



Vaping and Oral Health: The Developing Crisis

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A new challenge to oral and overall health has emerged: vaping nicotine products. Unfortunately, while dental hygienists can draw on a robust catalogue of scientific evidence when speaking with their clients about the risks of traditional cigarette smoking, they do not have access to the same amount of research required to navigate this relatively new challenge to oral and overall health.

Vaping was once marketed as a “safe alternative” to cigarettes and their by-products. However, developing evidence demonstrates that the safety profile of vaping products may not be as benign as previously believed.¹ In addition, there are vaping risks and oral and overall health effects that are of particular concern to the teenager and twenty-something demographic who use such products.^{2,3} Dental hygienists and other health care professionals often refrain from discussing vaping with their clients either because it may be perceived as a sensitive topic or because they feel that they lack sufficient knowledge on the subject.^{4,5} The objective of this article is to provide an evidence-based starting point for dental hygienists so they can confidently address vaping with their clients. Early recognition and strategic intervention strategies are essential in developing efforts to maximize oral and overall health.^{4,5}

Dental hygienists, with their expertise in oral disease prevention, health education, and health promotion, should be at the forefront of efforts to address vaping. Vaping involves inhaling and exhaling an aerosol created by a battery-powered device often referred to as a vape or e-cigarette. Most vaping substances contain a mixture of flavouring chemicals dissolved in propylene glycol or glycerol with either low or high levels of nicotine. These chemicals are considered safe in their conventional non-aerosolized and non-heated applications in food products and cosmetics. However, the long-term health consequences of inhaling these aerosolized chemicals for the human body are unknown.⁶ E-cigarettes were originally marketed as a “safer” alternative to smoking, and for adult users preliminary evidence suggests vaping may be less harmful than smoking.⁷⁻⁹ There is some preliminary evidence that switching from cigarette smoking to vaping may improve smoking cessation rates among adult smokers. However, it remains unclear how vaping compares with approved nicotine-replacement options like the “patch”

or chewing gum.¹⁰ From a health care perspective, it is important to note that, while vaping may be objectively less harmful than combustible cigarettes, it certainly is not harmless and at this stage the long-term health consequences remain unknown.



The rapid encouragement of vaping as a tool to help smokers stop smoking has occurred without any science or evidence-based assessment of the impact of vaping on overall health. Reports have emerged recently of severe cases of lung injury associated with vaping, with deaths also being reported to be associated with vaping in the United States.¹¹ Research comparing the effects of vaping to smoking also shows that vaping is just as detrimental to wound healing as smoking.¹² The adverse health effects of vaping raise serious concerns for young people, who view vaping as safer than cigarette smoking. Given the dramatic rise of vaping among still-growing teenagers in whom the impact of this toxic habit has yet to be fully elucidated, the situation is even more alarming.



▲ Marketing strategies targeting impressionable youth are creating a public health crisis.

With the mouth being the gateway into the body, the oral cavity allows us the opportunity to observe the potential impact of this new nicotine delivery device on healthy tissues directly. Vaping has been shown to deliver not only many of the same toxins as smoking, but also additional toxicants, carcinogens, and organic compounds produced through thermal decomposition of the solvents used in the devices. Case reports have suggested that vaping may significantly affect the oral tissues by increasing the risk of gingival recession, periodontal diseases, and oral carcinoma.¹³

As connections between oral and overall health continue to strengthen, dental hygienists with an increasing interdisciplinary role and strong skill set emphasizing disease prevention and health promotion have the potential to play an essential role in reducing the harms associated with vaping. Vaping manufacturers with their insidious marketing geared towards impressionable youth have created what public health departments have deemed a public health crisis.¹⁴ Even with this bold declaration from public health departments, dental hygienists may be hesitant to address vaping with their clients. Yet dental hygienists can build professional confidence by drawing upon their personal autonomy and therapeutic communication and research skills. By tapping into skill sets that have proven successful when broaching topics regularly addressed in practice environments, such as the bidirectional relationship between diabetes and periodontal disease or tobacco use, dental hygienists can initiate the vaping discussion with clients in an effort to improve health outcomes.

A suitable starting point for dental hygienists could be to apply strategies used for a tobacco dialogue to their vaping conversations. By doing so, dental hygienists are drawing from evidence-based information and educating and empowering their clients. Dental hygienists can incorporate the 5As (ask, advise, assess, assist, arrange) (Table 1) into their discussions with clients. Analysis of the 5As can help a dental hygienist consider reasons why a client has selected vaping products, habit patterns, and position the dental hygienist as an empathetic health care provider willing to help.¹⁵

Therapeutic communication can be further augmented through appreciation of the transtheoretical model or “stages” of change. A sound understanding of this model, its strengths and limitations, can enhance understanding of how, why, and when people are ready to change behaviours that challenge health.¹⁶ The social science behind the transtheoretical model enriches the roles of the dental hygienist as a communicator, collaborator, and change agent, as this understanding of behaviour change can be applied to any behaviour that challenges oral and overall health, ranging from choosing cariogenic foods to vaping. Furthermore, evidence points to the fact that stage-specific intervention strategies may be most effective.¹⁶ Successful application of suggested stage-specific strategies (Table 2) reduces intervention redundancy and ensures adequate resource allocation to meet client needs best.¹⁶ High-quality fact sheets to review and share with clients are available through the Government of Canada and US Centers for Disease Control and Prevention websites. Resources such as thetruth.com utilize mobile text messaging to bring about behaviour change in relation to youth and vaping. The Truth Initiative’s esthetic is especially appealing to teenagers, and the health promotion strategy

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Table 1. A Vaping Discussion Starting Point for Dental Hygienists

	Action	Potential Strategies
<p>ASK</p> <p>Systematically identify all vaping users at every visit.</p>	<ul style="list-style-type: none"> ▶ ASK all clients about vaping at every encounter and document. ▶ Make it routine. 	<ul style="list-style-type: none"> ▶ Keep the conversation simple and empathetic, avoid accusations. ▶ For adults and teens who do not use vaping products, congratulate on their healthy choice.
<p>ADVISE</p> <p>Consider actions taken here in relation to the age of the user.</p> <p>Level of risk is much greater in teens.</p>	<ul style="list-style-type: none"> ▶ For adults who use conventional cigarettes and are interested in switching to vaping, advise vaping is less harmful than cigarettes but not without risks. ▶ Consider other nicotine replacement options. ▶ Vaping has not been approved by Health Canada as a smoking cessation method. 	<ul style="list-style-type: none"> ▶ Advice should be clear, strong, and personalized.
<ul style="list-style-type: none"> ▶ For teens who use vaping products, empathetically advise to stop immediately. ▶ Consider the social factors contributing to the behaviour, such as peer pressure or low self-esteem. ▶ Consider an interdisciplinary approach, such as referral to a medical doctor, psychologist, social worker or evidence-based health promotion initiative. 		
<p>ASSESS</p> <p>Determine readiness to stop vaping.</p>	<ul style="list-style-type: none"> ▶ “Would you like to stop vaping?” 	<ul style="list-style-type: none"> ▶ Determine “stage of change” and consider motivational strategies specific to stage of change. ▶ For patients ready to stop move to ASSIST and ARRANGE.
<p>ASSIST</p> <p>Help the client develop a quit plan.</p>	<ul style="list-style-type: none"> ▶ Help develop a plan to stop, set a “quit date.” ▶ Discuss Health Canada approved nicotine replacement options. ▶ Provide supplementary material (Government of Canada, Centers for Disease Control and Prevention, dentalhygienecanada.ca/vaping). 	<ul style="list-style-type: none"> ▶ Have a list of potential community-based counselling services on hand and be prepared to make a referral.
<p>ARRANGE</p> <p>Schedule a follow-up or referral to a specialist for support.</p>		

Adapted from: World Health Organization. *Toolkit for delivering the 5A's and 5R's brief tobacco interventions in primary care*. Geneva: World Health Organization; 2014.

of using cell phones to communicate health information is supported by sound research.¹⁷ Furthermore, dental hygienists can always recommend and collaborate with other health care professionals on nicotine replacement therapies such as the nicotine patch, nicotine gum or counselling services in an effort to address underlying social issues surrounding vaping and reduce physiologic dependence on nicotine.

Upon reviewing all of the available information on vaping, several significant themes emerge. Vaping is not without health risks; it is not as innocuous as corporations and strategic marketing campaigns have led consumers to believe. Consumers rely on their health care providers, such as dental hygienists, to provide reliable, up-to-date health information. Dental hygienists are effective communicators and trusted health care providers and can tap into existing knowledge and scientific evidence to provide a suitable framework for discussing vaping with their clients. The declaration of vaping as a public health concern and the growing evidence of its oral and systemic health consequences emphasizes the necessity for the dental hygiene profession to address this developing crisis with our clients.



▲ A vaping device charges by USB on a laptop

Table 2. Evidence-Based Motivational Strategies for Each Stage of Change

Precontemplation <i>Not yet considering change</i>	Build rapport and nurture trust, express genuine concern, and keep the “door open” for future discussion. Discuss facts.
Contemplation <i>Considering the possibility of change</i>	Help “tip the scale” towards change, consider client’s personal values in relation to change.
Preparation <i>Ready to make a change in the near future</i>	Set concrete goals, offer options.
Action <i>Actively taking steps to change, but not yet stable</i>	Encourage client to continue with positive behaviour change, help to identify high-risk situations and appropriate coping strategies.
Maintenance <i>Met short-term goals, working to maintain gains</i>	Continue support, review long-term goals.
Recurrence/Relapse	Reframe the recurrence as a learning opportunity.

Adapted from: Center for Substance Abuse Treatment. Motivation and intervention, Chapter 2 [Figure 2-2: Appropriate Motivational Strategies for Each Stage of Change]. In: *Enhancing motivation for change in substance abuse treatment*. Treatment Improvement Protocol (TIP) Series, No. 35. Rockville (MD): Substance Abuse and Mental Health Services Administration (US); 1999. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK64963/table/A62587/>

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RECOMMENDED WEBSITES

<https://www.thetruth.com/categories/vaping/fact>

https://www.cdc.gov/tobacco/basic_information/e-cigarettes/index.htm

www.dentalhygienecanada.ca/vaping

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