

To: Medical Staff, House Staff, Patient Care Centers, and Outpatient Clinics

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Date: 9/3/2025

Subject: Change to Protein C testing methodology (switch to chromogenic Protein C assay)

Effective Date: 9/3/2025

Laboratory Section: Coagulation

Description/Summary:

The UCM Coagulation lab is switching our Protein C (PC) functional assay from a clotting-based assay to a chromogenic assay. This change is supported by international guidelines (ref: Cooper) to reduce interference by medications, lupus anticoagulants, and elevated factor VIII (8). We will continue to perform PC antigenic assays in settings of low PC function. Combining functional and antigenic testing allows determination of congenital deficiency types (1 or 2).

PC activity is reduced in the setting of warfarin, vitamin K deficiency, or recent thrombosis. A normal prothrombin time excludes most causes of acquired PC deficiency, and normal levels of factors VII and X suggest isolated PC deficiency.

We recommend ordering thrombophilia testing only when supported by guidelines (ref: Middeldorp). It is recommended to delay collection until 6 weeks after acute thrombosis (ref: Heit). It is also recommended to delay collection until 2 weeks after discontinuing warfarin, or 2 days after discontinuing heparin or DOAC (ref: Connors).

If requested, we will facilitate send-out clotting-based PC activity testing for the rare type 2B deficiency if heritable thrombophilia is strongly suspected but chromogenic PC level is normal.

References

- Cooper PC, Pavlova A, Moore GW, Hickey KP, Marlar RA. Recommendations for clinical laboratory testing for protein C deficiency, for the subcommittee on plasma coagulation inhibitors of the ISTH. J Thromb Haemost. 2020 Feb;18(2):271-277.
- Middeldorp S et al. American Society of Hematology 2023 guidelines for management of venous thromboembolism: thrombophilia testing. Blood Adv. 2023 Nov 28;7(22):7101-7138
- Heit JA. Hematology Am Soc Hematol Educ Program 2007 (1): 127-135
- Connors JM. Thrombophilia Testing and Venous Thrombosis. N Engl J Med. 2017 Sep 21;377(12):1177-1187

Questions: If there are any questions please contact:

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