P450 2C19 Genotyping for Determination of Clopidogrel (Plavix) Resistance

Summary and Explanation of the Test:
Loss of function variants of the cytochrome P450 2C19 (CYP2C19) gene are associated with reduced blood levels of the active metabolite of clopidogrel (Plavix) and a lack of efficacy (stent thrombosis, recurrent myocardial infarction, and death) in a gene-dose dependent manner (1). The ultra-metabolizing variant CYP2C19*17 is associated with an increased blood levels of active metabolite and increased risk of bleeding in patients on clopidogrel therapy (2). The CYP2C19 enzyme is also involved in the metabolism of many other drugs, so patients with reduced or increased metabolism may also have altered response to other drugs (3). Alleles *6 through *10 and *12 have been shown to exhibit reduced or poor metabolism in vitro, but significant clinical outcomes data in these uncommon variants is limited. Clinical consultation is available with the medical director (Dr. Kenneth Muldrew at 419-383-6444) regarding the response of other drugs with certain P450 2C19 genotypes. Useful guidelines and more information can be found in the Pharmacogenomics Knowledgebase (www.pharmgkb.org/).


Turn-Around-Time: 5-7 days

Sample Requirements:
Whole blood collected in EDTA (purple top) or ACD (yellow top) Vacutainer tubes is the specimen of choice. *Samples collected in a green top tube (heparin anticoagulated) are not acceptable.

Results Reporting:
A report is issued containing the results of the test (normal, heterozygous, or homozygous genotype) and an interpretation with reference to the metabolizer phenotype and expected clopidogrel (Plavix) response.

References:

Further information can also be found on the Molecular Diagnostics website: http://www.utoledo.edu/med/depts/path/moldx/index.html
For any further questions regarding pharmacogenetic testing, please contact the Molecular Diagnostics laboratory at 419-383-5636 or the medical director (Dr. Muldrew) at 419-383-6444.