

Statement from Brian Primack, MD, PhD

From my experience as a researcher, clinician, and public health professional, I am highly concerned about the rapid proliferation of e-cigarettes such as JUUL. I have these concerns for 7 major reasons.

1. Unknowns around emissions of e-cigarettes

Studies have examined emissions from traditional cigarettes and the aerosol associated with electronic cigarettes. Many of these studies conclude that the volume of toxicants associated with electronic cigarettes is less than the volume of toxicants associated with traditional cigarettes. However, it is important to note that these results have been extremely variable and differ for different toxicants and carcinogens. For example, a report in the New England Journal of Medicine (<http://www.nejm.org/doi/full/10.1056/NEJMc1413069#t=article>) found that, compared with levels of formaldehyde from traditional cigarettes, levels of formaldehyde from e-cigarettes actually may be higher than cigarettes. Thus, until we have solid evidence about the lack of harm on bystanders, I do not believe that it is wise to allow people to be systematically and widely exposed to the emissions from electronic cigarettes.

2. Creation of an environment ripe for youth experimentation by sending the message that e-cigarettes are safe

Allowing electronic cigarette use where cigarette smoking is disallowed creates an environment that sends the message that electronic cigarettes are an acceptable and safe alternative to cigarette smoking. Because of permissive policies, for example, e-cigarette advertisements now encourage not only e-cigarette use but also traditional cigarette use (<https://www.ncbi.nlm.nih.gov/pubmed/30012646>). This can lead to experimentation with electronic cigarettes among individuals for whom they are not appropriate, such as youth and those who are not using them for cigarette smoking cessation. Over the past few years, the rate of electronic cigarette use among previously nicotine-naïve youth has skyrocketed (<https://www.ncbi.nlm.nih.gov/pubmed/31046889>). Prevalence among high-school aged youth has tripled in the past few years alone, and the vast majority of these youth are not using them for cigarette smoking cessation. Youth report being attracted by the fruit flavors, the use of compelling technological devices, the perception that they are safe, and the permissiveness of policies.

3. The transition from e-cigarettes to traditional cigarettes

After youth have begun to experiment, they are at high risk of transition to traditional smoking. One reason for this is that most e-cigarettes deliver nicotine more slowly than traditional cigarettes. So, it represents in some ways the ideal “starter cigarette.” New users can start with flavored, palatable e-cigarettes and then progress to regular cigarettes when they need more nicotine and are more accustomed to the side effects. Another reason for the transition is that e-cigarettes are specifically designed to mimic the behaviors and sensations of cigarette

smoking. This might make the person more accustomed to the act of smoking. These theoretical arguments are borne out in national, longitudinal studies published in top journals including JAMA (<https://www.ncbi.nlm.nih.gov/pubmed/26284721>), JAMA Pediatrics (<https://www.ncbi.nlm.nih.gov/pubmed/26348249>), Pediatrics (<https://www.ncbi.nlm.nih.gov/pubmed/30397165>) and Tobacco Control (<http://tobaccocontrol.bmj.com/content/early/2016/01/05/tobaccocontrol-2015-052705>). These studies consistently demonstrate that, compared to those who do not experiment with e-cigarettes, those who do are many times as likely to transition to traditional cigarettes within the next 1-2 years, even after controlling for a comprehensive set of covariates. A systematic review published in JAMA Pediatrics supports all of these findings (<https://www.ncbi.nlm.nih.gov/pubmed/28654986>).

4. Concerns among adults as well as youth

Although the focus has been on youth, studies also show that adults are also susceptible. For example, even among adults who were previously at extremely low risk of traditional tobacco use, nearly half of those who experimented with e-cigarettes were smoking traditional cigarettes within 1-2 years (<https://www.ncbi.nlm.nih.gov/pubmed/29242110>).

5. Questionable efficacy of e-cigarettes for smoking cessation

Unfortunately, the theoretical value of electronic cigarettes for cessation has not been as robust as would have been hoped. For example, one randomized clinical trial published in the Lancet concluded that e-cigarettes were no more effective than the nicotine patch for cessation (<https://www.ncbi.nlm.nih.gov/pubmed/24029165>), and the nicotine patch is not associated with a toxic aerosol or the risk of luring impressionable youth with fruit flavors. Although a second randomized trial did show benefit of e-cigarettes over the patch (<https://www.ncbi.nlm.nih.gov/pubmed/30699054>), in that study the efficacy of e-cigarettes was still far below what we see for traditional best practices in smoking cessation, such as varenicline (<https://www.ncbi.nlm.nih.gov/pubmed/28449281>).

6. Cost-benefit analyses demonstrate substantial net harm from e-cigarettes

Because e-cigarettes may have benefits for some and harms for others, cost-benefit analyses can be helpful. Therefore, it is telling that the most rigorous such analysis conducted to date and published in PLoS One estimate about 1.5 million lives lost due to the presence of e-cigarettes (<https://www.ncbi.nlm.nih.gov/pubmed/29538396>).

7. Proliferation of e-cigarettes encourages dual use of e-cigarettes and traditional cigarettes

With how much promise they seem to hold for helping cessation, why have they not been more successful? One reason may be that smokers tend to go through a period of use of e-cigarettes (as they do with many other cessation aids) but then return to cigarette smoking. These “dual users” are aided by a permissive policy environment to continue a cycle of using e-cigarettes in

public places where they are allowed and then using cigarettes where they are allowed (such as in their homes). Instead of allowing smokers to use e-cigarettes simply as ways of continuing their nicotine addiction, it would be better to send the message that the best option is to use proven methods of cessation without problematic societal effects to transition to a life completely free of nicotine.