

Risk of heart attacks is double for daily e-cigarette users

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Use of e-cigarettes every day can nearly double the odds of a heart attack, according to a new analysis of a survey of nearly 70,000 people, led by researchers at UC San Francisco.

The research also found that dual use of e-cigarettes and conventional cigarettes—the most common use pattern among e-cigarette users—appears to be more dangerous than using either product alone. The study found that the risks compound, so that daily use of both e-cigarettes and conventional cigarettes raises the [heart attack risk](#) five-fold when compared to [people](#) who don't use either product.

This is the first study to examine the relationship between e-cigarette use and heart attacks, and begins to fill the understanding of the effects of e-cigarettes on long-term health. The study was published Aug. 22, 2018, in the *American Journal of Preventive Medicine*. The data were first presented in February in Baltimore at the 2018 annual meeting of the Society for Research on Nicotine and Tobacco.

"Most adults who use e-cigarettes continue to smoke cigarettes," said senior author Stanton Glantz, Ph.D., a UCSF professor of medicine and director of the UCSF Center for Tobacco Control Research and Education.

"While people may think they are reducing their health risks, we found that the heart attack risk of e-cigarettes adds to the risk of smoking cigarettes," Glantz said. "Using both products at the same time is worse than using either one separately. Someone who continues to smoke daily while using e-cigarettes daily increases the odds of a heart attack by a factor of five."

But the research also reported some good news if smokers quit:

"The risk of heart attack starts to drop immediately after you stop smoking," said Glantz. "Our results suggest the same is true when they stop using e-cigarettes."

Electronic cigarettes typically deliver an aerosol of nicotine and other

flavors by heating a liquid and are promoted as a safer alternative to conventional cigarettes, which generate the nicotine aerosol by burning tobacco.

While e-cigarettes deliver lower levels of carcinogens than conventional cigarettes, they deliver both ultrafine particles—which are 1/50 to 1/100 the size of a human hair—and other toxins that have been linked to increased cardiovascular and non-cancer lung disease risks.

The new analysis involved 69,452 people who were interviewed through National Health Interview Surveys in 2014 and 2016, a cross-sectional study in which in-person interviewers asked participants whether they had ever used e-cigarettes and/or cigarettes, and whether they had ever been told by a doctor or other health professional that they had had a heart attack.

Among the 9,352 current and former e-cigarette users, 333 (3.6 percent) had experienced a heart attack at some point, with the highest percentage (6.1 percent) among those who used e-cigarettes daily. In the analysis, a quarter of the 2,259 people who currently used e-cigarettes were former smokers of conventional cigarettes and about 66 percent of current e-cigarette users were also current cigarette smokers.

The researchers found that the total odds of having a heart attack were about the same for those who continued to smoke cigarettes daily as those who switched to daily e-cigarette use. For those who used both products daily, the odds of having had a heart attack were 4.6 times that of people who had never used either product.

The authors also said that while there was a "lasting effect" associated with being a former smoker, there was not a significant increase in myocardial infarction risk for former or (sometimes) e-cigarette users. They proposed that the risks of e-cigarette use may

dissipate rapidly when someone stops using them, that some people briefly experiment with e-cigarettes and stop using them before any lasting damage is done, or that e-cigarettes have not been available long enough to cause permanent damage to the cardiovascular system.

"The only way to substantially reduce the risk of a heart attack is to stop using tobacco," Glantz said.

The authors noted that it was not known whether the heart attacks occurred relative to [e-cigarette](#) use, and that some of the [heart attacks](#) that subjects reported are likely to have occurred before e-cigarettes became available in the U.S. (around 2009), which would lead them to underestimate the effects of e-cigarettes on [heart attack risk](#).

More information: Talal Alzahrani et al, Association Between Electronic Cigarette Use and Myocardial Infarction, *American Journal of Preventive Medicine* (2018). [DOI: 10.1016/j.amepre.2018.05.004](https://doi.org/10.1016/j.amepre.2018.05.004)

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