Warfarin Sensitivity Genotyping Assay: Test Ordering Information

Test Information (v1_020112):
Warfarin Sensitivity Genotyping Assay (CMGDL test code 4003)
CPT Codes 83891x1, 83892 x2, 83900 x1, 83901 x5, 88384 x1, 83912-Report & Interpretation
For additional information please refer to the CMGDL www.medgen.med.miami.edu.

Clinical Significance and Test Indications
Warfarin (Coumadin®) is one of the most widely adopted anticoagulants. Warfarin use has potentially severe hemorrhagic or thrombotic consequences if dosage is incorrect. The labeling of warfarin includes information about *CYP2C9*^*2*, *CYP2C9*^*3*, and *VKORC1* -1639G>A indicating that these mutations, highly prevalent among Caucasians, affect dose requirements.

Test Indications:
- This test is indicated to determine the genotype affecting warfarin metabolism
- Although widespread adoption of genotyping for warfarin sensitivity is not recommended, this test is useful in warfarin-naïve patients.
- In addition this test may help management of patients with a previous history of bleeding under warfarin or are on warfarin prophylactically after surgery.

Specimen Requirements
2.0 ml of whole blood (minimum)
Collection Tube: Lavender Top Tube /w EDTA
Handling: Room Temp- specimen processed within 72 hours

Turn-Around Times
2 business days.

Methodology and Assay Characteristics
This test is performed using the eSensor® Technology, a solid-phase electrochemical method for determining the genotyping status of a defined panel of mutations (read more at www.medgen.med.miami.edu).

The eSensor® Warfarin Sensitivity Test is an in vitro diagnostic for the detection and genotyping of the *2 and *3 alleles of the cytochrome P450 (CYP450) 2C9 gene locus and the Vitamin K epoxide reductase C1 (*VKORC1*) gene promoter polymorphism (-1639G>A) from genomic DNA extracted from whole blood samples preserved with EDTA.

Panel of Alleles Detected
The polymorphisms genotyped by the CMGDL Warfarin Sensitivity test via the eSensor® Warfarin Sensitivity Test are listed below:
- *CYP450 2C9* 430 C>T *2
- *CYP450 2C9* 1075A>C *3
- *VKORC1* -1639G>A GG, GA, or AA

The *CYP450 2C9* allele designations as established by the Human Cytochrome P450 (CYP) Allele Nomenclature Committee (http://www.cypalleles.ki.se/cyp2c9.htm). The major alleles of these polymorphisms are designated as *1.

Clinical Sensitivity
90 percent of *CYP2C9* and *VKORC1* mutations causing warfarin sensitivity in Caucasians are detected by this assay. Clinical Sensitivity is less characterized in other populations.

Analytical Sensitivity and Specificity
99 percent of analytical sensitivity and specificity.

Test Limitations
- Additional allelic variants other than the *2 and *3 alleles of the cytochrome P450 (CYP450) 2C9 gene locus and the Vitamin K epoxide reductase C1 (*VKORC1*) gene promoter polymorphism (-1639G>A) or in other genes will not be detected.
- The eSensor® Warfarin Sensitivity Test used by the CMGDL to perform this assay does not identify all possible polymorphisms in the *CYP450 2C9*, for example, *CYP450 2C9* 1076T>C (*4), 1080C>G (*5), 818delA (*6), 1003C>T (*11), 374G>A (*14), 485C>A (*15) and 895A>G (*16), or *VKORC1* genes.
- The presence of a novel mutation may result in a failure of the assay to generate an accurate result or in the inability to make a genotype determination for that sample.
- For all the alleles we cannot exclude the possibility of rare mutations located in close proximity to the mutations tested that could interfere with the genotyping results and be the cause of a diagnostic error such as a false positive or incorrect result or false negative result.
- Mutation detection is not a substitute for therapeutic drug monitoring.
- Non-genetic factors may also affect drug metabolism.
- Results of this test should be interpreted in the context of clinical presentation and in consultation with a licensed geneticist and/or pharmacist.

Pursuant to the requirements of CLIA '88, this laboratory has verified the test accuracy and precision. Genetic testing using the methods applied by the CMGDL is expected to be highly accurate. However, the chance of a false positive or a false negative result, due to laboratory errors incurred during any phase of the testing, cannot be completely excluded.

**Related Tests** (visit our website at [www.medgen.med.miami.edu](http://www.medgen.med.miami.edu))

**References:**
- eSensor® Trombophilia Risk Test Product Insert, PI0205REV:A