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World's first bedside genetic test proves effective

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Tailored anti-platelet therapy, made possible through a novel point-of-care genetic test, optimizes treatment for patients who carry a common genetic variant, researchers at the University of Ottawa Heart Institute (UOHI) have found.

A UOHI clinical trial known as RAPID GENE studied 200 patients undergoing coronary stent implantation for acute coronary syndrome or stable angina. Use of a simple, saliva swab test performed by nurses at the bedside on half of the patients allowed doctors to almost instantly identify those with the genetic variant, known as CYP2C19*2, which puts them at risk of reacting poorly to standard anti-platelet drug therapy, and administer an alternative drug.

The study demonstrated that tailored drug treatment therapy made possible by the genetic testing successfully protected all of the patients with the at-risk genetic variant from subsequent adverse events, while 30 per cent of patients treated with standard therapy did not receive adequate protection.

"These results are extremely promising, not only in the field of cardiology but for all areas of medicine. If you can administer a simple, rapid genetic test at the bedside, doctors can prescribe the right drug to the right patient at the right time. We then have a much greater chance of improving health outcomes and providing cost savings for the health care system," said Dr. Derek So, lead researcher for the study and Staff Interventional Cardiologist and Assistant Professor at the University of

Ottawa Heart Institute.

About 25 per cent of Caucasians and up to 40 per cent of Asians have the genetic variant CYP2C19*2, which puts a patient at risk of not responding well to clopidogrel (Plavix), the standard anti-platelet drug given following stent procedures. Those tested who were found to carry the at-risk genetic variant were administered an alternative drug, prasugrel (Effient).

About half of the patients were randomly selected to undergo the bedside genetic testing. This was compared to a group receiving conventional treatment without genetic testing.

"The RAPID GENE trial shows that point-of-care genetic testing is clinically feasible and accurate, and facilitates rapid personalization of anti-platelet therapy. A pharmacogenetic approach to treatment carries the potential to maximize treatment efficacy, while simultaneously minimizing harm to patients," stated Dr. Jason Roberts, the co-Principal Investigator of RAPID GENE and Resident Physician at UOHI.

The clinical trial findings were presented today by Dr. So as a late-breaking clinical trial at the Transcatheter Cardiovascular Therapeutics 2011 conference – the world's largest forum for interventional cardiovascular medicine, which showcases the latest advances in current therapies and clinical research.

Traditionally, genetic testing to gain this kind of patient knowledge takes anywhere between five to seven days. The rapid nature of this first bedside test allows doctors to react much more quickly to make effective decisions about treatment.

The point-of-care genetic test used in the study is a first in medicine and overcame many of the previous obstacles that had prevented routine

clinical genetic testing. The test featured:

-- A saliva swab performed by clinical nurses at the bedside with no prior training in genetic laboratory techniques.
-- A one-step insertion of the swab into a testing machine.
-- Sixty minutes to identify whether individuals carried the at-risk genetic variant.

Provided by University of Ottawa Heart Institute