



THE CANADIAN DENTAL
HYGIENISTS ASSOCIATION
L'ASSOCIATION CANADIENNE
DES HYGIÉNISTES DENTAIREs

CDHA Position Statement:

Vaping

Endorsed by CDHA's Board of Directors, February 2020





CDHA Position Statement

Vaping is the act of inhaling and exhaling vapour through the mouth. These vapours are produced by vaping devices such as electronic nicotine delivery systems (ENDS), electronic cigarettes (e-cigarettes) or vapes. According to the 2017 Canadian Tobacco, Alcohol, and Drug Survey, the prevalence of e-cigarette use is rising. Research suggests that nicotine, present in both regular cigarettes and e-cigarettes, may be as addictive as drugs such as heroin and cocaine.

Though e-cigarettes are relatively new products, there is already substantial evidence of various acute and chronic harms associated with the product. With information emerging continuously about health impacts, calls for regulation, and product variations, dental hygienists are encouraged to learn more about e-cigarettes, their use, and their possible effects on oral health to provide evidence-based advice to their clients. The Canadian Dental Hygienists Association (CDHA) recommends that dental hygienists continue to educate their clients on potential harms associated with vaping. Clients interested in quitting cigarette smoking should be assisted with evidence-based cessation treatments and behavioural supports. CDHA will continue to monitor emerging science and revise this position statement as appropriate.



▲ Adding e-juice to a vaping device

Background

Vaping is the act of inhaling and exhaling vapour through the mouth.¹ These vapours are produced by vaping devices such as electronic nicotine delivery systems (ENDS), electronic cigarettes (e-cigarettes) or vapes.²

In general, vaping devices such as e-cigarettes consist of a mouthpiece, a cartridge (chamber) containing the “e-liquid” or “e-juice,” a heating element, and a battery. The e-liquid, made up of propylene glycol, glycerin, flavours, and nicotine (usually), vaporizes upon heating and then condenses into an aerosol, which is then inhaled orally by the user.^{3,4}





Vaping devices vary widely in design and appearance and have evolved substantially since their introduction: from “cigalike” e-cigarettes, to modifiable tank-style e-cigarettes, to the recent emergence of a sleekly designed, high-tech device that imitates a computer flash drive and can be recharged at a USB port.⁵ The latter incorporates nicotine salts in a novel product design resulting in higher nicotine content; the product has gained popularity among youth and its market share has grown significantly since its emergence in 2015.^{5,6}



▲ *Vaping devices come in many shapes and colours*

The constituents of e-cigarettes are currently not regulated and, thus, vary greatly. According to a 2018 National Academies of Sciences, Engineering, and Medicine (NASEM) report, researchers have identified 113 chemicals in 50 brands of e-liquids. Additional compounds are found in aerosols as some chemicals are generated during the heating or vapourization of e-liquids.⁷

As the terminology used for e-cigarettes and their components is not standardized, surveillance of such products and the examination of patterns of usage are challenging.⁸ More importantly, it is difficult for consumers to know what they are inhaling and, subsequently, what the health risks are.



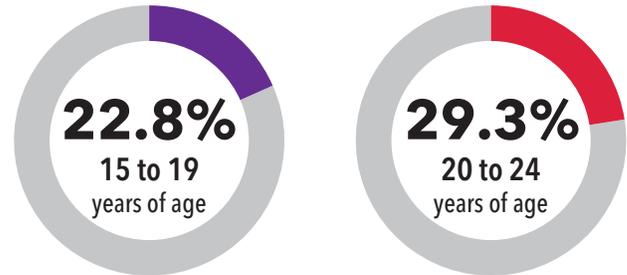
▲ *Sleekly designed modern e-cigarette*



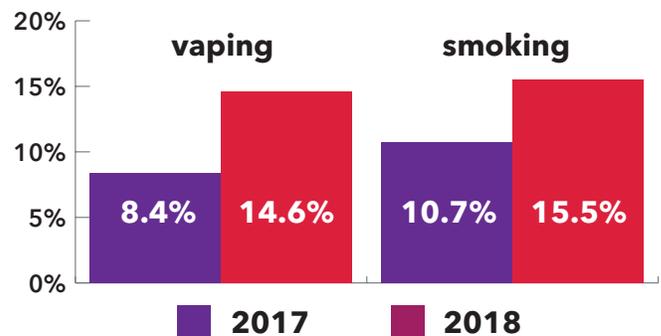
Prevalence

According to the 2017 Canadian Tobacco, Alcohol and Drug Survey (CTADS), the prevalence of e-cigarette use is rising. In 2017, 15.4% of Canadians (approximately 4.6 million people) ages 15 and older reported having ever tried an e-cigarette; 2.9% (approximately 863,000) reported using one in the past 30 days; and 1.0% (approximately 292,000) reported daily use.⁹ The usage of e-cigarettes is most prevalent among younger age groups: 22.8% of youth ages 15 to 19 and 29.3% of young adults ages 20 to 24.⁹

From 2017 to 2018, among 16- to 19-year-old Canadians, the prevalence of vaping in the past 30 days increased from 8.4% to 14.6% (an increase of 74%), while cigarette smoking increased from 10.7% to 15.5% (an increase of 45%). Surveys up to and including 2017 had shown a continuing decline in youth smoking, so this reversing trend is concerning. The Canadian Cancer Society has called for immediate government action to address this troubling increase in youth vaping in Canada.¹⁰



▲ Use of e-cigarettes among younger age groups



▲ Increase in vaping and cigarette use among 16- to 19-year-old Canadians

The Issues

- The emergence of e-cigarettes has prompted debate among health care professionals. As a harm-reduction strategy, e-cigarettes are viewed by some as a public health win, while others express concern that e-cigarettes offer a gateway to smoking and substance use, warning people of an emerging public health epidemic.¹¹ In such a situation, it is challenging for all health professionals, including those in oral health, to take a stance and educate their patients.¹¹
- E-cigarettes can lead to nicotine addiction among the young, as it affects the development of the brain's reward system.¹² According to reports from NASEM and Public Health England, as well as systematic reviews published in leading academic journals, there is substantial evidence that e-cigarette use among youth and young adults increases the risk of cigarette smoking initiation and ever using regular cigarettes.¹³⁻¹⁶ Research suggests that nicotine, present in both regular cigarettes and e-cigarettes, may be as addictive as drugs such as heroin and cocaine. Concerning as well is the fact that many e-cigarette users are exposed to even more nicotine than in regular cigarettes when consuming extra-strength cartridges containing a higher concentration of nicotine, or when increasing the e-cigarette's voltage to get a greater hit of the substance.¹⁷





- E-cigarettes can be used to vape both illegal and legal drugs, such as cannabis,¹⁸ which adds to potential population health risks, leads to the management of increasingly complex health effects by clinicians, and makes it difficult to police illegal drugs due to potential altered characteristic smells and storage within e-cigarette fluids.^{19,20}



- Some literature suggests that vaping is at least 95% less harmful than regular cigarette smoking.¹⁴ However, these studies do not specify for which health conditions vaping is considered to be less harmful. It is important to note that harm reduction should not be observed simply from the viewpoint of those health conditions (such as cardiovascular and respiratory diseases, stroke or cancers) for which there is conclusive evidence of causation due to regular cigarette consumption. Given other emerging health conditions, such as lung injuries and “popcorn” lung, as well as the dangers of explosions, poisonings, and the potential for vaping-related death, it is not appropriate to call e-cigarettes a harm-reduction strategy. Recently, the US Centers for Disease Control and Prevention reported 2,290 cases of e-cigarette or vaping product use-associated lung injury (EVALI) and 47 deaths (as of November 20, 2019), and have declared vaping illness an epidemic.²¹



- Studies show that second-hand e-cigarette aerosols can increase the risk of asthma, heart disease, and lung cancer, and decrease lung function, but long-term studies on chronic health conditions are not yet available.²² The levels of particulate matter from e-cigarette aerosols depend on various environmental conditions such as room size, the number of active e-cigarettes/users, and the type of e-cigarette used.²³ More research is needed on health risks from second-hand exposure to e-cigarette aerosols in various indoor and outdoor environments.⁶
- E-cigarettes are marketed as a less harmful alternative to regular cigarettes and also as an aid to smoking cessation. As a result, e-cigarettes are being used by regular cigarette smokers to quit smoking. However, it is unknown if smokers are able to quit smoking or if they develop a dual-use (using both e-cigarette and regular cigarettes) habit or just continue using regular cigarettes.
- The increase in the number and popularity of vaping devices has outpaced the growth in research. Gaps in knowledge about the harms and potential benefits of e-cigarette use, the lack of standardization in production, and the variety of e-liquids available have led to confusion among the public about safety and the potential dangers of usage and second-hand vapour. In addition, there is uncertainty among legislators regarding how to regulate vaping devices.



Considerations for Oral Health Professionals

- The safety aspects and potential health effects of e-cigarettes should be considered in isolation and not as a comparator to any other product; just because one product (regular combustible cigarettes) is proven to be harmful and there is insufficient evidence of the harms associated with a new product, one should not consider it to be a safer alternative.
- Though e-cigarettes are relatively new, there is already substantial evidence of acute and chronic harms associated with their use. Several deaths have also been associated with the use of e-cigarettes.²¹ In such an environment, it would be irresponsible to consider them as a harm reduction strategy.
- With information emerging continuously about the health impacts of vaping, calls for regulation, and growing product variation, oral health professionals are encouraged to learn more about e-cigarettes, their use, and their possible effect on oral health, and to provide evidence-based advice to their clients.^{24,26}
- E-cigarette use and type (with or without nicotine) should be discussed with clients and recorded in the client chart.^{25,26}
- Oral health professionals are encouraged to discuss substance use and addiction with clients who use e-cigarettes. In the early stages, clients may be more receptive to recognizing and addressing the signs of substance use disorder before the condition begins or worsens.²⁵
- Although research on the oral health effects of vaping is limited, the emerging evidence suggests it is important to monitor clients who use e-cigarettes for any alterations in their oral cavity, such as saliva thickening, unusual oral ulcers, gingival and periodontal changes, and caries prevalence.²⁵
- Oral health professionals should keep abreast of the research on the effectiveness of e-cigarettes (with or without nicotine) as a smoking cessation aid. In the absence of any conclusive evidence of the effectiveness of e-cigarettes, there is a need to focus future research on the effect of e-cigarettes in combination with other cessation therapies, such as behaviour therapy and prescription medication²³, as well as the identification of groups for which e-cigarettes may be more effective as a cessation aid.⁶ As part of their ongoing communication with clients, oral health professionals can assess the efficacy of vaping in smoking cessation.²⁷

Current Regulation

Vaping products in Canada are regulated under the Tobacco and Vaping Products Act (TVPA) and either the Food and Drugs Act (FDA) or the Canada Consumer Product Safety Act (CCPSA), depending on whether or not the product is marketed for therapeutic use.²⁸

Currently, e-cigarettes are legal for individual use. There are no restrictions at the federal level on the use of e-cigarettes or the sale of e-cigarettes and vaping accessories in Canada. The regulations that are currently in place are either at the provincial or municipal level.²⁸

Nova Scotia was the first province to regulate the use of e-cigarettes, passing legislation that came into effect on May 31, 2015. Currently, Alberta, the Northwest Territories, and Yukon are the only provincial and territorial jurisdictions yet to impose any regulations. Among those jurisdictions that have enacted regulations, there are significant inconsistencies in policy approaches.^{28,29} For example, the minimum age for consuming e-cigarettes is 18 years in Quebec and Manitoba, but 19 years in other jurisdictions; Nunavut's legislation has no mention of age restrictions.





Recommendations

In the absence of sufficient high-quality evidence demonstrating the safety of e-cigarettes and their role in smoking cessation, and given emerging concerns about health risks, federal, provincial/territorial, and municipal governments must take steps to minimize the potential negative public health consequences of these products, particularly for youth.^{4,30} CDHA recommends that e-cigarettes with and without nicotine be subject to the following regulatory controls^{2,4,8}:



- A ban on e-cigarette sales to minors, and an increase in the minimum age to purchase both regular and e-cigarettes to 21 years
- A ban on e-cigarette sales wherever tobacco sales are prohibited
- A ban on flavourings in cartridges and e-liquids, especially those that are directly marketed to youth (e.g., bubble gum or candy flavour)
- A ban on colourful and deceptive packaging of e-cigarettes and flavoured e-liquids
- Inclusion of potential health risks from vaping on packaging of e-cigarettes
- A ban on any advertising that misrepresents the characteristics and health hazards of e-cigarettes
- Regulation of the constituents of e-cigarettes to minimize toxic additives in e-liquids
- A ban on e-cigarette use in public places, workplaces, and all other areas where smoking is banned

CDHA also recommends enhanced surveillance of e-cigarette use in national and provincial survey data collection and monitoring, as well as further research on the safety, youth uptake, potential role in smoking cessation, and long-term health and societal effects of e-cigarettes.

Since e-cigarettes can lead to nicotine addiction and are not approved as a smoking cessation aid in Canada, health care providers should continue to educate their clients on potential harms, including death, associated with vaping. Individuals interested in quitting tobacco smoking should be offered evidence-based cessation treatments and behavioural supports. CDHA will continue to monitor emerging science and revise this position statement as appropriate.





References

1. Center on Addiction. *What is Vaping?* [Internet] October 2018 [cited 2019 Oct 9]. Available from: <https://www.centeronaddiction.org/e-cigarettes/recreational-vaping/what-vaping>
2. Heart and Stroke Foundation. *E-cigarettes in Canada* [Position statement]. Ottawa: Heart and Stroke Foundation; 2018 [cited 2019 Oct 9]. Available from: <https://www.heartandstroke.ca/-/media/pdf-files/position-statements/ecigarettesincanada.ashx?la=en&hash=8939FF52C37A5E11C551176982F2E4AC5D38D605>
3. Government of Canada. About Vaping [Internet] [cited 2019 Oct 9]. Available from: <https://www.canada.ca/en/health-canada/services/smoking-tobacco/vaping.html>
4. Canadian Dental Hygienists Association. *CDHA position statement on e-cigarettes*. Ottawa: CDHA; 2015. Available from: <https://files.cdha.ca/Profession/Resources/e-cig-position-paper.pdf>
5. Huang J, Duan Z, Kwok J, Binns S, Vera LE, Kim Y, Szczycka G, Emery SL. Vaping versus JUULing: How the extraordinary growth and marketing of JUUL transformed the US retail e-cigarette market. *Tob Control*. 2019;28(2):146-51.
6. Ontario Agency for Health Protection and Promotion (Public Health Ontario), Berenbaum E, Keller-Olaman S, Manson H, Moloughney B, Muir S, Simms C, Singh H, Watson K. Current evidence on e-cigarettes: A summary of potential impacts. Toronto, ON: Queen's Printer for Ontario; 2018.
7. National Academies of Sciences, Engineering, and Medicine. Chapter 5: Toxicology of e-cigarette constituents. In: *Public health consequences of e-cigarettes*. Washington, DC: National Academies Press; 2018. pp. 155-216.
8. Canadian Public Health Association. *A public health approach to nicotine-containing vaping devices* [Position statement]. Ottawa: CPHA; 2018. Available from: https://www.cpha.ca/sites/default/files/uploads/policy/positionstatements/vaping-devices-position-statement_e.pdf
9. Government of Canada. Canadian Tobacco, Alcohol and Drugs Survey (CTADS): Summary of Results for 2017 [Internet]. Available from: <https://www.canada.ca/en/health-canada/services/canadian-tobacco-alcohol-drugs-survey/2017-summary.html>
10. Canadian Cancer Society. Study finds dramatic 74% increase in youth vaping in Canada [media release], June 20, 2019 [cited 2019 Oct 9]. Available from: <https://www.cancer.ca/en/about-us/for-media/media-releases/national/2019/youth-vaping/?region=qc>
11. Martín Carreras-Presas C, Naeim M, Hsiou D, Somacarrera Pérez ML, Messadi DV. The need to educate future dental professionals on E-cigarette effects. *Eur J Dent Educ*. 2018;22(4):e751-e758.
12. National Institute of Drug Abuse, National Institutes of Health, US Department of Health & Human Services. *Vaping Devices (Electronic Cigarettes)* [Internet] 2020. Available from: <https://www.drugabuse.gov/publications/drugfacts/electronic-cigarettes-e-cigarettes>
13. National Academies of Sciences, Engineering, and Medicine. Chapter 16: Combustible Tobacco Cigarette Smoking Among Youth and Young Adults. In: *Public health consequences of e-cigarettes*. Washington, DC: National Academies Press; 2018. pp. 493-540.
14. McNeill A, Brose LS, Calder R, Bauld L, Robson D. *Evidence review of e-cigarettes and heated tobacco products 2018*. London, UK: Public Health England; 2018 [cited 2019 Oct 15]. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/684963/Evidence_review_of_e-cigarettes_and_heated_tobacco_products_2018.pdf
15. Soneji S, Barrington-Trimis JL, Wills TA, Leventhal AM, Unger JB, Gibson LA, et al. Association between initial use of e-cigarettes and subsequent cigarette smoking among adolescents and young adults: A systematic review and meta-analysis. *JAMA Pediatr*. 2017;171(8):788-97.
16. Chatterjee K, Alzghoul B, Innabi A, Meena N. Is vaping a gateway to smoking: A review of the longitudinal studies. *Int J Adolesc Med Health*. 2016 Aug 9;30(3).
17. John Hopkins Medicine. 5 Vaping Facts You Need to Know [Internet] [cited 2019 Oct 15]. Available from: <https://www.hopkinsmedicine.org/health/wellness-and-prevention/5-truths-you-need-to-know-about-vaping>
18. Centers for Disease Control and Prevention (CDC). About Electronic Cigarettes (E-Cigarettes) [Internet] 2020. Available from: https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html
19. Breitbarth AK, Morgan J, Jones AL. E-cigarettes—An unintended illicit drug delivery system. *Drug Alcohol Depend*. 2018;192:98-111.
20. Oyemade A. The drug trend conundrum. *Innov Clin Neurosci*. 2016;13(3-4):11-12.
21. Centers for Disease Control and Prevention. Outbreak of Lung Injury Associated with the Use of E-Cigarette, or Vaping, Products [Internet] 2020 [cited 2019 Nov 25]. Available from: https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html
22. Papaefstathiou E, Stylianou M, Agapiou A. Main and side stream effects of electronic cigarettes. *J Environ Manage*. 2019;238:10-17.
23. Diemert L, Bayoumy D, Pelletier H, Schwartz R, O'Connor S. *E-cigarette use for smoking cessation: scientific evidence and smokers' experiences*. Toronto, ON: Ontario Tobacco Research Unit; February 2019.
24. Chaffee BW. Electronic cigarettes: Trends, health effects and advising patients amid uncertainty. *J Calif Dent Assoc*. 2019 Feb;47(2):85-92.
25. Rouabhia M. *Evidence synthesis: Effects of e-cigarette use on oral health*. Ottawa: Office of the Chief Dental Officer; 2019.
26. Office of the Surgeon General. *Surgeon General's advisory on e-cigarette use among youth*. 2018 [cited 2019 Nov 20]. Available from: <https://e-cigarettes.surgeongeneral.gov/documents/surgeon-generals-advisory-on-e-cigarette-use-among-youth-2018.pdf>
27. Worku D, Worku E. A narrative review evaluating the safety and efficacy of e-cigarettes as a newly marketed smoking cessation tool. *SAGE Open Med*. 2019;7:2050312119871405.
28. Canadian Vaping Info. *Canadian E-cigarette & Vaping Laws* [Internet] [cited 2019 Nov 20]. Available from: <https://canavapes.com/info/canadian-e-cigarette-laws.html>
29. Canadian Press. A brief look at provincial approaches to vaping regulations. November 20, 2019 [cited 2019 Nov 20]. Available from: <https://www.winnipegfreepress.com/arts-and-life/life/health/a-brief-look-at-provincial-approaches-to-vaping-regulations-565834362.html>
30. Brandon TH, Goniewicz ML, Hanna NH, Hatsukami DK, Herbst RS, Hobin JA, et al. Electronic nicotine delivery systems: A policy statement from the American Association for Cancer Research and the American Society of Clinical Oncology. *J Clin Oncol*. 2015;33(8):952-63.

