Smoking study personalizes treatment

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Investigators are using personalized medicine to help patients determine which smoking cessation strategy may be more effective for them. Credit: Vanderbilt University

A simple blood test is allowing Vanderbilt University Medical Center (VUMC) researchers to determine which patients should be prescribed varenicline (Chantix) to stop smoking and which patients could do just as well, and avoid side effects, by using a nicotine patch.

The first-of-its-kind clinical study combines smoking cessation with personalized medicine by learning whether the patient is a "normal" or "slow" metabolizer of nicotine, and then using that information to select medication to quit smoking.

The novelty of the approach taken by VUMC researchers was to actually tell smokers whether they were normal or slow metabolizers.

A large study in 2015 showed that normal metabolizers of nicotine

would quit smoking at rates that were twice as high if they used varenicline (Chantix) versus the nicotine patch, while slow metabolizers quit just as often on either medication. But the results had not yet been put into clinical practice.

"You have to treat about five normal metabolizers with varenicline to help one person quit smoking, while, by contrast, you have to treat about 26 normal metabolizers with the nicotine patch in order to help just one quit smoking," said lead author Quinn Wells, MD, assistant professor of Cardiovascular Medicine.

This information may offer a "smarter" way to help people quit smoking , according to the study's senior author, Hilary Tindle, MD, founding director of ViTAL, the Vanderbilt Center for Tobacco, Addiction, and Lifestyle.

Chantix performs about the same as the patch in slow metabolizers, which is important because it is more expensive and can cause side effects such as nausea in about one-third of people, she said.

The study, published in *Nicotine & Tobacco Research*, enrolled 81 outpatient, treatment-seeking, adult, daily smokers with medical comorbidity (median age 53.5 years, 44.4 percent female, 28.4 percent black) from the VUMC Cardiology and GI-Inflammatory Bowel Disease clinics.

All participants were willing to undergo a blood test to see if they were "normal" or "slow" metabolizers of nicotine, and 90 percent of the study participants theoretically endorsed the idea of metabolism-informed care. A large majority (84 percent) of participants who received their metabolism information were also willing to follow recommendations of the blood test: Chantix for normal metabolizers and nicotine patch for slow metabolizers.

"In Caucasians, about two-thirds of people are normal metabolizers, while about one-third are slow metabolizers," Wells said.

In the Vanderbilt study, 84 percent of the metabolism-informed care group were prescribed medications that matched their metabolism as opposed to only 58 percent of the guideline-based care study group.

"Metabolism-informed care increased the odds of optimized medication matching more than threefold over guideline-based care," Tindle said.

The research team is now studying how to best implement precision approaches to quitting smoking throughout the health system.

Provided by Vanderbilt University