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# Effectiveness of Thrombophilia Testing – Testing To A Fault?

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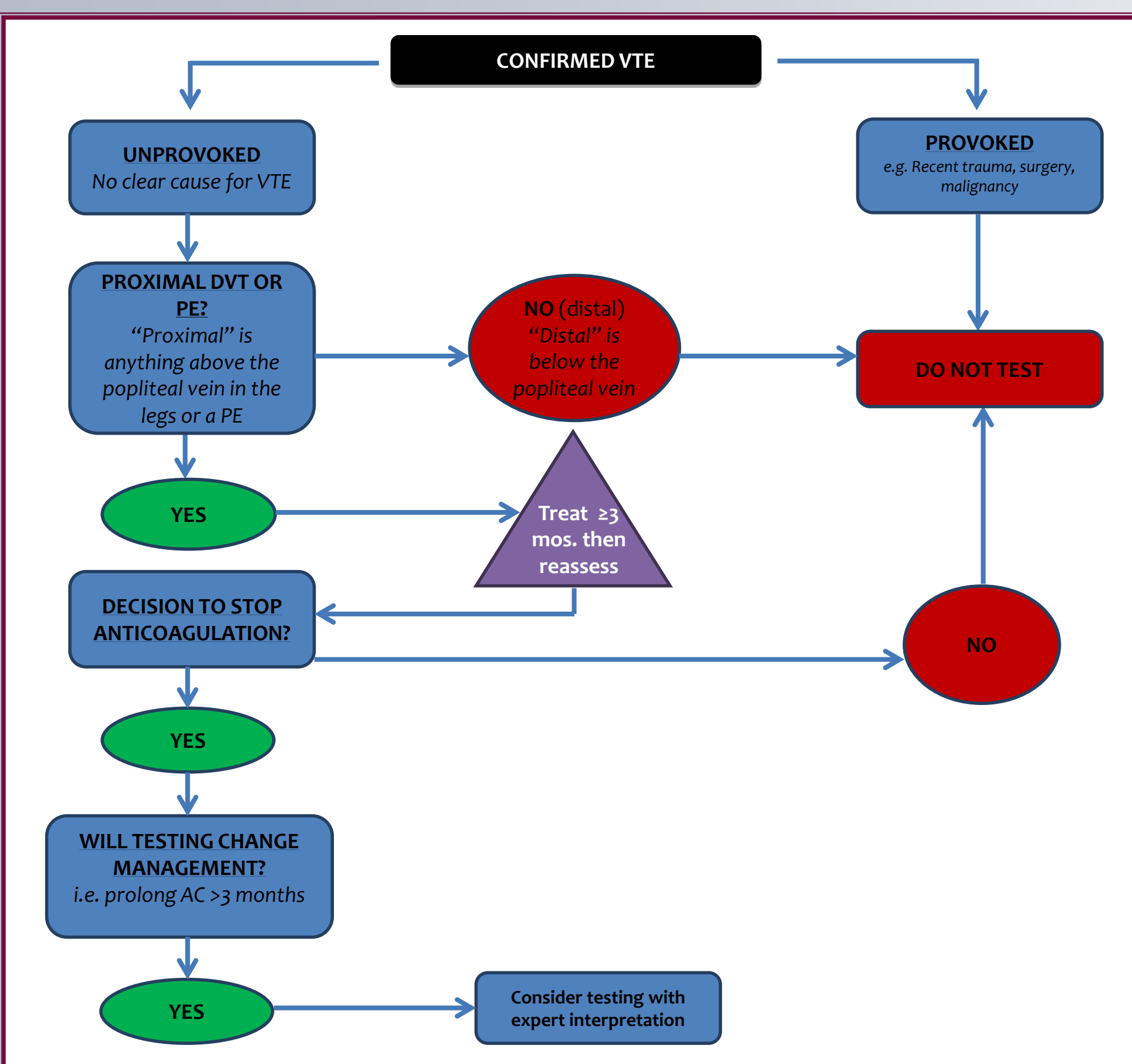
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## BACKGROUND

- Thrombophilias can occur due to a variety of inherited abnormalities within the coagulation pathway.
- The question then remains, in the event of a VTE, when is testing indicated for an inherited or acquired abnormality?
- The standard reasons to consider ordering a hypercoagulability panel:
  - a) Look for an underlying cause for an unprovoked VTE
  - b) Assess the probability of a repeat event thereby guiding duration of anticoagulation therapy
  - c) Identify asymptomatic family members with an underlying predisposition to thrombophilia who might benefit from thromboprophylaxis

The hypercoagulable panel, an order set (HCPAN) consisting of 8 tests indicated for testing of thrombophilias, was designed to increase testing efficiency at the University of New Mexico Hospital via collection of the most commonly ordered tests in one location. However, we hypothesize that the HCPAN is being ordered outside of guideline-directed diagnostic utility.

## THROMBOPHILIA TESTING GUIDELINES



## PURPOSE

To examine the HCPAN tests ordered during one year to determine whether clinicians are ordering the full panels in accordance with published guidelines and to understand reasons for ordering the HCPAN in various clinical contexts.

## METHODS

- A list of 600 HCPAN tests from October 2012 to November 2013 was generated from the TriCore historical database.
- Data included all inpatient and outpatient instances for Internal Medicine patients 18 years and older.
- Following the list generation, the investigators conducted manual chart review of each patient:
  - Charts reviewed evaluated risk factors for VTE, rationale for ordering the HCPAN, and the service of the ordering provider.
- The protocol was approved by the Institutional Review Board for the UNM School of Medicine.

## RESULTS

Out of the 45 patients analyzed, 35% of the charts surveyed ordered the HCPAN for a VTE that was clearly documented as provoked. 51% of the HCPANs were drawn while the patient was actively anticoagulated with one or more of the pharmacologic anticoagulants such as Heparin, Coumadin, or Lovenox. 60% of HCPAN tests were ordered in the presence of an active thrombus.

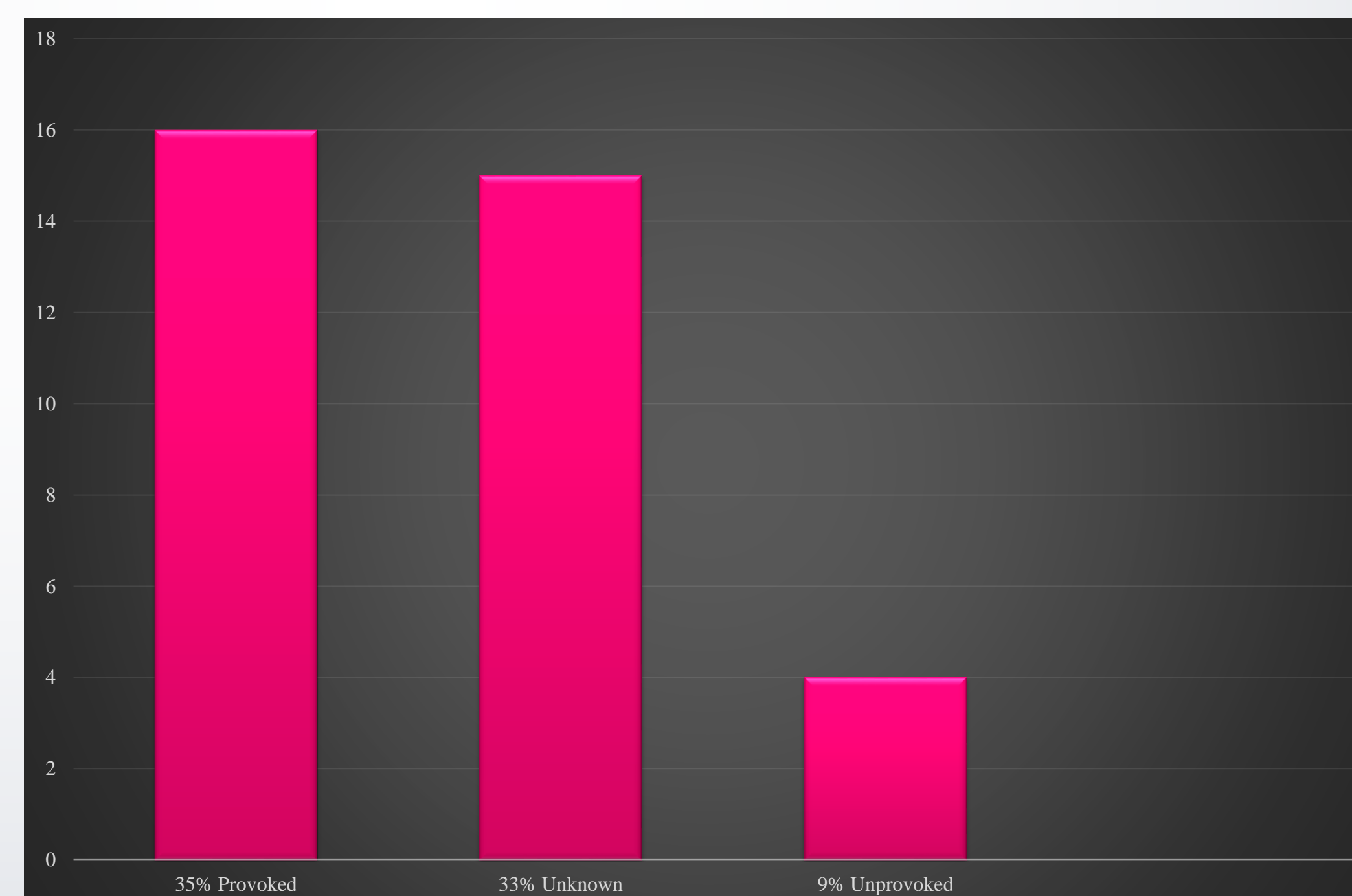
## CONCLUSIONS

The data indicates that the majority of HCPAN tests are being ordered outside of recommended guidelines and clinical reasoning for the following reasons:

- 1) As seen in Figure 1, the majority of HCPANs ordered with clear documentation were in the setting of a provoked VTE. These tests were ordered despite guidelines indicating the test for unprovoked cases only.
- 2) As seen in Figure 2, a majority of HCPANs are being drawn from patients with active anticoagulation. Many components of the HCPAN are invalidated by active anticoagulation, rendering the results of limited clinical utility.
- 3) As seen in Figure 3, a vast majority of HCPANs are drawn from patients who have an active thrombus. As is the case with anticoagulation, an active thrombus also invalidates portions of the HCPAN.

This is evidence that the majority of testing occurs outside of current guidelines, and establishes that hypercoagulability testing is an area which would benefit from a quality improvement intervention.

Figure 1: Charts reviewed which indicated thrombophilia testing in the setting of provoked and unprovoked VTE



Review focused on ordering of the HCPAN in context of:

- Presence of active thrombus
- Presence of anticoagulation
- A provoked or unprovoked thrombus

Figure 2: Patients with and without active anticoagulation at the time HCPAN was obtained

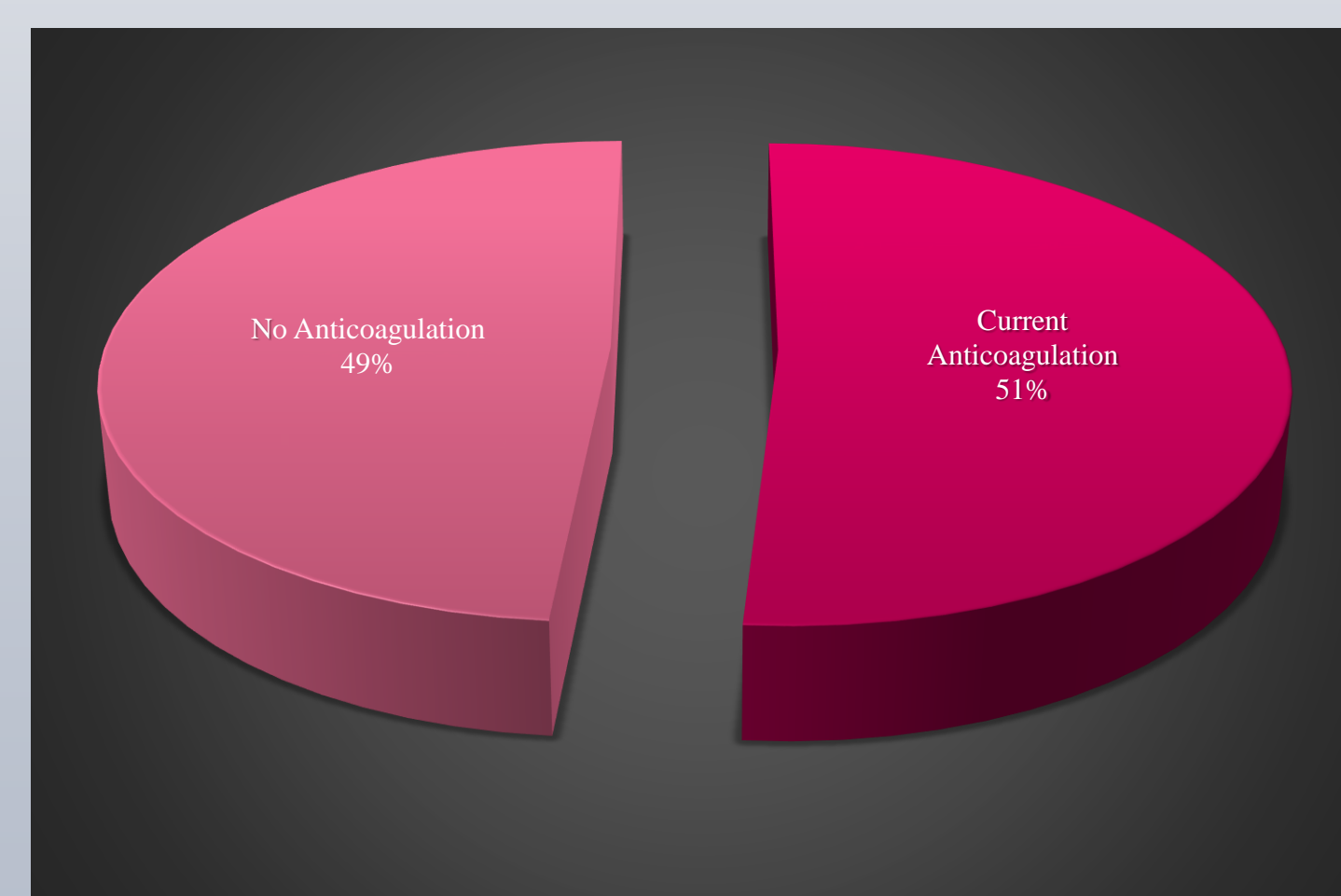
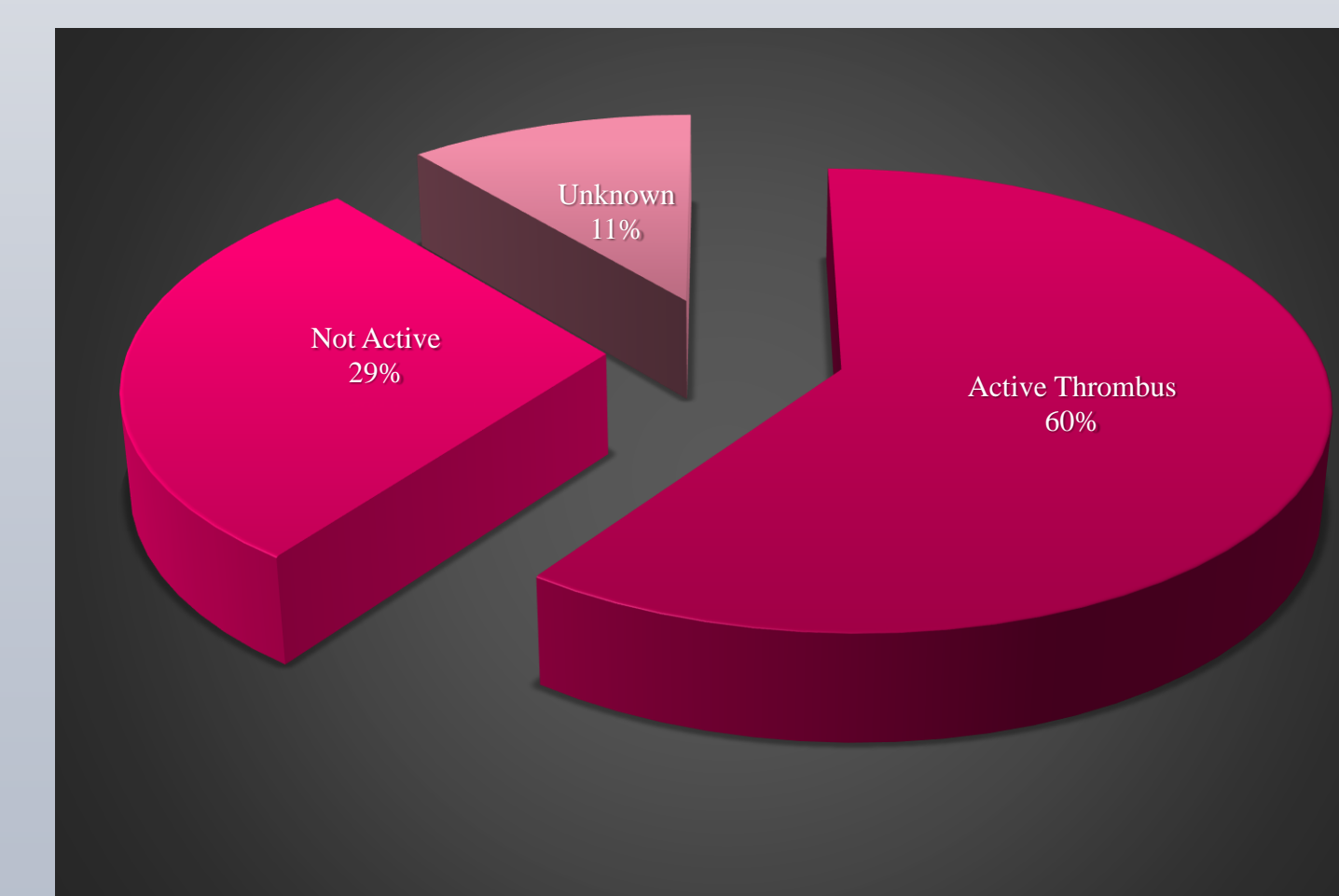


Figure 3: HCPAN tests ordered in the presence of an active thrombus, invalidating some results of the test



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