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REGIONAL MEDICAL LABORATORY

Memorandum

To: St. John Medical Center Medical and Nursing Staff
Jane Phillips Medical Center Medical and Nursing Staff
St. John Sapulpa Medical and Nursing Staff
St. John Owasso Medical and Nursing Staff

From: Lawrence Johnson, MD, FCAP, Chief of Hematology, Coagulation, and Flow Cytometry
Lizbeth Carreiro, CLS (ASCP), Manager Hematology, Coagulation, and Flow Cytometry

Date: September 1, 2010

Re: aPTT-Heparin therapeutic range and Heparin Dosing Nomogram changes effective Friday September 3, 2010 at 0800 hours

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Annually, the laboratory must switch to new lots of coagulation reagents used in the determination of both the prothrombin (PT) and the activated partial thromboplastin time (aPTT). Correlation studies have been performed with both the current lot of reagents as well as the new lot of reagents. On the basis of these studies, the PT and aPTT normal ranges will not be changed.

However, the weight-based heparin therapeutic dosing range/nomogram, as determined by the aPTT results in seconds, will change. The changes will take place at 0800 hours on Friday, September 3rd. The aPTT is an indirect method for monitoring unfractionated heparin therapy using the Brill-Edwards method. Briefly, a best fit heparin dose response curve for the aPTT is generated using direct measurement of heparin via a factor Xa inhibition assay and comparing this value to the corresponding aPTT values in seconds**.** The therapeutic aPTT in seconds corresponds to a heparin level of 0.3-0.7 IU/ml via the factor Xa inhibition assay. All forms will be redistributed via Pharmacy.

In addition, direct measurement of heparin using a factor X_a inhibition assay is always available at the core laboratory for those wishing to directly monitor heparin using the target therapeutic heparin level of 0.3-0.7 IU/ml. This method may also be more appropriate for patients with prolonged aPTT values secondary to the effects of a lupus anticoagulant, prolonged aPTT values secondary to acute venous thromboembolism because of the association of an elevated Factor VIII functional activity level, which can lower the dose-response relationship between the heparin concentration and aPTT prolongation, secondary to factor deficiencies. Also, this assay may be more appropriate in those patients with renal failure, as heparin is cleared by the kidneys, in patients with antithrombin deficiency, and finally in those patients with body weight extremes.

The revised weight-based nomogram for monitoring unfractionated heparin therapy is attached.

For questions or comments, contact Dr. Johnson or Liz Carreiro at (918)744-2500, or by email at LRJohnson@sjmc.org or lizbeth.carreiro@sjmc.org.

Attachments: Heparin Nomogram

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Dose Adjustment of Heparin According to Laboratory Values

Revised September 3, 2010

		Rate Change
aPTT Values (sec)	**Heparin anti-Xa Values (IU/ml)**	
<44	<.10	80 U/kg bolus, the 4 U/kg/h
44-62.9	0.10-0.29	40 U/kg bolus, then 2 U/kg/h
63-101	0.30-0.70	No Change
101.1-130	0.71-1.0	Decrease infusion rate by 2 U/kg/h
>130	>1.0	Hold infusion 1 hour, then decrease infusion rate by 3 U/kg/h

		Rate Change
aPTT Values (sec)	**Heparin anti-Xa Values (IU/ml)**	**For MI patients**
<40	<0.05	60 U/kg bolus, the 4 U/kg/h
40-53.9	0.05-0.19	40 U/kg bolus, then 2 U/kg/h
54-73	0.20-0.40	No Change
73.1-101	0.41-0.70	Decrease infusion rate by 2 U/kg/h
>101	>.70	Hold infusion 1 hour, then decrease infusion rate by 3 U/kg/h

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