



E-cigarettes in Canada

All levels of government need to protect people in Canada against possible harms of e-cigarette use and commission further research to better understand usage trends, product safety and determine potential cessation benefits.

Problem

Electronic nicotine delivery systems, electronic cigarettes (e-cigarettes), or vapes are a relatively new product category, which first emerged in 2004. E-cigarettes have been growing in use and are a source of great debate among public health advocates and in the media. As a recently regulated product in Canada, people are interested in knowing more about the associated implications, including the potential health consequences and benefits. Heart & Stroke believes that people in Canada deserve accurate information to make informed decisions, and government policies to protect them against possible harms and to maximize any potential benefits related to e-cigarette use in Canada.

Facts

- E-cigarettes are battery-operated devices that mimic the smoking experience using an inhalation and heating process that vapourizes fluid within the device. The liquid solution varies in composition but it is usually propylene or vegetable glycol based and can be combined with other ingredients and flavours. Nicotine can also be present or not.
- E-cigarettes containing nicotine are now legal in Canada since the passage of Bill S-5 in May, 2018. This legislation legalized e-cigarettes with nicotine for adults in Canada, and established a regulatory framework that included marketing restrictions and safety standards.

- Emerging evidence demonstrates that e-cigarettes are less harmful than conventional cigarettes.¹ Through the legalization of e-cigarettes containing nicotine, there is improved access to e-cigarettes for current smokers, therefore allowing adults more choice around alternative methods of nicotine intake and/or tobacco cessation.
- While early studies demonstrated some potential benefits to e-cigarettes as a smoking cessation device, current research remains inconclusive and the body of evidence is rapidly growing and shifting.^{2,3}
- Research shows that it would be less harmful to quit smoking completely, rather than use both e-cigarettes and tobacco (known as dual use).^{4,5} Individuals who have tried other ways to quit smoking without success could try e-cigarettes. Those unable to quit smoking would be better off using e-cigarettes over the long-term, rather than continuing to smoke regular cigarettes.
- Health concerns have arisen with these products¹, because the long-term health effects of inhaling propylene or vegetable glycol and the effects of second-hand exposure are unknown.
- E-cigarette use is associated with an increased risk of heart attack and the use of both conventional cigarettes and e-cigarettes is associated with a compounded risk of heart attack.⁶
- Reports of child poisoning due to accidental exposure and consumption of e-liquids are on the rise.⁷ There are also some cases of e-cigarette users being burnt by exploding devices.⁸ Recent federal legislation includes the introduction of product safety standards, including child-resistant packaging.
- Evidence shows that nicotine use in youth and adolescents particularly, can damage the developing brain.^{9,10}
- Emerging evidence indicates that there is potential for e-cigarettes to be a gateway to tobacco use and nicotine addiction.^{11,12}
- Marketing and promotion of e-cigarettes is common.^{13,14} Youth are targeted with the addition of attractive candy or fruit flavours. The e-cigarette industry has also expanded marketing tactics to promote lifestyle use across the world, partly by framing it as a method for individuals to exercise their liberty to “vape” where and when they choose.
- Emerging research showing that e-cigarettes could renormalize and undermine tobacco control and smoking cessation efforts.⁸
- E-cigarettes are appealing to youth with 23% of students in Canada reporting having ever tried an e-cigarette.¹⁵ Studies also show that more teens are using e-cigarettes as they see them as “cool” or “fun”.¹⁶

- Various Canadian and international jurisdictions are addressing e-cigarette use in public places in order to maintain progress in tobacco control and also to supplement clean air initiatives.
- The most common type of e-cigarette use in Canada is dual use – where a person both vapes and smokes combustible tobacco.¹⁷ This could be problematic as it might maintain tobacco use and nicotine addiction over complete smoking cessation.¹⁸

Background

Overview

E-cigarettes, also known as vaping products, are battery-operated devices which mimic the smoking experience using an inhalation process that vapourizes fluid within the device. These non-combustible products do not include tobacco; however, the liquid solution in e-cigarettes may or may not contain nicotine. The liquid solution varies in composition but is usually propylene or vegetable glycol based and can be combined with other ingredients and flavours.

Legal status in Canada

E-cigarettes with or without nicotine are legal in Canada. In May 2018, Bill S-5: An Act to amend the Tobacco Act and Non-smokers' Health Act received Royal Assent, which established a new legislative framework to regulate the manufacturing, sale, labelling and promotions of vaping products in Canada. Sales of vaping products containing nicotine are permitted to adults 18 years of age and older.

Safety requirements and health risks

Health Canada is currently moving forward to establish formal safety requirements for vaping product development, ingredient disclosure, information on nicotine levels and thresholds and ‘risk of use’ statements in Canada. This is necessary as research has shown that the concentrations of nicotine levels vary in different e-liquids.¹⁹ An Ontario study assessing vaping products at retail outlets determined that it was common for products to be mislabeled, as 27 percent of products labelled as ‘with nicotine’ had concentrations above of what was labelled.²⁰ In some instances, testing has shown that e-cigarette products labelled as nicotine-free do in fact contain nicotine.¹⁵ As e-cigarettes are a relatively new product, there is a lack of research on the long-term health effects of inhaling propylene glycol or other ingredients in e-cigarettes as well as the health consequences from second-hand exposure. Knowledge about the long-term effects of e-cigarette nicotine addiction is also limited. There is sufficient evidence indicating that long-term use of e-cigarettes is likely to pose some direct health risks to users related to respiratory and cardiovascular disease, although the precise level of risk is not currently



known.^{1,21} However, the risks from e-cigarettes are likely lower than the risks of smoking combustible tobacco. A recent study found that daily e-cigarette use was associated with increased risk (almost doubling the odds) of heart attack even when adjusting for traditional risk factors including smoking conventional cigarettes.⁶ Dual use of both e-cigarettes and conventional cigarettes daily – the most common pattern of use – was associated with a five-fold risk of heart attack compared to those who do not use either product.⁶ Dual use was found to be more harmful than using either product in isolation.⁶

There is an agreement among many from the public health community in Canada, such as the Canadian Cancer Society and Canadian Lung Association, that while e-cigarettes are less harmful than conventional cigarettes, they are not without their harms. Heart & Stroke acknowledges that e-cigarettes are less harmful than combustible tobacco and we support improved access to e-cigarettes for current smokers, thus allowing adults more choice to support tobacco cessation.

Some health organizations have endorsed the statement that “e-cigarettes are 95 per cent safer than cigarettes.” This statement is not verified by critically appraised evidence, and the authors of the study claimed conflicts of interest due to previous partnerships with e-cigarette industry distributors.^{22,23} Furthermore, this “95%” calculation comes from subjective opinions of a select group of individuals; hence the study design is biased. There needs to be more ongoing research into the health effects of e-cigarettes when compared to smoking combustible tobacco products.

Given the lack of research on long-term health effects of vaping products and their addictive nature, e-cigarettes should not be used by youth, by non-smokers, or by ex-smokers who have quit altogether.

E-cigarettes as a potential cessation aid

Heart & Stroke encourages people to strive for complete cessation as the best means of reducing the burden of tobacco-related illness. Experts agree that complete tobacco cessation over the long term, rather than reducing the number of cigarettes smoked per day, is the most effective way to reduce risk for disease and premature death.²⁴ We recommend people in Canada use cessation tools like nicotine replacement therapy (NRT), quit medications/pharmaceuticals and/or counselling. There is sufficient evidence to support that NRT through skin and mouth (the patch and gum) is effective to aid smokers in quitting. NRT through vapour may be more effective as the nicotine delivery is more efficient than the patch or gum, and it simulates the smoking experience.²⁵ Early research studies have demonstrated that many smokers are using e-cigarettes as a way to stop smoking, and smokers have referred to e-cigarettes as a useful cessation device; however the effectiveness as a cessation tool at the population level is still unknown.

Research is divided on whether e-cigarettes can be considered a useful smoking cessation device. This lack of consensus is partly due to rapidly evolving e-cigarette technology and a lack of standardization in the e-cigarette products studied, which makes it challenging to compare results across studies. Some

research shows e-cigarettes to be useful in quit attempts, while other research shows that smokers are unsatisfied with the new devices and return to smoking tobacco cigarettes or maintain dual use of e-cigarettes and conventional cigarettes.²⁶ A recent review demonstrated that e-cigarettes with nicotine (vs. those without nicotine) increased quitting.²⁶ However, the evidence quality was deemed low, supporting the need for more research with both larger samples and modern products.²⁷

Research shows that it would be healthier to quit smoking completely, rather than use both e-cigarettes and tobacco (known as dual use).²⁸ The best approach would be to stop smoking altogether, with behavioural support and/or cessation aids increasing the chance of success. Those who have tried other ways to quit smoking without success, could try e-cigarettes. Those unable to quit smoking, would be better off using e-cigarettes over the long-term, rather than continuing to smoke regular cigarettes.

Patterns of use

In 2015, 13% of people in Canada reported having tried an e-cigarette.²⁸ Youth (those aged 15-19 years) and young adults (aged 20-24 years) were found to have the highest rates of trying e-cigarettes at 6.3%.¹⁵ Between 2013 and 2015, use of e-cigarettes (ever use, recent use, and daily use) increased significantly.²⁹

Dual use of combustible tobacco and e-cigarettes is a topic of concern in Canada, as it is the most common pattern of e-cigarette use among smokers.¹⁶ Smokers also use e-cigarettes for different reasons.¹³ While some use e-cigarettes to quit, others use it instead of smoking cigarettes in smoke-free areas, which may have the effect of sustaining their smoking behaviours.

Sales and marketing of e-cigarettes

In Canada, it is illegal for manufacturers to make a health claim regarding an e-cigarette product's ability to aid in smoking cessation or to suggest that it is a safer alternative to smoking traditional combustible tobacco, unless the statements are authorized by Health Canada. Bill S-5 has also prohibited the promotion of vaping products that are appealing to youth, such as the promotion of flavours like confectionary or candy. The legislation also gives regulatory authority to Health Canada to mandate the application of consumer information, including health warning messages on vaping products.

Lifestyle marketing of vaping products has been prohibited in Canada through the passage of Bill S-5. However, it is easily found on the internet and social media, and often depicts cheerful and glamorous smokers taking back their right to smoke in public – representing e-cigarettes as a socially acceptable product free of stigmatization and guilt. This positioning is concerning because e-cigarettes are being marketed in a way that could undermine the hard-fought change

in social norms related to tobacco use, thus undermining progress in tobacco control. Furthermore, as there are no location-based restrictions of vaping product advertisements, youth can still be exposed to information or brand-preference advertisements in Canada. Though banned in Canada, celebrity e-cigarette endorsements are common and celebrities are often shown using e-cigarettes in entertainment programs, which act as a form of indirect endorsements. Increasing globalization and the growth of digital media, means that people in Canada can be exposed to e-cigarette marketing from countries where regulations are absent or less comprehensive.

Sales of e-cigarettes are growing rapidly in Canada and across the globe.^{3,29} Worldwide sales for e-cigarettes reached \$6 billion in 2014, with over a thousand e-liquid flavours available and more than 460 brands in the marketplace.³⁰ This has prompted an increasing number of tobacco manufacturers to purchase e-cigarette companies or to develop their own e-cigarette brands.

Youth and e-cigarettes

Studies looking at advertising effects on youth found that youth exposed to e-cigarette advertisements are more likely to try e-cigarettes, particularly when flavours are available.^{31,32} Marketing and promotion also target youth through the addition of attractive flavours like Hawaiian punch, bubble-gum and chocolate, as well as colourful design and packaging techniques. Devices are also being manufactured to look like everyday objects (such as USB memory sticks) in an attempt to hide vaping behaviour from teachers and parents.³³

Sales of vaping products to youth (below age 18) are prohibited in Canada. However, various studies have shown that users come from a variety of groups including children and youth, current-smokers as well as non-smokers.³⁴ E-cigarettes are appealing to youth.

Canadian student surveys from 2016-17 found that 23% of students in grade 7-12 reported ever trying an e-cigarette.¹⁵ This represents an increase from 20% found in 2014-15.¹⁵ An increase was also found in rates of recent e-cigarette use.¹⁵ Past 30 day (recent) use was reported among 10% of students, up 4% from 2014-15.¹⁵ For students in grades 10-12, recent use of e-cigarettes was 14.6%, increasing from 8.9% at 2 years prior.¹⁵ Recent use of e-cigarettes among upper year students is higher than recent use of conventional tobacco cigarettes (14.6% vs. 10.1%).¹⁵ Among all recent (past 30 day) student users, 11% indicated daily use of e-cigarettes and 57% indicated they had used an e-cigarette on 3 days or less.¹⁵ Of these same students, 17% identified as current smokers, 12% were former smokers, 35% were experimental smokers or puffers, and 36% reported that they had never tried a cigarette.¹⁵ Of the 13% students who had tried both tobacco cigarettes and e-cigarettes, 54% tried a cigarette first and 35% tried an e-cigarette first.¹⁵ However, the prevalence of trying an



e-cigarette first was higher among younger students than older students.¹⁵ Majority of students indicated it would be “fairly easy” or “very easy” to get an e-cigarette if they wanted one.¹⁵

Similar results have been found in US studies, indicating that youth and those youth not using tobacco are experimenting with e-cigarettes.³⁵ A Canadian study found that e-cigarette use among youth was linked with future tobacco cigarette smoking.³⁶ As e-cigarettes with nicotine are legalized and become more accessible and marketed in Canada, there are concerns about further increased use by youth.

Concerns around renormalization

E-cigarettes also have the potential to increase tobacco smoking by expanding the nicotine market among younger people and renormalizing smoking. There is concern that those who do not smoke tobacco cigarettes, but have started to vape e-cigarettes with nicotine, could potentially form a lifelong addiction to nicotine. Here, e-cigarettes could serve as a gateway for nicotine addiction and tobacco use. Studies conducted in the US and Canada have suggested that e-cigarette use in youth is associated with youth and adolescents taking up smoking combustible tobacco products in later years.^{32,37,38,39} Former smokers who use e-cigarettes might become accustomed to the nicotine intake and habit of smoking and return to smoking traditional tobacco cigarettes in the future. Federal Bill S-5, the Non-smokers' Health Act

has been amended to include vaping – this means vaping is prohibited in federally regulated workspaces and certain modes of transportation where smoking is banned.

The need for government action

While many in the public health community recognize the potential cessation and harm-reduction benefits of e-cigarettes, there are many unknowns about the products' long term safety and gateway potential for a new generation of tobacco and nicotine users. There is also concern that e-cigarettes could renormalize smoking, and those products with nicotine could promote dual use and perpetuate nicotine addiction instead of encouraging full cessation, thus undermining tobacco control efforts. E-cigarette use in public places has the potential to renormalize smoking and serve as a type of marketing and promotion for the products. A 2018 survey found that 86% of people in Canada support banning e-cigarette use for minors.⁴⁰ About a third of respondents felt e-cigarettes were doing more harm than good, and another third felt the harm and good was balanced.⁴⁰ Only 14% believed e-cigarettes were doing more good than harm.⁴⁰

In light of the concerns among the public and health community, the need to maintain tobacco control efforts and given the many unknowns around e-cigarette use, there has been growing



demand for regulation in Canada and internationally. Municipal, regional, provincial, and national governments around the world have proposed and implemented policies to regulate e-cigarettes with or without nicotine in a similar fashion as tobacco products.³⁰ Policies introduced include:

- Ban on sales: Argentina, Brazil, Panama, Cambodia, Mauritius, Nepal, Singapore, Thailand, Turkey, Uruguay among others. The US is exploring bans on certain products that are appealing to youth amid growing rates of use among young people.
- Public space bans: Vancouver BC, Red Deer AB, Hantsport NS, Innisfil ON, Toronto ON, Calgary, AB, Saskatoon, SK, New Jersey, North Dakota, Utah, Boston, Chicago, Indianapolis, Los Angeles, Nova Scotia, Argentina, Australia, France, Greece, Jamaica, Jordan and New York among others
- Age purchasing restrictions: California, Hawaii, Idaho, New Jersey, New York, Tennessee, Utah, France, Netherlands, Newfoundland and Labrador, Nova Scotia, New Brunswick, British Columbia, Quebec, and the UK among many others
- Brand and patent restrictions: Uruguay
- Treatment of e-cigarette products as tobacco products: California, Vermont, Nova Scotia, Newfoundland and Labrador, British Columbia, and Quebec among others
- Marketing and promotional restrictions: Quebec, Argentina, Germany, Greece, Norway, New Zealand, Portugal, Scotland, Spain among others.
- Health warning labelling requirements: Austria, Denmark, Finland, Germany, Ireland, Italy among others

Canadian Solutions

The Heart and Stroke Foundation recommends that federal, provincial and municipal governments immediately adopt the following policies, for all e-cigarettes where jurisdictionally appropriate:

- Prohibit use of e-cigarettes in public spaces and workplaces, where smoking is banned by law.
- Prohibit e-cigarette sales in locations where tobacco sales are banned.
- Ban sales to minors, and increase the minimum age of purchase for both tobacco and e-cigarettes to 21 years of age.
- Prohibit the sale of e-liquid flavours that are attractive to youth and adolescents, such as bubble gum, and candy flavoured e-liquids.
- Prohibit colourful and deceptive packaging and manufacturing of e-cigarettes and flavoured e-liquids.
- Adopt comprehensive restrictions on advertising and promotion, including strict restrictions by regulation under the federal Tobacco and Vaping Products Act.
- Regulate the product to minimize toxic additives in e-liquids.
- Require that the sale of e-cigarettes only take place in specialty vape shops where the sale of any product other than e-cigarettes and related products is not allowed.
- Ban retail displays (with an exception for specialty vape shops).
- Dedicate research funding to enable a deeper understanding of the usage and potential benefits of e-cigarettes as a cessation device as well as their possible risks, including safety, gateway to addiction potential and renormalization. Include e-cigarette surveillance in national survey data collection and monitoring.

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