

## DETECTION OF NON-FUNCTIONAL PLATELETS USING BLOOD COLLECTION BOTTLES COATED WITH COLLAGEN, RISTOCETIN AND ARACHIDONIC ACID

Authors – JG Smith 1, L Sheridan-Smith 1, MA Smith 2, SPambakian 1, VA Chomyn 3, J Campbell 4

Institutions     Frimley Park Hospital NHS Foundation Trust – 1  
                      Royal Marsden Hospital, Sutton, Surrey – 2  
                      HORIBA ABX, Chicksands, Bedfordshire, UK – 3  
                      Helena Laboratories, Beaumont, Texas – 4

Platelet function is a vital factor in preventing bleeding irrespective of circulating platelet number. Because of the widespread use of aspirin, clopidogrel and other platelet agonists, clinicians are often faced with canceling patient operations because of concern that platelet function is compromised. Similarly, patients bleed in the ITU setting even though the platelet count and humoral coagulation are normal. The concept of exhausted platelets is raised but difficult to prove. The availability of a bedside technique, which enumerates the functional platelet count, which is reliable and reproducible, represents a major step forward. Helena Laboratories, Beaumont, Texas has produced blood collection bottles coated with different platelet agonists, collagen (C), ristocetin (R) and arachidonic acid (AA) in addition to 3.2mg sodium citrate. We are the first group in Europe to use these bottles in association with point of care testing instrumentation (ABX PENTRA analyzer) to examine the functional platelet count in normal, renal dialysis, cardiac catheterization, haematological and ITU patients. Samples taken into K2EDTA served as baseline controls, whilst free platelets in the synchronously taken agonist samples represented the non-functional (NF) platelet compartment. In normal subjects (n=54) the NF platelet compartment was 6.2 +/- 2.1% when using C. Similar figures were found for R and AA. In patients with eGFR 4-25mls/min (n=32), the R NF% was 58.07 +/- 17.59%. In the group of renal patients on dialysis and aspirin (n=12), the R NF% was 60.55 +/- 21.86% which is the same as the non-aspirin taking renal group (p=0.955). In cardiac patients (n=24), all of whom were on aspirin, C NF% was 35.23 +/- 23.12%, AA NF% was 51.94 +/- 23.5% and R NF% was 51.53 +/- 19.04%. C vs AA showed p=0.003, C vs R p=0.002 and AA vs R p=0.94. These data show the potential value of this technology in determining whether operations should be cancelled and whether platelet transfusion is necessary.

*Presented at American Society of Hematology Annual Meeting  
December 2007*