Project Title: Effect of Non Vitamin K oral anticoagulants (NOACs) on procoagulant platelet formation
Code: ANZAC3

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Project Type: Laboratory based

Project Category: Cardiovascular, Pharmacology, Blood

Project Keywords:
1. Platelets
2. Anticoagulants
3. Assay
4. flow cytometry

Project Description:

Aims of the project: The project is to look at the effect of the new non-vitamin K oral anticoagulants (“NOACs”: rivaroxaban, apixiban and dabigitran) on the formation of procoagulant platelets.

Project Background: The central role of "procoagulant" platelets in cardiovascular disease is a new paradigm that has not been extensively tested in patients due to lack of a specific marker/assay. Our team has developed an assay that can measure this platelet subset. This innovation has allowed elucidation of novel pathway in platelet biology may lead to new treatments for cardiovascular patients and predict which patients require more intervention to prevent future heart attacks/stokes.

We will be using the validated flow cytometry assay for agonist induced procoagulant platelets. We have previously determined that heparin given during coronary angiogram procedures inhibits the formation of these platelets. We will be adding active parent or metabolite compounds of the above non-heparin based anticoagulants to blood taken from healthy volunteers, constructing dose response curves to determine whether non-heparin anticoagulants have an inhibitory effect on procoagulant platelet formation. We will understand the pathway through competition assays with direct PAR1 antagonists. The results will enable us to determine if the direct oral anti-coagulants will inhibit this subset of thrombotic platelets which has implications for therapy of acute coronary disease.