Memorandum:

To: Medical Staff, Residents and Clinicians

From: John D. Olson, M.D., Ph.D., Director of Clinical Laboratories, University Health System
Russell A. Higgins, M.D., Director, Hematology Laboratory University Health System

Subject: Activated Partial Thromboplastin Time and direct thrombin inhibitors

A number of studies have demonstrated that the activated partial thromboplastin time (aPTT) is dependent on both the instrument and the reagent that are used for performing the test. Any time that there is a change in either the reagent or the instrument, one can anticipate some change in the reactivity of the reagent to specimens from patients in different clinical settings. New reagents used for the aPTT are chosen to provide consistent performance from one lot to the next, requiring the clinician to use the test without changing her/his clinical thresholds.\(^1,2\) Currently the aPTT reagents available have a remarkably increased sensitivity and are not recommended for the monitoring of therapy with unfractionated or low molecular weight heparin. For information regarding monitoring heparin therapy click here. The approximate therapeutic interval for heparin if the aPTT is used for monitoring is 75-135 seconds.

**Isolated Factor Deficiency and Acquired Coagulopathies** The performance of the test in isolated factor deficiency demonstrates a sensitivity to factor VIII deficiency of 30-35% and to factor IX deficiency of 20%. With dilution of plasma with buffer, the test becomes abnormal with only 20% dilution, therefore the test is not satisfactory for the monitoring of patients with dilutional coagulopathy.

**Direct Thrombin Inhibitors**\(^3\): Manufacturers recommend the use of the aPTT to monitor the use of direct thrombin inhibitors such as hirudin analogues (ie Lepirudin) and argatroban (ie Novastan). In general, the recommendations are to target the aPTT to 1.5 to 2.5 times the baseline of the reference range. Along with UHS pharmacy, the hematology laboratory has constructed a nomogram for direct thrombin inhibitors based on 1.5 to 2.5 times the median of the current aPTT reagent. See the pharmacy protocol for starting dosage and recommendations for patients with renal insufficiency.

<table>
<thead>
<tr>
<th>APTT (seconds)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;40</td>
<td>Increase infusion rate increments of 20%; Recheck aPTT 4 hours after dosage change</td>
</tr>
<tr>
<td>45-70 seconds</td>
<td>No change</td>
</tr>
<tr>
<td>&gt;75</td>
<td>Stop infusion for 2 hours and restart at 50% reduced infusion rate.; Recheck aPTT 4 hours after restart</td>
</tr>
</tbody>
</table>
For a guide to monitoring DTI, click here.

Should you have any questions about these matters please free to contact Dr. Russell Higgins, UHS (Pager 235-0749) or Dr. John Olson, UHS (Mobile: 210 602 1047) or contact the Hematology Consult Service (call the hospital operator).

References:


_The information in the DOLS web site is developed for and intended to help the clinicians of our academic medical community: The University Health System; The University of Texas Health Science Center at San Antonio; The South Texas Veterans Healthcare System: Audie Murphy Memorial Veterans Hospital._

_If you are from outside of our community and you find that the information is helpful, you are welcome to it, however, we encourage you to consult with your local experts and your health science center libraries for more information._

---

E-mail the questions, comments or suggestions you have concerning DOLS

Return to Index

Return to The UTHSCSA Home Page

Return to the University Health System Home Page

---

Last updated on 29 April 2009 by John D. Olson, M.D., Ph.D.