

Electronic Cigarettes (E-Cigarettes) Assessment of Evidence and Implications for Middlesex-London Health Unit Recommendations

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The Middlesex-London Health Unit does not recommend the use of electronic cigarettes (also known as e-cigarettes). The following provides key messages and background information about the use of e-cigarettes.

- **Electronic cigarettes currently have undetermined health effects and a lack of quality control and manufacturing standards; therefore, the health and safety risks are unknown.** In 2009, Health Canada issued a public statement advising Canadians “not to purchase or use electronic smoking products, as these products may pose health risks and have not been fully evaluated for safety, quality and efficiency by Health Canada”. At present, there is not enough scientific evidence to support any health benefits of these products or to suggest that these products are safe for use.^{1,2}
- **Electronic cigarettes are not approved as a smoking cessation aid in Canada.** Individuals interested in quitting should use a cessation aid approved by Health Canada. There are several cessation aids available such as: nicotine replacement therapy (NRT) which includes nicotine lozenges, nicotine gum, nicotine inhalers, and nicotine patches; and medications like Champix or Zyban.
- **Electronic cigarettes undermine the current tobacco control policies in place.** Comprehensive tobacco-free policies should include electronic cigarettes in places where smoking is banned under the *Smoke-Free Ontario Act* (SFOA) and/or existing bylaws. These include, but are not limited to, enclosed public places and workplaces, elementary and secondary school property, hospitals, long-term care facilities and recreation/sports facilities.

E-cigarettes that contain nicotine or make a health claim are illegal in Canada. To report the advertising or sale of these products to Health Canada, call 1-800-267-9675.

Background

Electronic cigarettes are devices made of plastic or steel that, in most cases, resembles a real cigarette. They produce a visible vapour similar in appearance to cigarette smoke and the end of the device may glow like a cigarette. Typically an electronic cigarette consists of a cartridge, an atomizer and a battery. The cartridges contain water, and added flavourings in a base of propylene glycol, vegetable glycerin, or polyethylene glycol 400; which may or may not contain nicotine. Users inhale on the device like they would a cigarette which heats the solution into a vapour, that when exhaled looks like smoke.³

Rationale

1. Legislation:

Electronic smoking products that contain nicotine are regulated under the federal *Food and Drugs Act*. Therefore, before the importation, advertising or sale of these products, they need market authorization.⁴ According to Health Canada, it is illegal in Canada for electronic cigarettes to contain nicotine or make any sort of health claims. However, currently there is no legislation that regulates the use of electronic cigarettes that do not contain nicotine or that make health claims. The lack of legislation for these products has provided ambiguity which has been exploited by the manufacturers and has led to confusion within the health care provider community and the general public.

Electronic cigarettes do not currently fall under the definition of smoking or holding lit tobacco under the *Smoke-Free Ontario Act (SFOA)* or current smoking bylaws. Legally, this means that electronic cigarettes could be used in enclosed public places and workplaces or in other places where smoking is prohibited. Permitting the use of electronic cigarettes indoors, in places where smoking is banned under the *Smoke-Free Ontario Act (SFOA)* or existing bylaws can create enforcement challenges and undermine the work that has been done in tobacco control thus far.

2. Social Acceptance and Youth Initiation:

Manufacturers are designing the e-cigarette to closely resemble a real cigarette, and in order to appeal to more users, the manufacturers are constantly rebranding and modifying these products. Marketing strategies such as branding, flavouring, altering device design and appearance, adjustable smoke volume and voltage, making them rechargeable and/or disposable, providing longer battery life, and lowering prices have all become common, while displays and advertisements have quickly become more engaging and sophisticated.^{1,5}

E-cigarettes can be found for sale at grocery stores, gas stations, convenience stores, flea markets and pharmacies and are widely accessible on the internet. Accessories and e-liquid containing nicotine can also be accessed on the internet.

In Middlesex- London, approximately 75% of vendors are selling e-cigarettes and the health unit receives calls from various clients and community partners such as workplaces, schools, restaurants, and healthcare providers asking for advice on the use of such devices. Secondary school students have also been seen using e-cigarettes in areas where other students smoke tobacco cigarettes.

The use of e-cigarettes in places where smoking is prohibited combined with their growing availability and the savvy marketing strategies could lead to an increase in use and an increase in the social acceptance of smoking. The majority of people who use tobacco

begin smoking in their adolescence; efforts to denormalize tobacco use and decrease negative role modelling are important to protect youth and young adults from future smoking and addiction. The more that youth are exposed to tobacco use and the behaviour of smoking, even products which mimic tobacco cigarette use, the more likely they are to start using tobacco products. Furthermore, those who have quit smoking or are trying to quit may be tempted to smoke by seeing others use cigarette-like products.

3. Benefits, efficacy and safety:

Benefit and Efficacy

In theory, e-cigarettes have the potential to be used as a cessation aid or a harm reduction product. The device itself looks and feels similar to a cigarette, which smokers could find appealing, and it could help with mimicking the hand-to-mouth repetitions associated with smoking. E-cigarettes have also been marketed as a safer alternative to continued cigarette use, and if they contained nicotine, could potentially help with symptoms of nicotine withdrawal. However, although these products could have potential as a cessation aid or harm reduction product, there is limited data on their overall effectiveness to do so. As well, in order for an individual to use these devices for smoking cessation there should be instructions based on scientific evidence as to how to use the device to quit or cut back (e.g. safe maximum amount of puffs that should be taken; the number of puffs needed and how often; level of inhalation into the lungs; level of nicotine within the cartridges, etc...). Unfortunately, this information is lacking with the products that are available.¹ As a result of this lack of scientific evidence, these devices have not been approved by Health Canada for use as a cessation aid or harm reduction product and therefore should not be used as such.^{2, 6, 7}

Safety issues

There are many safety issues associated with e-cigarettes and their use, which can range from quality control and manufacturing standards, to the delivery system itself or to the health effects of the substances contained in electronic cigarettes.

Currently, quality control and manufacturing standards related to e-cigarettes and the facilities where they are manufactured are lacking. This means that there may be little to no consistency in the composition and quality of the individual delivery systems, the substances added to the device, the nicotine, the chemical makeup⁷ and the facilities where they are made.^{1, 2, 5} For example, some e-liquid may be manufactured in laboratories whereas some may be manufactured in residential basements or kitchens.

In terms of the health effects related to substances in e-cigarettes, a lot remains unknown. To date there have been no long-term studies on the health benefits or risks of using e-cigarettes. Nicotine can be lethal and, as previously mentioned, products can vary widely in the chemical and nicotine makeup making it difficult or even impossible to know the exact amount that has been delivered.¹ In addition, questions remain about the short and long-term effects and risks of inhaling propylene glycol as well as any other chemicals and by-

products that may be created from vaporization.^{1, 2, 5, 7} No existing nicotine replacement therapy (NRT) delivers nicotine to the lungs and therefore there is no data on the effects of this process.^{1, 2, 7} In addition, similar to smoking, the vaporization of nicotine and other chemicals contained in the electronic cigarette can emit ultra-fine particles into the air. Unlike smoking and second-hand smoke, the extent of the harm to others from these vapour emissions is not currently known.^{1, 2}

At this point in time, there is a lack of sufficient evidence around the benefit, efficacy and safety of these products; therefore, e-cigarettes should not be considered safe or effective in helping individuals quit and should not be recommended for use as a cessation aid.

Conclusion

To date, there have been no long-term studies on the health benefits or risks of using e-cigarettes; however, there is a growing body of relatively new scientific evidence that is raising concerns within the public health community about the health consequences and safety of these devices, and the negative impact that e-cigarette use in places where smoking is prohibited could have on the social acceptability of smoking. Middlesex-London Health Unit staff will continue to monitor developments by public health tobacco control partners and the advancements in the evidence related to e-cigarettes.

¹ World Health Organization. (July 9, 2013) Questions and answers on electronic cigarettes or electronic delivery systems (ENDS). Retrieved July 10, 2013 from www.who.int/tobacco/communications/statements/electronic_cigarettes/en/index.html

² German Cancer Research Center (Ed.). (2013). *Electronic Cigarettes- An overview*. Heidelberg, Germany

³ Non-Smokers' Rights Association and Smoking and Health Action Foundation. (March 2012). *The Buzz on E-Cigarettes*. Non-Smokers' Rights Association and Smoking and Health Action Foundation: Toronto, ON

⁴ Health Canada. (2009). *Notice - To All Persons Interested in Importing, Advertising or Selling Electronic Smoking Products in Canada*. Retrieved from http://www.hc-sc.gc.ca/dhp-mps/prodpharma/applic-demande/pol/notice_avis_e-cig-eng.php

⁵ Non-Smokers' Rights Association and Smoking and Health Action Foundation. (January 2013). *Report on the Forum on E-cigarettes*. Non-Smokers' Rights Association and Smoking and Health Action Foundation: Toronto, ON

⁶ Health Canada. (2009). *Health Canada Advises Canadians Not to Use Electronic Cigarettes*. Retrieved May 10, 2013 from <http://www.healthy Canadians.gc.ca/recall-alert-rappel-avis/hc-sc/2009/13373a-eng.php>

⁷ World Health Organization. (2009). WHO study group on tobacco product regulation: report on the scientific basis of tobacco product regulation. WHO technical report series; no. 955. Retrieved from http://www.who.int/tobacco/global_interaction/tobreg/publications/tsr_955/en/index.html