

Genetics



MOLECULAR PATHOLOGY
LABORATORY NETWORK, INC.

ThromboFLEX™ Profile

Determination of Thrombotic Risk

Specific laboratory tests are necessary to distinguish heterogeneous causes of thrombosis in patients presenting with early onset, familial, recurrent or unprovoked venous thrombotic events (VTE).

Acquired and inherited thrombotic risks are initially assessed with a detailed family history; however, identification of genetic risk factors is important for effective management of anticoagulant therapy.

Thrombotic Risk Assessment

Genetic mutations and polymorphisms in several well characterized genes are associated with an increased risk for venous thrombosis:

Risk Factors:

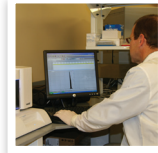
- Family history of VTE
- VTE before the age of 45
- Recurrent VTE
- VTE at unusual anatomic sites
- Pregnancy in women with VTE
- Recurrent pregnancy loss, unexplained severe preeclampsia, placental abruption, intrauterine fetal growth retardation, or stillbirth
- Oral contraceptives or estrogen replacement with a history of VTE

ThromboFLEX Profile

Offered by Molecular Pathology Laboratory Network, Inc. (MPLN), the ThromboFLEX Profile simultaneously analyzes the Factor V, Factor II, Methylenetetrahydrofolate Reductase (MTHFR), and Plasminogen Activator Inhibitor (PAI) genes for common mutations (polymorphisms) reported to be associated with an increased risk for venous thrombosis.

Thrombophilia

Thrombophilia is defined as a predisposition to thromboses associated with genetic and/or environmental risk factors that contribute to the induction of the hypercoagulatable state. Venous thrombotic events are common, affecting approximately 1/1,000 individuals annually.



It is estimated that ~50% of all VTE are associated with genetic mutation(s) in one or more of the known thrombophilia-associated genes. Identification of these genetic risk factors is important for clinical management, as anticoagulant therapy is an effective treatment.

Factor V (Leiden G1691A / R506Q)

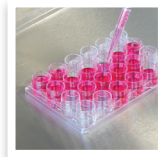
- Greater than 95% of cases of hereditary resistance to activated protein C (APC) are associated with the Factor V mutation.
- The Factor V mutation is the most common genetic cause of venous thrombosis.
- Factor V heterozygotes carry a 5-10X increased risk for venous thrombosis.
- Homozygotes carry a 50-100X increased risk.
- For women, this mutation can be associated with an increased risk for preeclampsia and pregnancy loss, as well as oral contraceptive induced venous thrombosis.



Factor II (Prothrombin G20210A)

The Factor II G20210A mutation is associated with increased plasma prothrombin levels and a 2- to 5-fold increased risk for venous thrombosis.

Risk may be increased if other factors are known to be present. Risks include genetic (presence of Factor V mutation) or acquired/environmental factors known to induce hypercoagulability (smoking, hypertension, diabetes, obesity, oral contraceptive use, hormone replacement therapy and pregnancy).

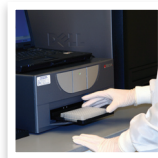


Methylenetetrahydrofolate Reductase (MTHFR C677T and A1298C)

The MTHFR C677T polymorphism can be associated with increased plasma concentrations of homocysteine (hyperhomocysteinemia), an independent risk factor for venous thrombosis, arterial vascular disease, and pregnancy-related venous complications.

The MTHFR C677T polymorphism is very common in the Caucasian population (prevalence of 30-40%).

The risk for venous thrombosis may be further elevated by the concomitant presence of either the Factor V or Factor II mutation or the MTHFR A1298C polymorphism





Plasminogen Activator Inhibitor-1 (PAI-1 4G/5G)

The PAI-1 4G/5G polymorphism is associated with increased plasma concentrations of PAI-1.

Increased plasma PAI-1 has been associated with the progression of coronary syndromes, the development of myocardial infarction and coronary thrombosis.

In women, increased plasma PAI-1 can be associated with an increased risk of complications during pregnancy.

References

1. www.genetests.org
2. www.twt.com

Related Tests

- Factor V Leiden (G1691A/R506Q)
- Factor II (Prothrombin G20210A)
- Methylenetetrahydrofolate Reductase (MTHFR C677T)
- Methylenetetrahydrofolate Reductase (MTHFR A1298C)
- Plasminogen Activator Inhibitor-1 (PAI-1 4G/5G)

Specimen Requirements

5.0 ml (min. 2.0 ml) whole blood EDTA preferred, ACD whole blood accepted.

CPT Codes

For each test within the ThromboFLEX Profile:

83891, 83892, 83896x2, 83903x2, 83912

Test Codes

FVLEI
F2PRO
MTHFR 1298
MTHFR 677
PAI

StrataFLEX™

ThromboFLEX is one component of StrataFLEX approach to molecular diagnostics. StrataFLEX is MPLN's innovative health management **strategy** that provides clinicians with disease specific **reflex** testing options.

Management of patients at risk for thrombosis requires a rational approach to reduce treatment cost and provide effective therapy.

About MPLN

Since 1989, Molecular Pathology Laboratory Network, Inc. has offered an expanding selection of tests in molecular oncology, infectious diseases and human genetics to hospitals, medical laboratories and private physician groups nationwide.

Headquartered in Maryville, Tennessee, MPLN is a fully-licensed laboratory, certified by the Clinical Laboratory Improvement Amendment, accredited by the College of American Pathologists, and licensed in the states of Tennessee, Florida, New York and Maryland.

At MPLN, our philosophy is simple - we build strong professional relationships, deliver personalized service, and offer advanced diagnostic technology to support high-quality patient care.

For more information, contact your local representative or call MPLN client services at 800.932.2943.

Trademarks

ThromboFLEX is a trademark of MPLN.