

Lab Value Activity

Mark A. Zaydman¹

¹Department of Pathology and Immunology, Division of Laboratory and Genomic medicine, Washington University in St. Louis, School of Medicine, St. Louis, MO

Introduction

Heparin induced thrombocytopenia (HIT) is a rare complication of exposure to the anticoagulant drug heparin. Patients with HIT are at a high risk for potentially devastating arterial or venous thrombosis. This risk can be reduced by withdrawing heparin medications and initiating an alternative anticoagulant, such as a direct thrombin inhibitor. However, these treatments are costly, require IV access, and carry a risk of major bleeding complications.

The PF4 Ab assay that detects antibodies against heparin/PF4 complexes such as those that cause HIT. This test has high sensitivity, but limited specificity due to the detection of other non-pathogenic antibodies. In this activity you will consider if and when the PF4 Ab test provides value.

Part 1: Accuracy of the PF4 Ab screen

Here are the results of a hypothetical case control study:

<u>HIT</u>	PF4 Ab OD >0.4	PF4 Ab OD ≤ 0.4
Diseased	194	6
Healthy	26	174

From these data:

1. Estimate the sensitivity and specificity
2. Estimate the LR+ and LR-

3. Estimate the DOR

Part 2: PF4 Ab value in a low pretest probability patient

Using the estimates from part 1 and assuming a pretest probability of 2%, estimate the following:

1. PPV and NPV
2. Post-test probability

Did the PF4 Ab result provide value for this patient?

Part 3: PF4 Ab value in an intermediate pretest probability patient

Using the estimates from part 1 and assuming a pretest probability of 10%, estimate the following:

1. PPV and NPV
2. Post-test probability

Did the PF4 Ab result provide value for this patient?

Part 4: PF4 Ab value in an high pretest probability patient

Using the estimates from part 1 and assuming a pretest probability of 70%, estimate the following:

1. PPV and NPV

2. Post-test probability

Did the PF4 Ab result provide value for this patient?