

Can electronic cigarettes assist patients with smoking cessation?

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YES Electronic cigarettes (e-cigarettes) can assist patients with smoking cessation, which is all they should be used for!

Mark Twain said, “Giving up smoking is the easiest thing in the world. I know because I’ve done it thousands of times.” Despite the current options, the rate of success in smoking cessation continues to be low.¹⁻³ Smoking is known to harm nearly every organ in the body⁴ and quitting smoking can add years to a patient’s life. This article reviews why e-cigarettes can assist our patients in their journey.

Potential concerns

A Chinese company, Ruyan, is credited with the invention of the e-cigarette, released on the Asian market in 2004.⁵ “Vaping” (the act of using an e-cigarette) is healthier than smoking because the e-cigarette does not produce smoke or contain the toxic compounds present in a traditional cigarette, nor does it release second-hand smoke. However, there are potential concerns. In 2009, the US Food and Drug Administration conducted an analysis of 2 brands of e-cigarette cartridges. Trace levels of carcinogenic nitrosamines were present in more than half of the samples, and potentially harmful compounds, such as anabasine, myosmine, and β -nicotyrine, were present in most of the tested samples.⁶ These compounds are also present in tobacco smoke at concentrations that are 100 to 1000 times higher than in e-cigarettes! Propylene glycol, the main ingredient in most e-cigarette cartridges, has been approved for use in food products in Canada as a food preservative, in asthma inhalers and nebulizers, and in theatrical fog machines. Its effects on health are currently, at most, controversial.


Another concern is that public use of e-cigarettes could re-normalize the use of tobacco products.⁷ Flavoured nicotine cartridges appeal to youth, which could potentially serve as a gateway to developing a harmful nicotine addiction. That being said, all population-based studies of adults show the highest rate of e-cigarette use is among current smokers, followed by former smokers, with little use among non-smokers, although e-cigarette trial and use rose in all of these categories.⁸ In a sample of e-cigarette users recruited from websites dedicated to e-cigarettes and smoking cessation,⁹ most (72%) were former smokers at baseline.

In Canada, the only legal e-cigarettes have no nicotine added. We need to ensure that there is specific legislation to prevent smoking e-cigarettes in the same places regular cigarettes are prohibited. They also should not be flavoured or sold to minors.

Choice is needed

People smoke for various reasons and thus need a variety of choices to assist in cessation attempts. Nicotine addiction, habit, stress, and lifestyle are all factors that need to be dealt with. Reasons quoted for smoking include the following: “I light up when someone makes me angry,” “I am very aware of not smoking when I don’t have a cigarette in my hand,” and “I find a cigarette in my mouth and don’t remember putting it there.”¹⁰ Allowing patients to mimic smoking behaviour with an e-cigarette can be helpful. In the ECLAT (Efficiency and Safety of an Electronic Cigarette) study, 11% of the smokers who received e-cigarettes containing nicotine reported that they had abstained from smoking traditional cigarettes at the last follow-up visit.¹¹ Polosa et al followed 23 subjects not currently planning to quit who were given e-cigarettes containing nicotine; at the 24-month visit 18 continued to smoke and 11 had reduced cigarette consumption by 50% or more, with a statistically significant reduction from an average of 24 to 4 cigarettes per day ($P=.003$).¹² Five participants had quit tobacco cigarettes at 24 months.

Conclusion

Do not throw the baby out with the bath water. Electronic cigarettes are a harm-reduction strategy for current smokers. Electronic cigarettes can assist your patients in quitting smoking, which is one of the most important health changes they will ever make! 

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Competing interests

Dr Kaplan has served on advisory boards for and received honoraria for giving lectures from Pfizer and Johnson and Johnson.

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CLOSING ARGUMENTS — YES

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- Current smoking cessation aids have limited utility and do not deal with the "habit" component of why people smoke. Electronic cigarettes (e-cigarettes) fill this void, but should not be used for any other purpose.
- Smoking e-cigarettes is healthier than smoking regular cigarettes because e-cigarettes do not produce smoke or second-hand smoke, and do not contain toxic compounds at the same levels as traditional cigarettes.
- Legislation is needed to ensure e-cigarettes are used properly. They should not include flavouring or nicotine, and they should not be sold to minors.

The parties in these debates refute each other's arguments in rebuttals available at www.cfp.ca. Join the discussion by clicking on Rapid Responses at www.cfp.ca.

NO As physicians, we have an obligation to use evidence-based medicine when prescribing new therapies to our patients. The electronic cigarette (e-cigarette) must be considered a new therapy for smoking cessation; the difference in this instance is that the e-cigarette is not a medication. It has hit the market with a momentum unrelated to medical research, and we must be careful. I argue that e-cigarettes are not only useless in smoking cessation, but their introduction has been detrimental to all aspects of tobacco control.¹

What we know

What do we know about this new therapy? The e-cigarette is an electronic device that looks like a traditional cigarette. The user draws on a mouthpiece to activate a microelectrical circuit that vaporizes the e-cigarette liquid. The liquid is contained in a removable cartridge that consists of nicotine and flavouring agents dissolved in chemicals such as glycerin and propylene glycol.² Nicotine-containing e-cigarettes are not licensed in Canada, but are widely available and wholly unregulated.

The e-cigarette has 3 main components. It is powered by a small battery at the distal end that activates an indicator light that mimics the glow of a cigarette. There is a vaporizing chamber in the mid-part of the device that is triggered by inhalation and heats the liquid from a replaceable cartridge so that it vaporizes. The cartridge is inserted near the tip of the cigarette closest to the mouth of the user. It delivers an odourless, smokeless dose of nicotine to the user.

Safety and benefit

The use of e-cigarettes for smoking cessation is controversial. The principle is that the user can decrease his or her nicotine intake, along with the intake of other chemicals contained in cigarettes, while maintaining the habit of puffing on a cigarette. As nicotine levels fall, they are eventually able to break the habit. To date, there have only been a few randomized trials studying the new device.³⁻⁶ Moreover, there have been no trials that have run longer than 2 years and few with more than 50 participants. In addition, there are no follow-up data available to assess sustainment of smoking cessation. Most of these trials have been sponsored by big tobacco companies and were underpowered to show any sustained benefit.

To complicate matters, the safety of e-cigarettes is also controversial. A 2009 US Food and Drug Administration document found harmful components in the 2 brands studied.⁷ Trace levels of carcinogenic nitrosamines were found in more than half the samples. Other harmful chemicals were found, such as anabasine, which is found in tree tobacco and is used as an insecticide; myosmine, an alkaloid closely related to nicotine; and β -nicotyrine. A recent study done at the University of Montreal in Quebec had similar results.⁸ There are now hundreds of brands on the market, most of which have not been studied in any systematic way. In addition, there are no mandated quality control standards. Two e-cigarettes manufactured by the same company might contain different amounts of nicotine. Most e-cigarettes are manufactured in China. Some brands are now being produced in the United States, but quality control has not been standardized. The long-term safety has not been established.⁹⁻¹¹

Marketing

One of the most disturbing issues related to e-cigarettes