

VCUHS Pathology Laboratories
NEW TEST UPDATE: Warfarin Genotyping
Effective: 9/1/2007

Name: Warfarin Genotyping

Internal Code: 52814

CPT Code: 83891, 83900, 83901, 83914 (X6), 83903, 83912

Related Information: Molecular Pathology Tests

Synonyms: CYP2C9 and VKORC1 Genotyping

Laboratory: Molecular Diagnostics

Availability: Mon-Fri, 8 AM – 5 PM

Turnaround Time: 7 days

Specimen: Blood

Volume: 3.0 mL blood

Minimum volume: 1.0 mL blood

Container: Lavender top (EDTA)

Collection: Routine venipuncture. Specimen must be labeled with the patient's full name, hospital number and the date and time of collection.

Storage Instructions: Store blood at 4°C until delivery to the Molecular Diagnostics Laboratory

Causes for Rejection: Improperly labeled, clotted, hemolyzed or heparinized blood

Reference Interval: Not applicable

Use: CYP2C9 (Cytochrome P450) and VKORC1 (Vitamin K epoxide reductase complex subunit 1) play important roles in metabolism of Coumadin-based anticoagulants. Interindividual variability in the DNA sequence of these two genes account for 25% (VKORC1) and 10-14% (CYP2C9) variability in Warfarin dosing. Warfarin overdosing and underdosing can result in life-threatening events (e.g. bleeding or thrombosis). VKORC1 (-1639), CYP2C9*2 and CYP2C9*3 are among the best characterized polymorphisms. Presence of heterozygote missense mutation VKORC1 (-1639 G>A) can result in Warfarin resistance, while homozygous missense mutation leads to combined deficiency of Vitamin K-dependent coagulation factors. The presence of the CYP2C9*2 and CYP2C9*3 alleles can result in poor metabolizer phenotype.

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Limitations: The extracted DNA concentration should be between 1-10 ng/uL.

Methodology: Third Wave Technologies Invader® Chemistry based DNA genotyping utilizing sequence specific Invader® DNA probes, a structure-specific cleavage enzyme and a universal fluorescent resonance energy transfer (FRET) system combined with microtiter plate reader instrumentation and interpretative software.