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# Assessment of the Efficacy and the Impact of the Rapid, Practical and Ergonomic DOAC & Platelets Filter Device on Thrombin Generation Assay

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calibrator ranged from 3.6 - 17.3% (2016-2018). The corresponding CVs for FIX were 2.9 - 26.2% (2013-2015) and from 5.5 - 17.8% (2016-2018).
**Conclusions**: Laboratory performance of FVIII and FIX testing has improved over the past six years. Assessments based against calibrator rather than reagent showed reduction in the numbers of outliers in each peer group and provided improved comparability of results with reduced CVs. The decreasing trend in outliers also supports the retention of the assessment criteria being based on calibrator.

## PB0140 | Are Global Coagulation Assays Better Measures of the Intensity of Anticoagulation in Patients with Antiphospholipid Syndrome?

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**Background**: Antiphospholipid antibodies may interfere with the prothrombin time and higher international normalized ratio (INR) targets have been proposed for warfarinized antiphospholipid syndrome (APS) patients for perceived higher thrombogenicity.
**Aims**: To investigate if prothrombin time-based clot wave analysis (PT-CWA) and platelet-poor plasma calibrated automated thrombogram (CAT) thrombin generation, provide better measures of the intensity of anticoagulation in APS patients by comparing them to non-APS warfarinized patients.
**Methods**: Plasma samples from warfarinized APS patients were analysed for INR and PT-CWA using the Sysmex CS2100i analyzer, with remaining plasma used for thrombin generation analysis with the calibrated automated thrombogram (CAT) system. Similar parameters from warfarinized atrial fibrillation (AF) and deep vein thrombosis (DVT) patients were compared. Correlation to INR was performed using Pearson's correlation. Parameter means were compared using multivariate analysis with correction for the age and INR values at 5% significance.
**Results**: 15 APS plasma samples were compared to 28 and 59 samples from AF and DVT patients. Increasing INR did not correspondingly increased PT-CWA parameters in the APS and DVT group and minimally in the AF group. Despite similar INR range samples in the APS and AF groups, the ETP for the APS group (379.19 ± 79.90) was lower than the AF (455.14 ± 57.25) group after age and INR corrections. The PT-CWA did not significantly differ amongst the various groups, was not affected by the INR with no significant differences between the groups for samples within the therapeutic range.
**Conclusions**: PT-CWA parameters do not provide a different measure of anticoagulation intensity in APS patients who display lower thrombin generation potential compare to similar warfarinized AF and DVT patients. The role of such global assays remain unsubstantiated in the management of APS.

## PB0141 | A Rapid, Practical and Ergonomic Device to Prepare Plasma Sample Free of Platelets and Direct Oral Anticoagulant for Routine Hemostasis Tests

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**TABLE 1** TG and PT-CWA correlations to INR

| | | Correlations to INR | | | |
|---|---|---|---|---|---|
| Group | INR range | ETP | PTMin1 | PTMin2 | PTMax2 |
| AF (n=28) | 1.94 - 6.29 | -0.261 | -0.376 | 0.326 | 0.042 |
| APS (n=15) | 1.81 - 7.38 | 0.128 | 0.061 | 0.053 | -0.010 |
| DVT (n=59) | 1.55 - 5.38 | -0.350 | 0.043 | 0.018 | -0.087 |

**TABLE 2** Means of various parameters obtained from all samples in the groups and within therapeutic range, after adjustment for age and INR

| | | Adjusted means ± SE | | | |
|---|---|---|---|---|---|
| INR range | Group | ETP | PTMin2 | PTMin2 | PTMax2 |
| All | AF | 455.14 ± 57.25 | 3.03 ± 0.22 | 0.786 ± 0.06 | 0.575 ± 0.04 |
| | APS | 379.19 ± 79.90 | 3.31 ± 0.31 | 0.842 ± 0.08 | 0.578 ± 0.05 |
| | DVT | 440.24 ± 38.22 | 3.04 ± 0.15 | 0.790 ± 0.04 | 0.577 ± 0.03 |
| Therapeutic range (2.0 - 3.5) | AF | 517.16 ± 100.15 | 2.86 ± 0.37 | 0.757 ± 0.10 | 0.599 ± 0.07 |
| | APS | 262.79 ± 116.86 | 3.15 ± 0.44 | 0.795 ± 0.11 | 0.524 ± 0.08 |
| | DVT | 517.15 ± 58.73 | 2.90 ± 0.22 | 0.766 ± 0.06 | 0.597 ± 0.04 |

**Background**: Direct oral anticoagulants (DOACs) are known to interfere with almost all clotting tests to varying degrees. This may lead to false positive or false negative tests results and to unnecessary investigations.

**Aims**: To assess the effectiveness of the one step plasma preparation by filtration with the original DOAC & Platelets Filter (DP-Filter) device from the University of Namur on i) the removal of platelets from plasma in substitution of the second centrifugation and ii) the removal of all types of DOAC including dabigatran, apixaban, rivaroxaban and edoxaban from test plasma (with minimal effect on hemostasis variable).

**Methods**: i) Platelet-poor plasma was prepared in two different ways: i) by a double centrifugation at 2500g during 15 min or by a single centrifugation at 2500g during 15 min followed by one filtration by centrifugation at 200g during 2 min with the DP-Filter. Platelets count was assessed using a Sysmex XN-9000 analyzer. ii) Normal pooled plasma were mixed with either dabigatran, apixaban, rivaroxaban and edoxaban at 0-100-300-1000 ng/ml. Plasma DOAC concentrations were assessed before and after filtration with DP-Filter using calibrated STA-Liquid anti-Xa or STA-ECAII for anti-Xa and anti-IIa drugs, respectively. Prothrombin time (PT) and activated partial thromboplastin time (aPTT) were also assessed before and after filtration to assess the impact of DP-Filter on hemostasis parameters.

**Results**: DP-Filter efficiently removed platelets and DOACs to concentrations until 1000 ng/mL to levels below the limits of detection of the instrument/tests. DP-Filter was able to restore normal prothrombin time and activated partial thromboplastin time at all DOACs concentrations.

**Conclusions**: DP-Filter can be used to efficiently substitute the second centrifugation step for platelet poor plasma preparation and efficiently remove dabigatran, apixaban rivaroxaban and edoxaban from plasma to concentrations up to 1000 ng/ml. Global hemostasis parameters were restored and are not influenced by the device.

## PB0142 | Pronounced Alterations of Thrombin Generation Profiles are Found in Whole Blood Compared to Plasma of Liver Disease Patients

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**Background**: Severe distortions of both pro- and anticoagulant drivers in liver disease patients result in a 'frailly rebalanced' haemostatic system. Novel global coagulation tests like thrombin generation (TG) assess the integration of the pro- and anticoagulant system.

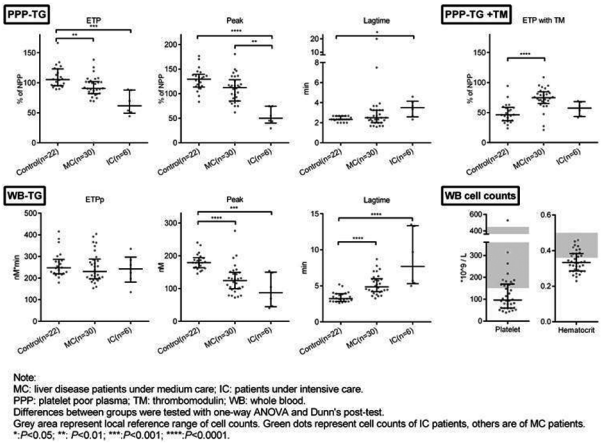


**FIGURE 1** Thrombin generation parameters and cell counts of liver disease patients

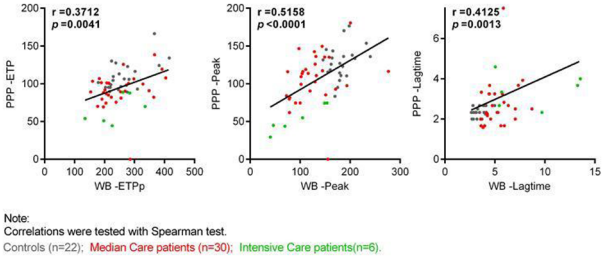


**FIGURE 2** Correlations between thrombin generation parameters in whole blood and in plasma

Function of the blood cells may cause additional influence on the global coagulation.

**Aims**: To study the whole blood (WB) and plasma TG profiles of liver disease patients.

**Methods**: Liver disease patients under medium care (MC; n=30), intensive care (IC, n=6) and controls were recruited at King's College Hospital, London. The study was approved by the local ethic committee and all participants gave consent for the study. TG in Citrated WB samples was measured with a miniaturized device at 2.5 pM tissue factor (TF). TG in Platelet poor plasma (PPP) was measured at 5 pM TF, with or without 10 nM thrombomodulin (TM).

**Results**: MC and IC patients had significantly prolonged APTT and INR, lower FII, FX and antithrombin, but higher FVIII compared to controls. Most patients had lower platelet count and hematocrit than local reference range (Figure 1). In PPP-TG, only IC patients showed significantly lower peak and longer lagtime than controls, while with WB-TG this was found in both MC and IC patients. Plasma endogenous thrombin potential (ETP) of patients was comparable or higher than controls when TM was present. ETP until peak (ETPp) in WB-TG was similar between patients and controls (Figure 1). TG parameters in WB and PPP showed significant correlation (Figure 2). Significant