Is Vaping a Gateway To Smoking?

By Chuck Dinerstein, MD, MBA — November 11, 2019

Using nicotine habitually is a bad idea. It is worse when delivered by combustion, with fewer health consequences when vaporized. We have always said that vaping nicotine is a gateway or path to smoking cessation. Much of the current vaping concerns suggest that it is a gateway in the other direction to smoking cigarettes; a new paper in Nicotine and Tobacco Research looks at the possibility. [1]

Does vaping serve as a gateway to tobacco use is a reasonable concern; about 50% of adolescents vaping use other tobacco products. But here is the thing, “e-cigarette smokers are more similar to conventional cigarette smokers than they are to nontobacco users in terms of demographics, smoking-related mediators, and behavioral characteristics.” So perhaps this is a chicken or egg dilemma?

The study

The data comes from Monitoring the Future, a nationally represented survey of eighth and tenth graders “about drug use, behavior, attitudes, and values…” Students self-reported their use of conventional and e-cigarettes among five use options; collapsed by the researchers into two, lifetime use (never vs. any other amount) and current use (regular now vs. anything else). The 12,421 responses come from 2015 and 2016 and represent 58% of the total sample, the other surveys eliminated for missing data. Alcohol and marijuana use was characterized along with one variable for other illicit substances. [2]

- Within the entire cohort, 25% were lifetime e-cigarette users, 2.2% were current users.
- For conventional cigarettes, 14% were lifetime users, and 0.96% were current smokers.
We can take some solace in the fact that the message about the harms of smoking tobacco has been heard, there is more vaping. Not good, but a step in the right direction.

The researchers examined the cross-over between conventional and e-cigarette use, the bidirectional gateway in three ways, as an unadjusted regression, an adjusted regression, and using inverse propensity weighting. The differences in the statistical approach increasingly reduce confounding variables. As a reminder, confounding variables are unmeasured characteristics that might skew the results [3]

Without any adjustment for shared risk factors, the gate swings wide open. An ever e-cigarette smoker was 17 times more likely to have tried conventional cigarettes, and 35 times more likely to be a current smoker. A current e-cigarette user was 22 times more likely to have tried traditional smoking and 16 times more likely to be currently smoking. But when the shared risk factors were fully accounted for, those likelihoods dropped dramatically. E-cigarette use, ever or current, resulted in twice the possibility of trying conventional cigarettes. But concerning current smoking, e-cigarette use, ever or current, resulted in no statistically significant increase.

When you adjust for the common characteristic of the two groups, e-cigarette, and conventional cigarette users, the differences in currently smoking tobacco go away. Those individuals using nicotine, vaporized, or combusted, were more similar than nonsmokers. The availability of e-cigarettes had little impact compared with

“...major risk factors for both conventional and e-cigarette use include parental education, and smoking, peer smoking, sensation-seeking behavior; impulsivity; delinquent behavior; internalizing symptoms (depression, anxiety, etc); alcohol, marijuana or other illicit substance use, exposure to health warning labels on cigarette packs and cigarette advertising receptivity.”

E-cigarettes are not a gateway as much as they may be an alternative path. As a physician and father, there is little difference between gate and path; using nicotine habitually is just stupid and bad for your health. But wearing the hat of population health, e-cigarette use seems to be a better alternative to conventional cigarettes.

The study has limitations. First, it is a statistical conclusion, not a randomized control study. More importantly, there is no data about which came first, the conventional or e-cigarette; how the gate actually swings remains unclear. As the researchers suggest, given the considerable overlap in characteristics between the two groups and their substantial differences from non-smokers, the concern of which came first may be less relevant. E-cigarettes may be mistakenly perceived as the healthful alternative; in the same way, low tar and nicotine cigarettes and filtered cigarettes were previously promoted.

[1] For those who may be concerned, the study was financed by the National Institute on Drug Abuse, the National Institute for General Medical Science, and the author's home university, the University of North Dakota.
[2] LSD, meth, inhalants, crack, DMT, steroids

[3] For example, activity level can be correlated with weight, but if you look at a wide range of ages and do not take the relationship of activity level and age into account, your correlation regarding weight may be skewed.

Source: The Relationship between electronic cigarette use and conventional cigarette smoking is largely attributable to shared risk factors Nicotine and Tobacco Research DOI: 10.1093/ntr/ntz157