PHYSICIAN UPDATE

Heparin/Platelet-Factor 4 Antibody Testing Now Performed In-House

SUMMARY

PeaceHealth Laboratories in Whatcom County is now offering faster turnaround time on tests for heparin-induced thrombocytopenia (HIT), a potentially devastating complication of heparin therapy. Testing is performed by detection of heparin/platelet-factor 4 (PF4) complexes using the enzyme-linked immunosorbent assay (ELISA) method. This test provides the highest level of sensitivity of all routine test methods (>90%), such that a negative result indicates a low likelihood of HIT. Testing for these antibodies in correlation with clinical information can aid in the diagnosis of HIT.

SIGNIFICANCE OF HIGH SENSITIVITY TESTING

The primary clinical need is for a screening method which can rule out HIT with the highest degree of confidence. It is essential to minimize the number of false negative results, since patients left on heparin will be exposed to a significant clotting risk.

In cases with a high clinical suspicion of HIT and an initial negative ELISA test, repeat testing is recommended since approximately 10% of patients that have an initial low level of antibody become positive with retesting. Most importantly, since false negatives occur with all available methods and the potential risks are great, it is recommended that if clinically warranted, the anticoagulant in use should be changed immediately without waiting for test results. If a negative test result is later obtained, the option to restart the patient on heparin can then be considered.

HIT IN REVIEW

HIT is a well-recognized and serious adverse drug reaction associated with heparin use. The clinical consequences of HIT can be dire with at least one-third of patients developing venous or
Heparin/Platelet-Factor 4 Antibody (continued)

arterial thrombosis (type II HIT). HIT patients with thrombosis have a 20-30% mortality rate with an equal percentage disabled by thrombotic complications including amputation and stroke.\(^2\) Heparin/PF4 antibodies have been detected in orthopedic surgical patients and those undergoing cardiopulmonary bypass procedures.\(^3\)

**Clinical Indication of HIT Include:**
- **Thrombocytopenia**
  - Platelet count <150 K/\(\mu\)L or a 50% drop from baseline
  - Onset 4-10 days after initiation of heparin
- Exclusion of other causes of thrombocytopenia
- With or without thrombotic complications

The risk is higher for patients receiving unfractionated heparin than for those receiving low molecular weight heparin (1-3% vs. 0-0.8% respectively).\(^4\) Clinically significant heparin/PF4 associated HIT usually develops within 4-10 days after initial exposure to heparin.\(^5\) Antibody titers usually become undetectable 90 days after last exposure to heparin.

FDA approved alternatives to heparin include argatroban and lepirudin:
- **Argatroban** is preferred in patients with renal disease due to its hepatic clearance.
- **Lepirudin** is less expensive than argatroban, is preferred in patients with liver disease due to renal clearance, and may have utility in pregnant patients with HIT.

**QUESTIONS?**

If you have any questions, please contact:

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REFERENCES


ordering information on back
# Heparin/Platelet-Factor 4 Antibody

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## ORDERING INFORMATION

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<th>Code</th>
<th>Description</th>
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<tr>
<td>28060</td>
<td>Heparin/PF4 Antibody for HIT</td>
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**Methodology:** Enzyme-Linked Immunosorbent Assay (ELISA)  
**Performed:** Monday through Friday  
**Released:** Same day as tested  
**CPT Code:** 86022

## SPECIMEN REQUIREMENTS

**Collect:** One 7.5 mL serum separator tube (SST) or one 5 mL red top tube  
**Handling:** Allow to clot, centrifuge and remove serum from cells as soon as possible. Serum may be stored at 2-8°C if tested within 48 hours. Freeze if serum will not be assayed within 48 hours. Label with patient name and number (date of birth, barcode, or similar) and “serum.” If multiple tests are ordered, freeze a separate aliquot for this test.

**Standard Volume:** 1 mL serum  
**Minimum Volume:** 200 µL serum  
**Stability:** 4 hours ambient, 48 hours refrigerated, or 2 years frozen.  
**Transport:** Refrigerated, or frozen on dry ice  
**Reference Ranges:**

- **Negative:** No evidence of Heparin/PF4 antibody. Sensitivity level to HIT by this method is reported as >90%, however, false negatives can occur and clinical correlation is required.  
- **Positive:** Heparin/PF4 antibody present. Sensitivity level to HIT by this method is reported as >90%, however, the presence of antibody is not diagnostic for HIT and clinical correlation is required.

**Comment:** Patient should be off IV heparin at least 12 hours prior to collection of specimen. Confer with physician before discontinuing heparin. Although it may decrease sensitivity of the assay, testing will be performed on patients undergoing heparin therapy upon physician request.