during this time. E-cigarette vaping in children, teenagers and young adults has spiked recently, with an estimate of > 20% of high school age adolescents using e-cigarettes¹. Although the majority of those who vape use nicotine based e-cigarettes alone, vaping and dabbing of cannabinoids such as THC is now extremely common in all age groups.

Prior to 2019, the few reported cases of vaping-related lung illnesses included lipoid pneumonia^{2,3}, eosinophilic pneumonia⁴⁻⁶, hypersensitivity pneumonitis⁷ and diffuse alveolar hemorrhage⁸. This year, however, hundreds have developed Vaping Associated Pulmonary Illnesses (VAPI), more recently named E-Cigarette or Vaping Associated Lung Injury (EVALI) with 26 deaths reported as of 10/14/19 and over 1200 cases in 48 states as defined by the CDC. Approximately 70% of patients are males, 79% are younger than 35 years of age, and 14% younger than age 18. The median age is 24 years and ranges from 13-75 years old. These cases are most similar to chemical inhalation injuries, and the diagnosis is one of exclusion⁹.

What causes EVALI/VAPI?

The base ingredients of all e-liquids are propylene glycol and glycerin. Nicotine and THC are the main active chemicals used in e-devices. Greater than 99% of e-devices are used with either nicotine or THC.

The total number of chemicals in e-liquids ranges from 60-113, with a total number of chemicals in e-cigarette vapor being higher due to chemical reactions which occur in the presence of heat, oxygen and water in the air^{10,11}.

Approximately 86% of those affected with VAPI/EVALI have admitted to vaping THC, with the majority concomitantly vaping nicotine. However, all chemicals in e-liquids have the potential to cause lung injury or other adverse effects on health, including the base chemicals propylene glycol and glycerin. None of the chemicals used in e-devices have undergone safety testing for inhalation injury. Moreover, several additives have already been identified as either toxic or potentially toxic, and the FDA is working to regulate these chemicals in particular.^{12,13}

What needs to be done to protect public health during this crisis?

Because the core chemicals, additives, contaminants and metals driving these toxic lung effects are as yet unknown, and no specific e-cigarette or vaping product / brand has been associated with VAPI/EVALI, it would be safest to avoid all e-cigarette use. At the very least, all e-cigarette users should avoid vaping or dabbing THC.

Nicotine is a highly addictive substance and the developing brain is particularly vulnerable to addictive chemicals. Because brain development continues into the third decade of life^{14,15}, children, teenagers and young adults are more susceptible to nicotine addiction relative to older adults. Addiction experts estimate that it takes a young person only a few vaping sessions to become addicted. Hence, it is imperative that meaningful measures are taken to prevent further expansion of the vaping epidemic in children, teenagers and young adults. All fruit flavors and sweet flavors should be included in this ban,^{16,17} Additionally, vaping shops should not be permitted to operate in close proximity to schools.

Over 99% of e-liquids are flavored. While some cities and states have implemented a full ban of flavored e-cigarettes, others are considering

allowing the sale of tobacco and mint or menthol flavored devices. However, tobacco and mint or menthol flavors have not undergone safety testing. In addition, certain ethnicities are known to prefer mint or menthol flavors and will be placed at increased risk if these flavors are allowed to be produced and sold¹⁸.

What about second and third-hand exposure?

Second- and third-hand exposure to e-cigarette vapor are worrisome as it has been shown that a person in the same room as someone actively vaping an e-device inhales the same chemicals, just to a lesser degree. In fact, someone standing near a user of a nicotine e-cigarette will develop detectable levels of nicotine metabolites in their blood^{19,20}. Because e-cigarette vapor is an aerosol made up of chemical droplets in the air that are heavy and sink due to gravity, children are at increased risk from being in an environment where someone is vaping as they are smaller and shorter and will be exposed to more aerosol as a result.

Are there other ways to be exposed to vaping chemicals?

The active ingredients and other chemicals in e-liquids can penetrate the skin. Since droplets from vaping aerosol drift downwards, a baby, child or adult who touches a surface that is below where someone was vaping can absorb drugs and chemicals into their body.

CTS thanks John Balmes MD for his expert content review and input on this statement.

RESOURCES

For Healthcare Professionals:

Clinicians who identify suspected cases of EVALI/VAPI are asked to report the cases to their local health department. Local health departments should report new cases or direct any inquiries to the CDPH Duty Officer dutyofficer@cdph.ca.gov or (916) 328-3605. Please also contact the CDPH

Duty Officer when any vaping devices or supplies have been collected from a patient and can be turned over to CDPH for testing.

1. [Update: Interim Guidance for Health Care Providers Evaluating and Caring for Patients with Suspected E-cigarette, or Vaping, Product Use Associated Lung Injury — United States, October 2019](#)
2. MMWR Early Release: [Characteristics of Patients in a National Outbreak of E-cigarette, or Vaping product use - Associated Lung Injury](#)
3. [CDC Smoking and Tobacco Portal](#)
4. [NEJM E-cigarette and Vaping Portal](#)
5. [ATS Clinician Information](#)
6. [California Department of Public Health](#)
7. [California Smoker's Hotline](#)

For Patients:

1. [ATS Patient Information on Vaping/electronic Nicotine Delivery Systems](#)
2. [California Smoker's Hotline](#)

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