



Tests Explained

Coagulation Panel

- **Prothrombin Time (PT), activated Partial Thromboplastin Time (aPTT)**

Prothrombin Time (PT) measures the extrinsic pathway of coagulation following damage to blood vessels. Activated Partial Thromboplastin Time (aPTT) measures the intrinsic pathway of coagulation.

Both these tests are done in tandem and help determine the variety of factors involved in the normal blood clotting process and the pathway involved. Clotting factor disorders result either in longer clotting time and hemorrhage, or excessive clotting with thrombosis and micro emboli. Deficiencies have been associated with failed embryo implantations and recurrent pregnancy loss.

- **Clotting Factors (proteins essential for normal blood clotting)**

- **Lupus Anticoagulant**

Lupus is a systemic autoimmune disease that mainly affects women of non-European descent, where the body attacks its own cells. One component of the disease is a specific type of anti-phospholipid antibody in the bloodstream that can cause abnormal blood clotting. Lupus anticoagulant testing is used to help determine the cause of unexplained blood clotting and/ or recurrent pregnancy loss.

- **Anti-Phospholipid Antibodies (APA)**

Phospholipids are a main component of the cell membrane. Antibodies against phospholipids in the blood attach to the cell membrane. Positive APA is an autoimmune disorder that results in an increased blood clotting tendency that can cut off blood flow to the fetus. These antibodies can also cause the placenta to have a weak attachment to the uterine lining and may cause recurrent miscarriages.

Cardiolipin is a phospholipid, a main component of cell membranes. It is essential for proper cell functions necessary for embryo development. Elevated levels of antibodies to

cardiolipin are an autoimmune disorder that may interfere with the ability of cells to function normally, and have been associated with venous and/or arterial thrombosis (clotting), lower counts of blood platelets, and fetal loss.

We test for 2 different forms of antibodies (IgM, and IgG) against the most common APA: anti-phosphatidylserine, anti-cardiolipin, and anti- β_2 glucoprotein antibodies. Next in significance are anti- phosphatidylethanolamine, anti-phosphatidylinositol, anti-prothombin, and anti-annexin antibodies followed by other less common antibodies such as anti-phosphatidic acid and anti-phosphatidylglycerol antibodies.

- Anti-phosphatidylserine Antibodies (IgG & IgM)
- Anti-phosphatidic Acid Antibodies (IgG & IgM)
- Anti-phosphatidylglycerol Antibodies (IgG & IgM)
- Anti-phosphatidylinositol Antibodies (IgG, IgM)
- Anti-phosphatidylethanolamine Antibodies (IgG, IgM)
- Anti-phosphatidylcholine Antibodies (IgG, IgM)
- Anti-prothombin Antibodies (IgG, IgM)
- Anti-annexin Antibodies (IgG, IgM)
- Anti- β_2 glucoprotein Antibodies (IgG, IgM)
- Anti-cardiolipin Antibodies (IgG, IgM)

• **Protein C Activity**

The active form of protein C, activated protein C (APC), exerts potent anticoagulant activity.

A deficiency in protein C is characterized by the inability to control coagulation, resulting in the excessive formation of blood clots (thrombophilia).

Decreased activity of Protein C may occur post-surgery or be caused by liver disease, congenital defects, D.I.C or treatment with oral anticoagulants. Low Prot C activity may cause abnormal blood clotting in veins.

Low Protein C activity levels have been reported in studies of women with spontaneous miscarriage.

• **Protein S activity**

Protein S functions as an anticoagulant by directly inhibiting procoagulants, such as Factor Xa (FXa), FVa, and FIXa, while also serving as a cofactor for anticoagulants such as Activated Protein C and Tissue Factor Pathway Inhibitor.

High levels and activity happen in some situations, including advanced age, but cause no health problems. Reduced activity puts you at risk for blood clots and related dangers.

Protein S Activity may be affected by certain commonly administered drugs (e.g. Warfarin) or certain conditions such as pregnancy, DIC, Vitamin K deficiency, and liver disease.

Low Protein C levels have been reported in studies of women with spontaneous miscarriage.