Blood thinning breakthrough announced

October 19 2010

A team of scientists led by the University of Manchester have reported an important breakthrough and simplification in the control of oral anticoagulation, the blood thinning treatment with warfarin and similar drugs currently given to approximately 1 million patients in the UK for thrombotic disorders.

Success of anticoagulation depends on ensuring the safety and effectiveness of the drug-induced coagulation defect. Too little anticoagulation is ineffective whereas too much causes dangerous bleeding. Safety is assessed by prothrombin time (PT) blood tests performed on each patient at frequent intervals with the results given as international normalised ratios (INR).

INR are based on a system of PT standardisation pioneered in the early 1960's in Manchester with a procedure using Manchester Reagent thromboplastin, which was subsequently recognised as British Comparative Thromboplastin and later the World Health Organisation primary biological standard for thromboplastin.

Professor Leon Poller, who leads the European Action on Anticoagulation (EAA) with its Central Facility based in Manchester's Faculty of Life Sciences, has reported the breakthrough in *Clinical Chemistry*.

Professor Poller explained: "The aim of the WHO Scheme has been to make the treatment safe and effective on a world scale by providing a reliable international system for blood testing and reporting of results as

INR. In recent years, the WHO Scheme has proved increasingly difficult to apply not only because of its heavy demands but because the manual PT testing procedure on which it is based has increasingly been replaced by automated systems of measurement. These automated PT systems as well as differing from manual PT testing may vary in INR results on the same patient's blood specimen and even coagulometers of the same manufacture may give different INR results on the same patient's blood. As a result of the difficulties, the INR system has become increasingly difficult to apply at the local level and has been falling into disfavour."

The new method provides a simplified method of local INR derivation whilst preserving the safety and effectiveness of the INR system. Results of the large international study at 28 experienced centres co-ordinated over 5 years from The University of Manchester showed that the simplified method of INR derivation using the new PT/INR Line based on testing only 5 European Concerted Action on Anticoagulation (ECAA) certified plasmas gives reliable INR. Furthermore, the PT/INR Line is shown to be reliable as INR derivation using the traditional WHO procedure and does not demand the now almost entirely discarded manual PT testing for traditional WHO ISI calibration and INR interpretation.

With the new procedure it is also far easier to derive INR than with conventional WHO thromboplastin calibration. This first description of the new development is to be followed by further reports in the medical press including the Journal of Thrombosis and Haemostasis.

The sets of 5 ECAA certified calibrant plasmas are being made available from the EAA via Hart Biologicals Limited, Hartlepool, UK. Any income derived from their sale will be devoted to further research in anticoagulation.

More information: The paper '*Simplified Method for International*

Normalised Ratio (INR) Derivation Based on the Prothrombin Time/INR Line - An International Study' is available at *Clinical Chemistry*.

Provided by University of Manchester