Genetic test helps improve outcomes in heart stent patients

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A genetic test recently implemented at UPMC Presbyterian can significantly reduce the risk of cardiovascular events by helping to identify more effective medication for some heart patients, according to the results of a large study conducted in part at the University of Pittsburgh and UPMC. The findings are being presented today at the American Heart Association's Scientific Sessions in New Orleans.

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. About 30 percent of all patients have the genetic deficiency, which can lead to decreased clopidogrel effectiveness and increased risk for adverse cardiovascular events, such as strokes, heart attacks and death.

In the current study from the National Institutes of Health's Implementing Genomics in Practice (IGNITE) Network, researchers at the University of Pittsburgh School of Pharmacy and other sites throughout the country analyzed medical outcomes in 1,815 patients who had genetic testing at the time of their cardiac procedure. The testing allows physicians to pinpoint the best anti-clotting medication for each patient.

The study reported significant results: About 60 percent of patients with the genetic deficiency were given a different, more effective medication. Using the genetic data to guide changes in therapy reduced the percentage of deaths, heart attacks or strokes by nearly half

compared with those who continued taking clopidogrel, the researchers found. Among those who had the genetic deficiency and continued taking clopidogrel, 8 percent experienced one of those complications.

"We saw significantly fewer adverse events among patients who were switched to an alternative drug," said Larisa Cavallari, Pharm.D., director of the Center for Pharmacogenomics at the University of Florida College of Pharmacy who led the multi-institutional study.

Earlier this year, UPMC Presbyterian became one of the first medical centers in the country to make this test available for patients as part of the PreCISE-Rx (Pharmacogenomics-guided Care to Improve the Safety and Effectiveness of Medications) initiative. Approximately 10 percent of the study population was analyzed by the team at Pitt and UPMC, one of the affiliates in the IGNITE Network.

"This study is a major step forward as it shows applying pharmacogenomics to achieve a precision medicine approach in cardiac stent patients can provide significant benefits," said Philip Empey, Pharm.D., Ph.D., assistant professor of pharmacy and therapeutics at the Pitt School of Pharmacy and leader of the Pitt team.

PreCISE-Rx is a leading initiative of the Institute for Precision Medicine (IPM), a joint effort by UPMC and Pitt to move biomedical research into personalized well-being and clinical care.

"The success of PreCISE-Rx demonstrates that the IPM is well-positioned to dramatically improve the standard of care through precision medicine by taking advantage of the world-class clinical and research expertise in Pittsburgh," said Adrian Lee, Ph.D., professor of pharmacology and chemical biology at Pitt, and director of the Women's Cancer Research Center, University of Pittsburgh Cancer Institute.