SUMMARY

Direct thrombin inhibitors (DTIs) are anticoagulants that bind to thrombin without the mediation of antithrombin III, unlike heparin. Dabigatran is an oral DTI recently approved by the FDA as an alternative to Coumadin (warfarin) therapy. Reported advantages include reliable response to fixed dosing with no dietary or drug interactions and equal or better efficacy compared to warfarin in preventing stroke, or thrombosis secondary to atrial fibrillation.

Dabigatran is approved for use without routine monitoring. However, in some cases monitoring may be desirable in patients with:

- renal disease due to impaired drug clearance
- high/low weight possibly affecting dose requirement
- confusion or other problems with compliance
- unexpected bleeding during treatment
- urgent surgery required and already on Dabigatran therapy

Dabigatran has a half-life of approximately 14 hours. Correction of overdose is complicated by the lack of an effective antidote. Moderate to severe bleeding may require hemodialysis or infusion with potent procoagulant solutions (prothrombin complex concentrates or recombinant FVIIa).

ABOUT THE ASSAY

Testing for DTI has been well studied and results from PeaceHealth Laboratories’ validation correspond closely with the published data. The activated partial thromboplastin time (APTT) can be used to monitor Dabigatran, but is relatively insensitive. It is also non-linear at high drug concentrations and is affected by many factors influencing the coagulation system including disseminated intravascular coagulation (DIC), liver disease and lupus inhibitors.

The DTI assay validated at PeaceHealth Laboratories is a modified thrombin time test performed on patient plasma diluted in pooled normal plasma. This eliminates most interferences on the assay including factor deficiencies, D-Dimer and lupus inhibitors. This test is also much more sensitive to Dabigatran effect than the APTT (see Figure 1).

**Figure 1: Relative Sensitivity of PT, APTT and DTI Tests to Dabigatran** (PeaceHealth Laboratories’ data)

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- **Highly sensitive assay for Dabigatran effect**
- Determines DTI status for patients requiring urgent surgery
- Monitoring may be necessary in some patient subsets
- Performed daily with 24-hour reporting

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**PHYSICIAN UPDATE**

Direct Thrombin Inhibitor (DTI) Test Now Available to Monitor Dabigatran (Pradaxa™)

**BENEFITS**

- Highly sensitive assay for Dabigatran effect
- Determines DTI status for patients requiring urgent surgery
- Monitoring may be necessary in some patient subsets
- Performed daily with 24-hour reporting

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**Figure 1: Relative Sensitivity of PT, APTT and DTI Tests to Dabigatran** (PeaceHealth Laboratories’ data)
DTI Test Monitors Dabigatran (continued)

REFERENCES


ORDERING INFORMATION

27138: Direct Thrombin Inhibitor (DTI) Assay
Methodology: Modified Thrombin Time
Performed: Daily
Released: 24 hour (call to expedite STAT testing)
CPT Code: 85670

SPECIMEN REQUIREMENTS

Collect: One 4.5 mL blue top tube (sodium citrate). Fill tube to maximum draw, at least 90% full. Mix by gentle inversion.

Handling: Refrigerate and keep capped in original tube if specimen will be received at the laboratory with 4 hours. If not, centrifuge to produce platelet–poor plasma (at least 1700X g for 15 minutes), and transfer the top 2/3 of the plasma with a plastic pipette into a plastic vial and freeze quickly. Label with patient name, test and ‘plasma.’ If multiple tests are ordered, freeze a separate aliquot for each test.

Stability: 2 hours ambient, 6 hours refrigerated, or 1 month frozen

Standard Vol.: 5 mL whole blood or 2 mL plasma
Minimum Vol.: 1.8 mL whole blood or 0.5 mL plasma
Transport: Refrigerated
Retention: 1 week

Rejection Criteria: Serum; visible fibrin; moderate to marked hemolysis; specimen age

Reference Ranges: No detectable DTI: <17 seconds
Therapeutic range: 50–90 seconds (corresponding to 0.06 – 0.19 μg/mL Dabigatran)³