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September 3, 2020

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Two big national studies show E-cigarettes Won't Help Smokers Quit, but they may become Addicted to Vaping

Two papers authored by large diverse groups (including several e-cigarette enthusiasts who have supported companies like Juul), just concluded that e-cigarettes don't help people quit smoking. Even more important, e-cigarettes have displaced FDA-approved therapies for smoking cessation and people who use e-cigarettes in quit attempts are more likely to still be using e-cigarettes later than people who use conventional therapies.

These are very important findings that should inform FDA assessment of whether allowing e-cigarettes to be sold as consumer products would be "appropriate for the protection of public health," the standard in the law.

These results should be particularly sobering to Mitch Zeller, head of the FDA Center for Tobacco Products, who was recently quoted (again) as saying that e-cigarettes might be beneficial for people who "switch completely." These studies show that "switching completely" is rare.

And, of course, there is also the huge problem of youth nicotine addiction initiation with e-cigs.

Here is the press release UCSF put out on the two studies, with a little editing from me to put it in the present tense:

E-cigarettes are now the most popular product used by smokers in the United States who are seeking help to quit, ahead of all U.S. Food and Drug Administration (FDA)-approved cessation aids put together, including the nicotine patch, nicotine gum and prescription medications. However, two analyses, led by University of California San Diego School of Medicine researchers of a large nationally representative longitudinal study reported that e-cigarettes are not effective in helping adults to quit smoking.

Both analyses used data from the Population Assessment of Tobacco and Health (PATH) Study, a longitudinal study of tobacco use and its effect on the health of people in the United States. Undertaken by the National Institute of Drug Abuse (NIDA) and FDA Center for Tobacco Products under contract to Westat. The PATH study enrolled a nationally representative sample 45,971 adults and youth between September 2013 and December 2014 and re-interviewed them annually.

The first of these two analyses was published in the journal PLOS ONE on September 2, 2020

<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0237938>.

This paper considers the 2770 daily smokers in the PATH Study who made a quit attempt in the year prior to the Wave 2 survey. Twenty five percent of these used e-cigarettes to help them in this quit attempt. The research question asked whether those who used e-cigarettes to help with the last quit attempt before Wave 2 would have

greater success in staying quit for at least 12 months (i.e. until Wave 3) -The study used propensity score matching to identify a comparison group that were very similar to the e-cigarette users,

" Among this sample of US smokers trying to quit, we found no evidence that e-cigarettes were helpful in the quit attempt," said John P. Pierce, PhD, Professor Emeritus of Cancer Prevention at UC San Diego Moores Cancer Center, the study's first author. "This lack of effectiveness was also apparent in the sub-sample who used e-cigarettes on a daily basis for this quit attempt."

The second analysis, published online on July 27, 2020 in the **American Journal of Epidemiology**, considered 2,535 PATH participants who were both daily and non-daily smokers at Wave 2 and who made a quit attempt before Wave 3. Seventeen percent of these used an e-cigarette to help with the quit attempt. Use was higher among sub-groups who were younger, more nicotine dependent, non-Hispanic White and higher income and education. Using a similar propensity score matching methodology, a comparison group that was very similar to the e-cigarette using group was identified.

During the one-year follow up (Wave 4 of PATH Study), 13 percent of e-cigarette users were still refraining from cigarette use – the difference from the first analysis is attributed to the inclusion of non-daily smokers who are known to have higher quit rates.

Again, there was no observable impact of using an e-cigarette on successfully quitting smoking. However, in this analysis, it was very clear that participants who used e-cigarettes to quit smoking were less likely to be tobacco-free, largely because many of those who had quit smoking cigarettes were still using e-cigarettes, which contain nicotine.

<https://academic.oup.com/aje/advance-article/doi/10.1093/aje/kwaa161/5876619>

"In each of these two publications, we carefully matched each smoker who used e-cigarettes as a cessation aid with one or more similar smokers who tried to quit without using e-cigarettes," said Karen Messer, PhD, Professor of Family Medicine and Public Health, Director of Biostatistics at UC San Diego Moores Cancer Center, and senior author on both papers. "Our results suggest that these smokers would have been just as successful in quitting smoking without the use of e-cigarettes. Without the use of e-cigarettes they would have been more likely to beat their nicotine dependence."

Co-author's for the PLOS ONE study, published September 2, 2020 include

Tarik Benmarhnia, Ruifeng Chen, Martha White, Sheila Kealey and Dennis R. Trinidad, all of UC San Diego; David B. Abrams, Raymond S. Niaura, of New York University; Bridget K. Ambrose, Nicolette Borek, Blair Coleman, James Henrie, Jean Limpert, Carolina Ramôa, Ethel Taylor and Lisa D. Gardner, all of the Food and Drug Administration; Carlos Blanco, Kelvin Choi, Wilson M. Compton, Heather L. Kimmel, all of the National Institutes of Health; K. Michael Cummings, Medical University of South Carolina; Cristine D. Delnevo and Michael B. Steinberg, of Rutgers Center for Tobacco Studies; Tara Elton-Marshall, Centre for Addiction and Mental Health; Maciej L. Goniewicz, Karin A. Kasza and Maansi Bansal-Travers, all of Roswell Park Comprehensive Cancer Center; Shannon Gravely, University of Waterloo; Geoffrey T. Fong, University of Waterloo and Ontario Institute for Cancer Research; Dorothy Hatsukami, University of Minnesota; Eva Sharma and Cassandra A. Stanton, of Westat; Marushka L. Silveira, National Institutes of Health and Kelly Government Solutions; Andrew Hyland, Roswell Park Comprehensive Cancer Center and Westat; and Samir Soneji, Gillings School of Global Public Health.

This research was funded under federal government contract No. HHSN271201100027C to Westat. No major conflicts of interest were declared.

Co-author's for the American Journal of Epidemiology study, published July 27, 2020 include Ruifeng Chen, Eric C. Leas, Martha M. White, Sheila Kealey, David R. Strong, Dennis R. Trinidad Tarik Benmarhnia, all of UC San Diego.

This research was funded, in part by, the National Institutes of Health (RO1CA234539) as well as the California Tobacco-related Disease Research Program (grant 28IR-0066)

The authors declared no conflicts of interest in this research.

The citation for the first paper is Pierce JP, et al. Role of e-cigarettes and pharmacotherapy during attempts to quit cigarette smoking: The PATH Study 2013-16. PLOS One 2020: <https://doi.org/10.1371/journal.pone.0237938>

Here is the abstract:

Background: More smokers report using e-cigarettes to help them quit than FDA-approved pharmacotherapy.

Objective: To assess the association of e-cigarettes with future abstinence from cigarette and tobacco use.

Design: Cohort study of US sample, with annual follow-up.

Participants: US adult (ages 18+) daily cigarette smokers identified at Wave 1 (W1; 2013–14) of the PATH Study, who reported a quit attempt before W2 and completed W3 (n = 2443).

Exposures: Use of e-cigarettes, pharmacotherapy (including nicotine replacement therapy), or no product for last quit attempt (LQA), and current daily e-cigarette use at W2.

Analysis: Propensity score matching (PSM) of groups using different methods to quit.

Outcome measures: 12+ months abstinence at W3 from cigarettes and from all tobacco (including e-cigarettes). 30+ days abstinence at W3 was a secondary outcome.

Results: Among daily smokers with an LQA, 23.5% used e-cigarettes, 19.3% used pharmacotherapy only (including NRT) and 57.2% used no product. Cigarette abstinence for 12+ months at W3 was ~10% in each group. Half of the cigarette abstainers in the e-cigarette group were using e-cigarettes at W3. Different methods to help quitting had statistically comparable 12+ month cigarette abstinence at W3 (e-cigarettes vs no product: Risk Difference (RD) = 0.01, 95% CI: -0.04 to 0.06; e-cigarettes vs pharmacotherapy: RD = 0.02, 95% CI: -0.04 to 0.09). Likewise, daily e-cigarette users at W2 did not show a cessation benefit over comparable no-e-cigarette users and this finding was robust to sensitivity analyses. Abstinence for 30+ days at W3 was also similar across products.

Limitations: The frequency of e-cigarette use during the LQA was not assessed, nor was it possible to assess continuous abstinence from the LQA.

Conclusion: Among US daily smokers who quit cigarettes in 2014–15, use of e-cigarettes in that attempt compared to approved cessation aids or no products showed similar abstinence rates 1–2 years later.

The second paper is: Chen R, et al. E-Cigarette Use to Aid Long-Term Smoking Cessation in the US: Prospective Evidence from the PATH Cohort Study. Am J Epid. 2020: <https://doi.org/10.1093/aje/kwaa161>

Here is the abstract:

E-cigarettes are the preferred smoking-cessation aid in the US, however there is little evidence regarding long-term effectiveness among those who use them. We used the Population Assessment of Tobacco and Health Study to compare long-term abstinence between matched US smokers who tried to quit with and without use of e-cigarettes as a cessation aid. We identified a nationally representative cohort of 2,535 adult US smokers in 2014–15 (baseline assessment), who in 2015–2016 (exposure assessment) reported a past-year quit attempt and the cessation aids used, and reported smoking status in 2016–17 (outcome assessment; self-reported 12+ months continuous abstinence). We used propensity-score methods to match each e-cigarette user with similar non-users. We found that, among US smokers who used e-cigarettes to help quit, 12.9% (95% CI: 9.1%, 16.7%) successfully attained long-term abstinence. However, there was no difference compared to matched non-e-cigarette-users (cigarette abstinence difference: 2%; 95% CI: -3%, 7%). Furthermore, fewer e-cigarette users were long-term abstinent from nicotine products (nicotine abstinence difference: -4%; 95% CI: -7%, -1%); about two-thirds of e-cigarette users who successfully quit smoking continued to use e-cigarettes. These results suggest that e-cigarettes may not be an effective cessation aid for adult smokers, and instead may contribute to continuing nicotine dependence.

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