

# Study that investigated whether three smoking cessation drugs could reduce alcohol intake yields unexpected finding

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A clinical trial to test whether three proven smoking cessation treatments could also reduce alcohol intake found no differences between the medications, but the rates of behavior change for alcohol consumption and smoking were high in all treatment groups. Results suggest these medications could play an important role to reduce alcohol use and smoking at the same time. Unexpectedly, nicotine replacement therapy performed as well as the prescription drugs varenicline and cytisine.

The study, published Aug. 5 in *JAMA Network Open*, involved 400 people living with HIV in Russia and was designed by researchers from Vanderbilt University Medical Center (VUMC), Boston University School of Medicine, Boston Medical Center and First Pavlov State Medical University of St. Petersburg, Russia. The investigators, who included addiction specialists and HIV researchers, recruited volunteers who self-identified as engaging in risky drinking and daily

smoking. Participants were followed up to 12 months after enrollment in the clinical trial. Medications were placebo-controlled, so participants and investigators did not know who was assigned to which medication.

The study showed that after three months, alcohol consumption decreased regardless of whether participants were given [nicotine replacement therapy](#), varenicline or cytisine. The main outcome was number of heavy drinking days in the past month at three months, and secondary outcomes included abstinence from alcohol at three months, and abstinence from smoking at six months.

"A single medication to treat both risky drinking and smoking could improve health efficiently and significantly. Risky drinking and smoking frequently co-occur, and they both threaten health by increasing risk of cardiovascular disease, cancer and other important health outcomes," said the study's lead author, Hilary Tindle, MD, MPH, the William Anderson Spickard, Jr., MD, Professor of Medicine, and associate professor of Medicine at VUMC. "

Researchers are increasingly focusing on comorbidities among people living with HIV, such as cardiovascular disease and cancer, to improve their longevity because there are now effective treatments for the virus.

"It was gratifying to see high-risk research participants being included in NIH-funded research," said Matthew Freiberg, MD, MSc, a study principal investigator, Dorothy and Laurence Grossman Chair in Cardiology and professor of Medicine at VUMC. "They are not only living with HIV, but also have a high burden of hepatitis, multi-substance use and mental health issues. Such participants are often excluded from drug trials. If a

medication as simple as nicotine replacement could help them, that would be a win."

Freiberg noted that when investigators had designed the study, they envisioned the nicotine replacement as the "control" arm for alcohol consumption. Nicotine replacement therapy has been available in the United States to treat tobacco addiction since the early 1980s and is not used for reduction of alcohol consumption.

The study enrolled participants who engaged in five or more heavy drinking days in the past month (defined as five or more drinks in one day for a man or four or more drinks in one day for a woman) and who smoked five or more cigarettes a day.

VUMC researchers worked with Jeffrey Samet, MD, MA, MPH, the John Noble, MD, Professor in General Internal Medicine and professor of Community Health Science at Boston University Schools of Medicine and Public Health, and colleague on the study. Samet's research focuses on [substance abuse](#) and HIV infection.

"Another important observation in our post-hoc analysis was that rates of alcohol consumption were lower, and rates of alcohol abstinence were higher, among the people who quit smoking as compared to those who continued to smoke. These results need further study to understand if findings were due to the medications directly, quitting [smoking](#) or both," said Samet, the senior author on the study.

Tindle added that there is much to be learned about how the study drugs—termed nicotinic acetylcholine receptor agonists—may work to reduce voluntary [alcohol intake](#). Studies in animal models show that stimulation of a very specific receptor type containing the alpha four subunit is required. Importantly, all three of the study medications target these very receptors.

The investigators concluded that the results of the study, which was conducted from July 2017 to December 2020, extends prior work in several ways. Notably, this is the largest trial to study nicotinic acetylcholine receptor partial agonists to target [alcohol consumption](#) and the first to examine

cytisine to treat both [alcohol](#) and tobacco. Cytisine is not yet approved by the U.S. Food and Drug Administration to treat tobacco use but it has been used widely in Eastern Europe for decades and is under active study globally.

**More information:** Effectiveness of Varenicline and Cytisine for Alcohol Use Reduction Among People With HIV and Substance Use, *JAMA Network Open* (2022).

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