# Improving anticoagulation control

**Implementation of genotype-guided dosing of Warfarin for atrial fibrillation to improve anticoagulation control.**

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Oral anticoagulant (OAC) drugs thin the blood and prevent clots in patients with atrial fibrillation (AF) which is one of the major causes of stroke. Warfarin is the most common drug used.

If the dose is too high, the blood might be too thin and risk a bleed and if the dose is too low, there is a risk of stroke because the blood is not thin enough. Trying to find the right amount of Warfarin to suit each patient is difficult and needs to be done in a short amount of time so that patients do not start bleeding or have a stroke. At the moment there is no set effective way of giving patients the most suitable amount of Warfarin for them and much if it is trial and error. Some clinics start with a low dose and work upwards and others start with a high dose and work down. The correct dose is achieved when the blood is thinned to just the right amount and can be measured in the clinic using the test which is called international normalized ratio (INR). For some people, this process can take a long time and can require many visits to the anti-coagulation clinic. Recent research has shown that some people carry a higher risk of bleeding when taking Warfarin and new genetic tests can reveal who is most at risk. Carrying out this genetic test before prescribing Warfarin can help healthcare professionals to know what the correct warfarin dose is more quickly and stabilise patients on Warfarin.

As part of the delivering personalised health and care theme within CLAHRC NWC, we wish to implement this test as part of the routine clinic visit prior to giving patients with AF Warfarin to improve the time it takes to find the most suitable Warfarin dose. This will reduce the amount of times that patients need to attend hospital, reduce the amount of times that patients experience bleeding side effects, improve the patient experience and help patients to manage their medication better. We want to examine whether the test can be cost effective and find out what staff think about and how it can become part of the routine in clinics.

Some sites involved in the project will use the new test and others will act as comparison sites by providing data on their AF patient outcomes. Staff in the sites using the new testing equipment will be trained to use the new test and equipment will be loaned to the clinics involved. We will then evaluate 300 patients with the test. Patients who may benefit from this test will have the new test explained to them, we will work with clinics to make sure they are able to change the way they work to accommodate the new test and record all information needed for the patient records and evaluation.

We will then collect data from sites using the testing equipment and other sites agreeing to act as comparisons to see if the test is cost effective, to determine if it has improved the time it takes to give the most suitable dose of Warfarin, see if it has reduced the number of times patients have abnormal INRs and bleeding as a side effect, and improved management among other health outcomes. We will also assess if this test is acceptable to patients and staff involved and will see if the cost is also acceptable. Analysis will also assess whether the testing method reduces inequalities in the targeted patient group. We think this project will reduce inequalities if people are able to have fewer appointments at the clinics which will be more convenient.

The aims and objectives of the project include:

- To implement GGD of Warfarin to determine whether it improves patient outcomes related to reducing the time to stabilised INR and reduced visits to clinics
- Demonstrate cost effectiveness of GGD of Warfarin particularly considering whether the costs of reduced visits for a number of staff would offset the cost of the equipment
- Improve the patient experience and explore whether DNA testing is convenient and acceptable to patients
- Consider the implications of introducing GGD testing for staff and the patient pathway by examining whether staff find it convenient to use and the time taken to administer the test is able to be incorporated into clinics
- To determine whether this change in practice has led to a reported improvement in patient quality of life

For more information regarding the project, please contact Jenny Downing, Research Manager, Delivering Personalised Health and Care Theme via J.Downing@liverpool.ac.uk