



MEMORANDUM #145

TO: UNC Hospitals Attending Physicians and Faculty Practice Physicians, Housestaff, Clinical Nurse Coordinators, Department Heads and Supervisors

FROM: *HCU* Herbert C. Whinna, MD, PhD, Medical Director, McLendon Clinical Laboratories and Director, Core Laboratory; Automated Coagulation

MRX Marian Rollins-Raval, MD, MPH; Medical Director, Special Coagulation Laboratory

SUBJECT: **Artificially reduced aPTT due to Emicizumab (trade name Hemlibra)**

DATE: June 25, 2018

Emicizumab (trade name Hemlibra) is a humanized monoclonal antibody for the treatment of hemophilia A. This drug acts to replace the function of factor VIII, by binding to the activated factor IX and factor X, potentiating the activation of factor X.

In November 2017, it was approved by the US FDA for treatment of haemophilia A patients who had developed resistance to other treatments.

This drug will lead to an artificially reduced aPTT, as well as affecting all assays based on this principle (i.e. FXII, FXI, FIX, Protein C and S activities, aPC Resistance, ACT, and TEG).

Assay effect described or theorized

Assay principle	Assay	Effect of emicizumab	Mitigation/alternative test
Intrinsic clotting	ACT	Reduced	None identified
aPTT based assays	aPTT	“Normal” clotting time, even at low plasma drug concentration	None identified; limited utility in these patients
	Protein S	Reduced	Use chromogenic Protein C
	Protein C	Reduced	Use free Protein S or PT-based protein S assay
	FVIII	>100% FVIII activity	Use FVIII chromogenic (Hyphen Kit only) and divide by 3—not a great alternative
	FXII,FXI, FIX	Increased	ELISA antigen tests
	APC Resistance	Uncertain, but likely disturbed	FVL molecular test
	Bethesda Inhibitor assays	False negative	Use Chromogenic Bethesda (bovine based) assay

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Assay principle	Assay	Effect of emicizumab	Mitigation/alternative test
LAC testing	dRVVT	No effect	
	Antibody tests	No effect	
	Kaolin/Silica based clotting time	Decreased	dRVVT and antibody tests

Some chromogenic assays (Anti-Xa, Protein C chromogenic, anti-thrombin, plasminogen), PT/TT-based assays, Latex particle, ELISAs, and Genetic tests, should not be affected by this drug.

If there is clinical concern for a bleeding patient with unexpected results (possibly secondary to emicizumab administration), please contact the McLendon Clinical Laboratories Clinical Coagulation attending on call or the Hematology/Oncology Coagulation/Benign Hematology consult service.