Can e-Cigarettes Help Adults Who Smoke Successfully Quit All Combusted Tobacco Products?

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Tobacco use remains the leading preventable cause of death in the US.\(^1\)\(^2\) Within public health, the question of whether the use of e-cigarettes might assist adults who smoke cigarettes to successfully quit all combusted tobacco products continues to be hotly debated.\(^2\)\(^-\)\(^4\) In their study, Pierce and colleagues\(^5\) report results from the analyses of large cohorts of established US adults who smoke cigarettes at baseline from the Population Assessment of Tobacco and Health (PATH) study suggesting that among recent former smokers at the first annual follow-up, switching to e-cigarettes did not prevent relapse back to smoking combusted cigarettes at subsequent annual follow-ups. Controlling for a range of potential confounders, switching to e-cigarettes was associated with a 9.3% higher relapse rate back to smoking over the next year of follow-up than among those former smokers who remained tobacco free (that is, did not use e-cigarettes or any other noncigarette tobacco product).

These new results add to the growing body of evidence from randomized trials and observational studies examining the effect of switching to e-cigarettes on smoking cessation. Meta-analyses of these studies have reported somewhat varying conclusions about this evidence. A 2020 meta-analysis by the Cochrane Review\(^6\) reported that there is moderately strong evidence that switching to e-cigarettes, particularly with behavioral support within trials, is associated with lower relapse rates than those who quit smoking without switching to e-cigarettes. However, another meta-analysis by Wang and colleagues\(^7\) concluded that when smokers use commercially available e-cigarettes in self-initiated cessation attempts, the typical outcome is less success in long-term abstinence than those who do not use e-cigarettes.

Wang and colleagues\(^7\) did suggest that e-cigarettes used within a more therapeutic setting (like randomized control trial [RCT] protocols) could increase smoking cessation rates. There is some RCT evidence supporting this hypothesis—a 2019 trial conducted in the United Kingdom\(^8\) reported significantly higher rates of biochemically confirmed sustained abstinence from cigarette smoking at the 1-year follow-up among baseline smokers randomized to switch to e-cigarettes (18%) compared with those randomized to use nicotine replacement therapy (NRT) (9.9%). Both trial arms received free product (e-cigarettes or NRT) along with expert guidance on effective product use and behavioral counseling. This trial suggests that in other countries, such as the United Kingdom, promoting the use of e-cigarettes as an effective smoking cessation therapy where behavior counseling is provided could significantly help adults who smoke to successfully quit all combusted tobacco products.\(^8\)

E-cigarettes have not been approved by the US Food and Drug Administration (FDA) as a smoking cessation medication.\(^2\)\(^-\)\(^7\) Thus, within the regulatory and market structure of the US there remains uncertainty whether e-cigarettes, as they are commonly used, can help smokers successfully quit all combusted tobacco products.\(^2\)\(^-\)\(^4\)\(^\,\)\(^7\) Based upon this uncertainty, particularly in the US situation, the 2020 Smoking Cessation: A Report of the Surgeon General concluded in Major Conclusion #9 that “e-cigarettes, a continually changing and heterogeneous group of products, are used in a variety of ways. Consequently, it is difficult to make generalizations about efficacy for cessation based on clinical trials involving a particular e-cigarette, and there is presently inadequate evidence to conclude that e-cigarettes, in general, increase smoking cessation.”\(^2\)
This current situation places US clinicians and public health workers in a difficult position when asked, “Should I use e-cigarettes to help me quit smoking?” The motivation to quit smoking needs to be encouraged, but the uncertainty about the efficacy of using e-cigarettes as a cessation device used in an unsupervised manner must be communicated. These new results from the study by Pierce and colleagues provide additional evidence suggesting that switching to e-cigarettes in a real world setting could result in higher relapse rates back to smoking.

Wang and colleagues do make the important point that while trial data suggest more recent types of e-cigarettes may be more effective than FDA-approved nicotine replacement therapies, other FDA-approved therapies, specifically bupropion and varenicline, could be equally or more effective than e-cigarettes. This observation clearly highlights the need for more clinical trials and research.

The overall discussion of e-cigarettes as smoking cessation aids emphasizes several key implications for US clinicians and public health workers. First, every clinical visit should include screening for tobacco use behavior following the 5 A’s model of the Clinical Practice Guidelines. While rates of screening and counseling have been increasing, recent analyses of outpatient clinical records indicate that screening did not occur for as many as one-third of all patients, and among patients identified as tobacco users, less than one-fourth reported that counseling or education was ordered or provided during their visits. Second, the uncertainty about the efficacy of e-cigarettes as a smoking cessation strategy should not inhibit clinicians from discussing smoking with patients. Rather, each clinical interaction should encourage any motivation to quit and channel it toward easily accessible smoking cessation services such as the Centers for Disease Control and Prevention Quit Smoking online resource page and 1-800-QUIT-NOW. Third, the availability of high quality and easily accessible smoking cessation services in the US needs to be significantly increased. Promoting these services together with prescribing FDA-approved therapies, particularly bupropion and varenicline, remains the best evidence-based response to patients who ask, “Should I use e-cigarettes to help me quit smoking?”

From a health policy perspective, there are additional implications from the results of the study by Pierce and colleagues. The FDA is faced with increasing evidence that although e-cigarettes cannot be advertised as a smoking cessation device, many adults who smoke begin using e-cigarettes to help them quit smoking combusted cigarettes. If, in fact, use of e-cigarettes in unsupervised or real-world settings does not increase cessation rates, and may even increase relapse rates, then a population harm could be resulting from permitting their sale as a consumer product. It can be argued that the population harm reduction potential of the e-cigarette, used to justify their sale as a consumer product, requires that they can become a “disruptive technology” that will replace the cigarette as the preferred nicotine delivery device. In the modern cigarette, the tobacco industry has created a highly efficient drug delivery device, against which even the improving e-cigarettes are failing as a disruptive technology. Population patterns of use of e-cigarettes indicate that a large majority of adults who also smoke cigarettes primarily use cigarettes but use e-cigarettes in some situations where they are not permitted to use combusted products (eg, dual users).

The 2014 Surgeon General Report recognized this problem, stating that: “The impact of the noncombustible aerosolized forms of nicotine delivery on population health is much more likely to be beneficial in an environment where the appeal, accessibility, promotion, and use of cigarettes and other combusted tobacco products are being rapidly reduced, especially among youth and young adults.” Specifically, the report noted that the FDA could use its statutory powers to reduce the appeal of combusted tobacco products by setting product standards to reduce nicotine content and mandating the removal of compounds to make the products less appealing, particularly to youth (eg, removing menthol). While disagreeing about the efficacy of e-cigarettes as a smoking cessation aid, recent commentaries have agreed that FDA needs to use its authority to reduce the appeal of combusted tobacco products. Given that the FDA currently is taking stronger regulatory action regarding e-cigarettes, the tobacco control community should increase demands that the FDA
implement tobacco product standards such as banning menthol as a characterizing flavor and reducing nicotine levels in cigarettes.

REFERENCES


