

ELECTRONIC CIGARETTES (ENDS): EVIDENCE AND HEALTH HARMS



E-CIGARETTES: EVIDENCE AND HEALTH HARMS

At a time when many countries are seeing declines in tobacco use, electronic cigarettes (e-cigarettes or electronic nicotine delivery systems [ENDS]), increasingly undermine progress in reducing tobacco consumption by hooking another generation of young people on nicotine.¹

E-cigarettes are battery-powered devices that heat e-liquid, typically derived from tobacco and containing nicotine, to create an aerosol that the user inhales.² ENDS vary greatly in terms of shape, size, and functionality, with nearly 16,000 e-liquid flavors available in some markets, and more than 30,000 brands sold in the EU.³ Given the relative newness, rapid growth, and diversity of the e-cigarette market, research on the health harms of e-cigarette use and the impact on public health is ongoing and evolving.

Tobacco companies claim that e-cigarettes are less

harmful and are tools to help smokers quit, while using these claims to oppose common sense regulation of these products for public health. As evidence for these claims is far from clear, e-cigarettes are increasingly designed and successfully marketed to young people, most of whom are non-smokers. The likely impact of these products without regulation is negative. Countries that allow these products on the market should apply the tobacco control provisions outlined in the WHO Framework Convention on Tobacco Control to these ever evolving and multiplying products.

HEALTH HARMS

Research funded by e-cigarette interests produces results that depict e-cigarettes as less harmful, while independent research not funded by the tobacco industry has shown more serious dangers.⁴ While the long-term health effects of e-cigarette use are unclear, current evidence demonstrates that e-cigarettes are not harmless, particularly among non-smokers and youth.^{1,3} Furthermore, research suggests that e-cigarette use significantly increases the risk of conventional cigarette smoking among youth and young adults.^{1,3}

- Because adolescent brains are still developing, e-cigarette use can be especially harmful to young users, increasing the risk of addiction among youth,⁵ and negatively impacting children's and young adults' brain development and learning.^{3,6}
- Short-term use of e-cigarettes has been associated with cardiovascular harm and increased risk of developing asthma and COPD.^{1,6}
- Growing evidence indicates that ENDS use promotes inflammation in the respiratory system,⁷ increases risk of periodontal disease,⁶ and inhibits immune cells in the lungs.⁶
- Though the health effects of secondhand exposure to emissions from ENDS is still developing, exposure has been associated with wheezing, asthma, uncontrolled asthma symptoms,⁸ irritation of the respiratory tract,⁹ headache,¹⁰ and potential cumulative cardiac effects.¹¹
- Findings from a meta-analysis suggest that the odds for certain disease outcomes like cardiovascular disease and stroke are not statistically significantly lower for e-cigarettes than for cigarettes. For other disease outcomes, like asthma and COPD, the study found lower odds of disease from e-cigarettes compared to cigarettes. However, the reductions were not as substantial as older estimates have claimed.¹⁸

YOUTH MARKETING AND INITIATION

Far from targeting adult smokers to quit, marketing tactics for e-cigarettes often follow the tobacco industry's playbook and target young people. The industry appeals to youth with candy, beverage, and fruit flavored products,³ sleek and modern product design,³ and engineered smooth nicotine delivery using nicotine salts that makes it easier for new users to start and develop addiction.³

- E-cigarettes are creating a new generation of tobacco users. E-cigarette users are three times more likely to go on to smoke conventional cigarettes compared to non-e-cigarette users.¹
- Recent market trends show an increase in the sale of e-cigarettes that use nicotine salts to deliver high levels of nicotine more efficiently and with less irritation, making it easier for young people to initiate use and become addicted.^{3,12}
- More than 16,000 unique ENDS flavors are available on the market, many of which are attractive to youth and increase the likelihood of children's use. Research shows adolescents consider flavor as an important factor when trying e-cigarettes and are more likely to initiate e-cigarette use with flavored products.¹² Eight in ten (84.9%) youth e-cigarette users in the US used flavored e-cigarettes, including flavors like fruit, candy, desserts, other sweets, and mint.¹³
- E-cigarettes are the most commonly used tobacco product among high school and middle school students in the US.¹⁴ In the US in 2022, 14.1% of high school students and 3.3% of middle school students (2.55 million total US middle and high school students) reported current e-cigarette use.¹³ Use of e-cigarettes is also greatest in young people in Australia, with over one-third of current e-cigarette users under the age of 25 and half under the age of 30.¹

EVIDENCE OF E-CIGARETTES FOR CESSATION IS INCONCLUSIVE

While e-cigarette companies claim their products help smokers quit and use a harm reduction argument to lobby for limited regulations on e-cigarettes, the World Health Organization (WHO) reported in their 2021 Report on the Global Tobacco Epidemic that, "evidence on the use of ENDS as a cessation aid is inconclusive." No e-cigarette product has been approved by a government as a safe and effective cessation device. Any potential benefits are likely to accrue only for smokers who switch completely from conventional cigarettes to e-cigarettes, and many e-cigarette users are either dual users or never smokers. Initiation of e-cigarettes among youth due to the marketing of these products also offsets potential population-wide public health benefits.

- Smokers who continue to smoke and use e-cigarettes (dual use), may increase their individual risk if this delays or prevents complete cessation from cigarettes, even if they smoke fewer cigarettes per day.¹
- Many e-cigarette users report using both e-cigarettes and cigarettes. In the United States, the 2021 National Health Interview Survey found that 29.4% of adult e-cigarette users were also current cigarette smokers (dual users) while 30.3% had never been smokers.¹⁶ Research shows that, depending on the degree of continued smoking, dual users may not be exposed to lower levels of toxicants compared to exclusive cigarette smokers.¹⁷
- Evidence suggests that former smokers using ENDS as a cessation aid are two-times as likely to relapse to conventional cigarette smoking compared to former cigarette smokers not using ENDS in their quit attempt.¹

KEY POINTS

- E-cigarettes are not harmless, and the relative newness and incredible diversity of products makes any definitive determination of harm difficult.
- Youth-targeted product design and marketing is resulting in high rates of youth initiation, and these users are more likely to become conventional cigarette smokers.
- Evidence for the effectiveness of e-cigarettes for cessation is inconclusive, especially under real world conditions.
- The way e-cigarettes are designed, marketed, and used is unlikely to produce any potential benefits, even if they are ultimately shown to be less harmful than conventional cigarettes to an individual smoker.
- If allowed on the market, ENDS should be regulated like other tobacco products, in adherence to the WHO Framework Convention on Tobacco Control.

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