Simple genetic test promises better outcomes in heart stent patients

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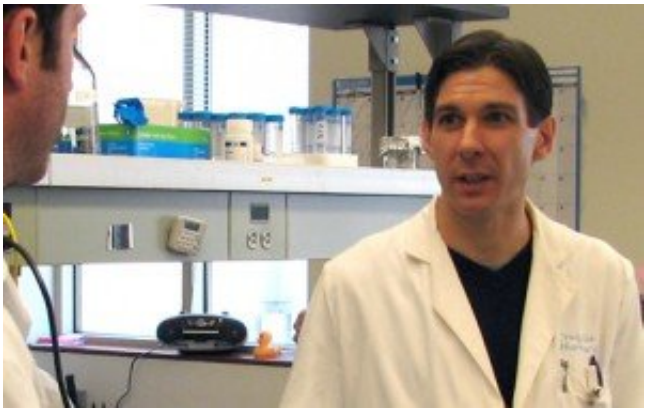

Craig Lee, PharmD, PhD. Credit: University of North Carolina at Chapel Hill School of Medicine

Researchers in the Division of Cardiology, School of Pharmacy and UNC McAllister Heart Institute at the University of North Carolina at Chapel Hill are part of a national study which found that a quick, precise genetic test, when used to guide medication selection, can significantly reduce the risk of cardiovascular events in patients who receive a coronary stent. The study was conducted by the National Institutes of Health's Implementing Genomics in Practice (IGNITE) network, and published online November 1.

The test identifies a genetic deficiency that affects the body's ability to activate clopidogrel, a common anti-clotting drug given after a coronary

artery stent is inserted. Researchers at UNC and six other sites throughout the country analyzed medical outcomes in 1,815 patients who had genetic testing at the time of their cardiac procedure. They found that 572 patients (approximately 30 percent) had a gene which predicted that clopidogrel would not be metabolized normally (a loss-of-function allele). The risk for major adverse cardiovascular outcomes was twice as great in these patients if they were treated with clopidogrel compared to alternative therapy.

The study examined the effect of genotype-guided treatment on cardiovascular outcomes after a percutaneous coronary intervention, or PCI, in which a metallic stent is inserted into a heart artery to treat a blockage. The findings are the first from a large group of U.S. patients to show that the risk of cardiovascular problems is reduced when PCI patients with a genetic deficiency get an alternative medication.

"Patients with the genetic deficiency saw significantly better outcomes when treated with an alternative drug," said Craig Lee, PharmD, PhD, associate professor at the UNC Eshelman School of Pharmacy and a co-author of the study.

The genetic test that identifies a patient's response to clopidogrel is performed by the UNC Health Care Molecular Pathology and Genetics Lab.

"We are using this test on a daily basis to help decide in a timely manner which drug to prescribe, said George "Rick" Stouffer, III, MD, the Henry A. Foscue Distinguished Professor of Medicine, chief of cardiology at UNC, and a coauthor of the current study.

The results of this trial show the power and the promise of personalized medicine, which tailors medical decisions based on a patient's genetic information and other unique characteristics.

"This is an important breakthrough in personalized medicine because it shows how a genetic marker can be used to modify treatments and improve patient outcomes," said Tim Wiltshire, PhD, director of the UNC Center for Pharmacogenomics and Individualized Therapy.

More information: Larisa H. Cavallari et al. Multisite Investigation of Outcomes With Implementation of CYP2C19 Genotype-Guided Antiplatelet Therapy After Percutaneous Coronary Intervention, *JACC: Cardiovascular Interventions* (2017). DOI: 10.1016/j.jcin.2017.07.022

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