

Laboratory News

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Protein S: Changes Take Effect With Move to New Platform

Effective Monday, September 27, 2021, Marshfield Labs has modified its algorithm for the diagnosis of protein S deficiency to comply with expert recommendations.

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Protein S Changes

The initial test in the algorithm will be the **free protein S antigen** (PROTSI) level. This assay has better accuracy and less potential interference than protein S activity. Theoretically, one could miss type 2 deficiencies where the activity is low, but antigen level is normal. However, these cases are extraordinarily rare. When indicated, protein S activity testing will be initiated by a clinical pathologist who has reviewed the case and will be performed in house.

Total protein S antigen has a minimal role (if any) in diagnosing protein S deficiency and will not be offered any longer. Protein C activity will continue to be the primary test for protein C deficiency with correlative protein C antigen testing done at the discretion of the clinical pathologist.

Testing for protein S or protein C deficiency is nearly always part of a Congenital Thrombotic Risk Panel that also includes antithrombin activity. To confirm a previous positive (deficiency) result or in the setting of a positive family history, ordering a single test from the panel may be appropriate. Some laboratories offer protein S or protein C testing for patients on a stable warfarin dose by calculating the ratio to another vitamin K dependent factor (such as factor VII or factor X). However, this approach has not been widely validated and is discouraged in the recent opinion of coagulation experts.

Protein S and protein C are vitamin K dependent co-factors. Protein S is a co-factor for protein C which downregulates activated factors V and VIII. Thus, rare inherited deficiencies of either protein S or protein C predispose patients to thrombosis, generally on the venous side. However, acquired deficiencies of either protein S or protein C are far more common. These include recent thrombotic events, liver disease, vitamin K deficiency (most commonly due to warfarin), pregnancy, and female hormonal therapy including many oral contraceptives.

New Test Information:

Test name: Protein S Antigen, No Coumadin

Test Code: PROTSI

Specimen: 0.75 mL 3.2% Citrated Blue Top Tube (BTT), Platelet Poor Plasma

*See Instructions for: [Preparation of Platelet Poor Plasma](#)

Storage: Frozen

Reference

Range: 55-146 %

CPT Code: 85306

For questions please contact:

Regarding test selection: Coagulation Laboratory (1-6356)

For test interpretation: Technical Specialist Jill Brantner (1-6335)

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