

My patient wants to try e-cigarettes to quit smoking. What should I say?

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ABSTRACT

Electronic cigarettes are popular alternatives to actual cigarettes and are often used for smoking cessation. However, concerns about their efficacy and safety have resulted in calls for tighter regulation of their use.

Keywords: electronic cigarettes, tobacco cessation, smoking cessation, nicotine replacement, e-cigarettes, electronic nicotine delivery systems

An estimated 42 million American adults smoke.¹ The health risks associated with smoking are widely known, and electronic nicotine delivery systems, although not new, have gained recent popularity from being advertised as a safer cigarette.² Electronic cigarettes (e-cigarettes) deliver nicotine and other chemicals via an inhaled aerosol.³ Scientific evidence regarding e-cigarettes' efficacy for smoking cessation and safety is lacking. However, according to the CDC, e-cigarettes accounted for a drastic increase in toxicity-related calls to poison control centers, 51.1% of which pertained to young children.³ E-cigarettes are not approved by any entity specifically for smoking or tobacco cessation. Thus, the World Health Organization is calling for regulation of electronic nicotine delivery systems, citing health risks to users and nonusers, questions of efficacy in cessation, and interference with current tobacco-control efforts. Regulation is controversial, though, and experts have not reached a consensus.⁴

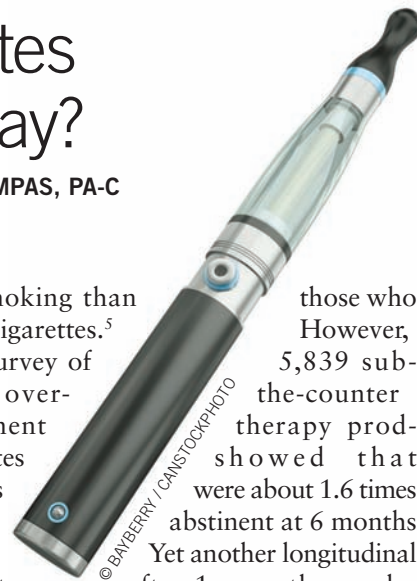
Results of studies regarding the efficacy of e-cigarettes for smoking cessation are mixed and difficult to evaluate. A national study of 2,758 callers to a smoking quitline assessed e-cigarette use and current smoking status at routine follow-up 7 months after the initial call and found that the e-cigarette users were actually less likely to be

abstinent from smoking than those who had never used e-cigarettes.⁵ However, a cross-sectional survey of 5,839 subjects comparing over-the-counter nicotine replacement therapy products with e-cigarettes showed that e-cigarette users were about 1.6 times more likely to be abstinent at 6 months after initiation.⁶ Yet another longitudinal study showed that after 1 year, those who used e-cigarettes were no more likely to have quit permanently, but did reduce their cigarette consumption.⁷ Orr and Asal reviewed six clinical studies that compared e-cigarettes with either baseline smoking habits, placebo, or other pharmacologic methods of quitting.⁸ They concluded that e-cigarettes may modify smoking habits or reduce the number of cigarettes smoked.⁸

The biggest concern about e-cigarettes is their safety. As stated, the increase in poisonings related to these products is frightening, as are the reports of carcinogens and exposure to secondhand nicotine and other dangerous compounds. Nicotine exposure is a major concern related to e-cigarettes. A 2014 review of 18 publications by Callahan-Lyon showed that, due to the lack of quality standards, concentrations in the cartridges can vary by as much as 50%.⁹ Czogala and colleagues found that e-cigarettes emit nicotine into the air, but at a level 10 times less than cigarettes.¹⁰ Furthermore, they did not produce any aerosolized particles or carbon monoxide emissions. This slightly lessens the concerns regarding secondhand exposure to e-cigarette vapor.

In addition to water and nicotine, the other compounds commonly found in e-cigarettes are propylene glycol and glycerin. These are both known upper airway irritants, but data (including toxicology literature) are lacking on their effects at the concentrations being inhaled with e-cigarettes, so no conclusions may be drawn.^{9,11}

Physiologically, e-cigarettes are believed safer than smoking cigarettes. To support this, Callahan-Lyon's review found no change in the following effects among users of e-cigarettes: heart rate, carbon monoxide concentrations, plasma nicotine levels, complete blood cell count parameters, lung function, cardiac function as measured by echocardiogram, or inflammatory markers.⁹



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DOI: 10.1097/01.JAA.0000469270.17053.f3

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Based on the current competing literature, the best options for smoking cessation appear to be another form of nicotine replacement therapy paired with a prescription medication and/or cognitive-behavioral therapy. However, if a patient is already using e-cigarettes or is unwilling to try alternatives, clinicians should educate the patient on the health risks and questionable efficacy of these popular devices, while supporting the patient's decision to pursue a healthier lifestyle. Health promotion and disease prevention can be accomplished by keeping communication open for counseling, support, and additional education. **JAAPA**

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