

Cytochrome P450 CYP2C19 Genotype Testing

Clinical Indication and Relevance

Genetic variance in the *cytochrome P450 2C19* gene can affect the pharmacokinetic and pharmacodynamic responses to different drugs, including clopidogrel and voriconazole. The *CYP2C19* genotyping test is used to identify individuals carrying genetic variants that can influence response to treatment with drugs that are metabolized by this enzyme. Determination of a patient's genotype and drug response can help to optimize efficacy and minimize adverse effects of therapy.

Methodology

The assay is performed on patient genomic DNA by real-time PCR. Three common genetic variants of the *CYP2C19* gene (allele *2, rs4244285; allele *3, rs4986893; and allele *17, rs12248560) are detected by TaqMan probe technique. Genotypes of three common genetic variants are reported.

Sensitivity

N/A

Turn-around Time

5-7 working days

STAT sample: 2 working days – please call lab before submitting sample

Sample Requirements

Collect

Peripheral blood (PB): 3-5 mL (1 mL minimum), in purple top (sodium EDTA) tube.

Transport

Ambient or 2-8°C (wet ice or cold packs). Do not freeze.

Stability

PB samples: ambient - 8 hours; refrigerated - 48 hours.

Unacceptable Samples

Serum or plasma; frozen peripheral blood; clotted blood; severely hemolyzed samples.

CPT Code(s)

81225: *CYP2C19* (cytochrome P450, family 2, subfamily C, polypeptide 19), gene analysis, common variants (eg, *2, *3, *4, *8, *17)

G0452-26: Molecular pathology procedure; physician interpretation and report

References

1. Berg M et al. *Eur J Clin Pharmacol.* 67:253, 2011
2. Collet JP et al. *Lancet.* 373:309, 2009
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4. Matsumoto K et al. *Int J Antimicrob Agents.* 34:91, 2009
5. Mega JL et al. *N Engl J Med.* 360:354, 2009
6. Sibbing D et al. *Eur Heart J.* 30:916, 2009
7. Sibbing D et al. *Circulation.* 121:512, 2010
8. Simon T et al. *N Engl J Med.* 360:363, 2009