

Teens who use e-cigarettes may be more likely to begin smoking

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Credit: AI-generated image ([disclaimer](#))

Among high school students in Los Angeles, those who had ever used electronic cigarettes were more likely to report initiation of smokable ("combustible") tobacco (such as cigarettes, cigars, and hookah) use over the next year compared with nonusers, according to a study in the August 18 issue of *JAMA*.

Combustible tobacco, which has well-known health consequences, has long been the most common nicotine-delivering product used. Electronic cigarettes (e-cigarettes), which are devices that deliver inhaled aerosol usually containing nicotine, are becoming increasingly popular, particularly among adolescents, including teens who have never used combustible tobacco. According to 2014 U.S. estimates, 16 percent of 10th graders reported use of e-cigarettes within the past 30 days, of whom 43 percent reported never having tried combustible cigarettes. Whether use of e-cigarettes is associated with risk of initiating combustible tobacco use has not been known, according to background information in the article.

Adam M. Leventhal, Ph.D., of the Keck School of Medicine of the University of Southern California, Los Angeles, and colleagues examined whether adolescents who reported ever using e-cigarettes were more likely to initiate the use of combustible tobacco (cigarettes, cigars, and hookah) during the subsequent year. The study included 2,530 students from ten public high schools in Los Angeles who reported never using combustible tobacco at study entry (fall 2013, 9th grade, average age = 14 years) and completed follow-up assessments at 6 months (spring 2014, 9th grade) or 12 months (fall 2014, 10th grade). At each time point, students completed self-report surveys on any use of combustible tobacco products.

The researchers found that e-cigarette users ($n = 222$) were more likely than never users ($n = 2,308$) to report past 6-month use of any combustible tobacco product at the 6-month follow-up (31 percent vs 8 percent) and at the 12-month follow-up (25 percent vs 9 percent). Baseline e-cigarette use was associated with a greater likelihood of use of any combustible tobacco product averaged across the 2 follow-up periods in the analyses adjusted for sociodemographic, environmental, and intrapersonal risk factors for smoking. In addition, relative to baseline e-cigarette never users, e-cigarette ever users were more likely

to be using at least 1 more combustible tobacco product averaged across the 2 follow-up assessments.

"These data provide new evidence that e-cigarette use is prospectively associated with increased risk of combustible tobacco use initiation during early adolescence. Associations were consistent across unadjusted and adjusted models, multiple tobacco product outcomes, and various sensitivity analyses," the authors write.

They add that "some teens may be more likely to use e-cigarettes prior to combustible tobacco because of beliefs that e-cigarettes are not harmful or addictive, youth-targeted marketing, availability of e-cigarettes in flavors attractive to youths, and ease of accessing e-cigarettes due to either an absence or inconsistent enforcement of restrictions against sales to minors."

"Further research is needed to understand whether this association may be causal."

"The report by Leventhal and colleagues is the strongest evidence to date that e-cigarettes might pose a health hazard by encouraging adolescents to start smoking conventional [tobacco products](#)," writes Nancy A. Rigotti, M.D., of Massachusetts General Hospital and Harvard Medical School, Boston, "Regardless of whether e-cigarettes are a gateway to tobacco product initiation, there is no reason for adolescents to use a product for which the hypothesized public health benefit is harm reduction for adult smokers. However, there is ample evidence that e-cigarettes are marketed in ways that appeal to children and adolescents. Prompt, effective action is needed to protect youth and reduce the demand for e-cigarettes by nonsmokers of all ages. A rational approach is to extend to e-cigarettes the same sales, marketing, and use restrictions that apply to combustible cigarettes."

In an accompanying Viewpoint, Andrew Y. Chang, M.D., and Michele Barry, M.D., of the Stanford University School of Medicine, Stanford, Calif., discuss health considerations of e-cigarettes unique to low- and middle-income countries.

"Developing nations should not underestimate the availability and targeted marketing of electronic nicotine delivery systems (ENDS) within their borders and should place e-[cigarettes](#) under the purview of their medical and pharmaceutical regulatory boards. Low- and middle-income countries can feel empowered to exclude multinational tobacco companies from this regulatory process in accordance with Article 5.3 of WHO's Framework Convention on Tobacco Control, which warns against the conflict of interest posed by the industry in this sphere."

"International nongovernmental organizations such as the Gates Foundation and the Bloomberg Initiative to Reduce Tobacco Use should support these efforts to provide consistency in control and enforcement of ENDS legislation. Even though [e-cigarettes](#) may have a future as smoking cessation tools, evidence to support this indication is lacking. More rigorous studies must be conducted regarding the awareness, usage patterns, and potential for harm of these devices in low-income countries, particularly Africa and South Asia, where data are currently missing."

More information: [DOI: 10.1001/jama.2015.8950](https://doi.org/10.1001/jama.2015.8950)
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