

Clearing the Air

The Relationship Between Electronic Cigarette Use, Vaping, and Oral Health

The use of electronic cigarettes, otherwise known as e-cigarettes, has increased in popularity in the United States (US) since 2007, particularly among middle and high school students.¹ In 2020, approximately 3.6 million adolescents² and 9.1 million adults³ reported e-cigarette use.

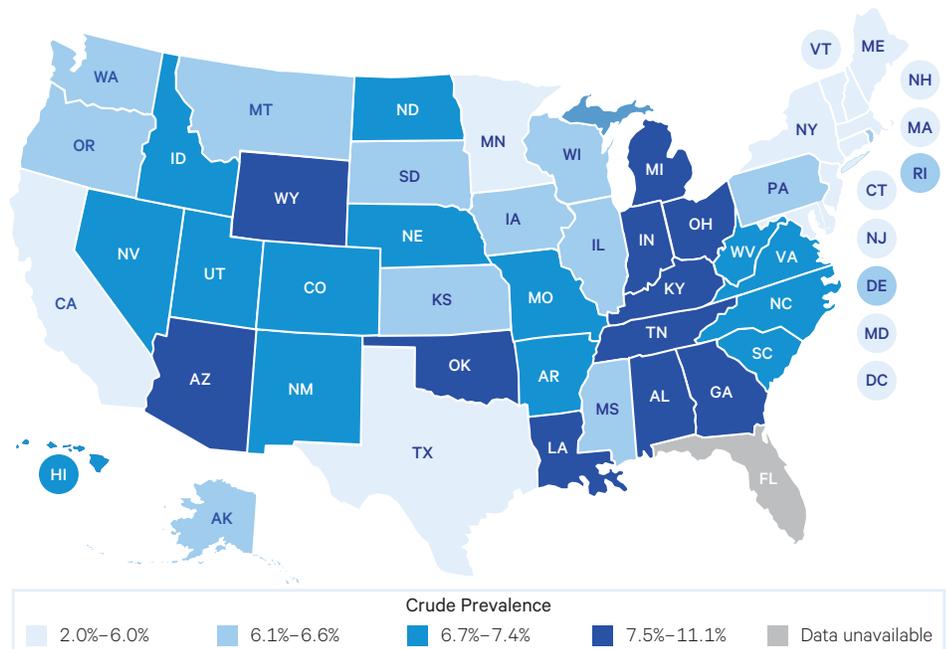
E-cigarettes are designed to heat a liquid, often flavored, until it is hot enough to become an aerosol, which the user then inhales.⁴ Although the smoke-like product put out by an e-cigarette is sometimes referred to as a vapor (and the use of e-cigarettes is often called vaping), unlike a vapor, the aerosol produced by an e-cigarette contains ultrafine particles that are inhaled into the lungs.^{4,5}

Some users of conventional cigarettes have turned to e-cigarettes in an attempt to stop smoking regular cigarettes. However, as of June 2022, no e-cigarette products have been approved by the US Food and Drug Administration (FDA) as a tobacco cessation device.⁶ Additionally, the Centers for Disease Control and Prevention (CDC) recommends that smokers use alternative smoking cessation options (such as [nicotine replacement](#) patches, gum, or lozenges) due to the unknown hazards associated with chemicals in electronic cigarettes. Some of these risks include a condition known as “e-cigarette or vaping use-associated lung injury” ([EVALI](#)) linked to the use of some tetrahydrocannabinol (THC)-containing e-cigarettes that include vitamin E acetate.⁷ This condition can cause respiratory symptoms such as shortness of breath and chest pain as well as nausea, vomiting, and stomach pain.⁸

Use of e-cigarettes is linked to symptoms such as cough, sore throat, shortness of breath, headache, and change in or loss of taste.^{9,10} However, menthol flavoring in some e-cigarettes may mask the sensation of throat irritation or dryness.¹⁰ In addition to increasing the risk of cardiovascular disease¹¹ and pulmonary conditions like asthma and chronic obstructive pulmonary disease (COPD),¹² growing evidence demonstrates the negative impacts of electronic cigarettes on various aspects of oral health.

States in Which Adults Currently Use E-Cigarettes in 2021

Variable calculated from one or more Behavioral Risk Factor Surveillance Survey questions (Crude Prevalence)



* Prevalence estimate not available if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3 or if the state did not collect data for that calendar year.

** Median value reported with no confidence intervals.

Data Source: [Behavioral Risk Factor Surveillance System \(BRFSS\)](#)



Individuals who use e-cigarettes are **significantly more likely** to report having **periodontal (gum) disease** compared to those who do not smoke or use other nicotine products.^{13, 14}



E-cigarette use is linked with **signs of periodontal disease** such as increased plaque, deeper periodontal pockets around the teeth, and bone loss.¹⁵⁻¹⁷



Oral lesions such as **nicotine stomatitis** (“smoker’s palate”), **hairy tongue** (discoloration of the tongue), and **angular cheilitis** (sores in the corners of the mouth) **are commonly seen** in the mouths of individuals using e-cigarettes.¹⁸



There is growing evidence that individuals who use e-cigarettes are at a **higher risk for dental caries** (decay), potentially because of sugars (such as sucrose) used in the flavoring of some e-cigarette liquids that may increase risk of caries.^{19, 20}



Currently, no long-term studies exist showing a direct relationship between e-cigarette use and oral cancer.²¹ **However, researchers describe “an array of environmental toxins” in e-cigarettes “that considerably exceed federal occupational exposure limits”²² and may place users at higher risk for oral cancer after prolonged exposure to e-cigarettes.**

Because of the risks to oral health posed by e-cigarette use, the American Dental Association encourages oral health professionals to [ask their patients about their e-cigarette use](#) and offer them resources regarding cessation treatment options.²³ These resources can include behavioral and pharmacological options, such as those suggested by the [American Lung Association](#).²⁴

A significant health concern with e-cigarette use among young people is the potential long-term neurologic effects of high levels of nicotine exposure on the developing brain.²⁵ As e-cigarette use is a particular cause for concern in youth, the [US Surgeon General](#) and the [CDC](#) provide resources about engaging in conversations with young people regarding the risks of e-cigarette use for health care providers, parents, teachers, and other concerned adults.²⁶

Oral health professionals have long been involved in encouraging tobacco cessation with their patients. The more evidence that emerges about the risks to oral health from e-cigarette use, the more important it becomes for dental professionals to discuss e-cigarette use with their patients.

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