

Moving toward molecular assessment of treatment response in Tuberculosis

Wilber Sabiiti, PhD

School of Medicine, University of St. Andrews, St. Andrews, KY16 9JT

Scientists at University College London and University of St. Andrews have developed the Molecular Bacterial Load (MBL) assay exploiting the detection of *M. tuberculosis* ribosomal RNA (rRNA) to quantify viable mycobacteria in patient sputum (<http://jcm.asm.org/content/49/11/3905.long>). This assay can provide real time data on bacterial load in patient sputum and response to treatment. The PanACEA Biomarkers Expansion programme (PANBIOME) is piloting the MBL assay in three African countries, Malawi, Mozambique and Tanzania supported by funding from the EDCTP strategic primer grant (http://www.edctp.org/Newly_signed_grants.500.0.html).

I set out from St. Andrews, Scotland to Mozambique's National Institute of Health (MNIH) in Maputo, Mozambique; College of Medicine (COM) Blantyre in Malawi; Mbeya Medical Research Centre (MMRC) and Kilimanjaro Clinical Research Institute (KRCI) in Tanzania. MNIH and COM are in addition to the execution of molecular-based assays are being developed as potential sites for future clinical trials (see the Where's Wilber map, Figure 1).



Figure 1: Where's Wilber map

My mission was to audit and help train laboratory staff at these sites in preparation for the application of MBL assay (See figure 2, MBL assay theory training at KCRI). The assay will be applied on sputum samples from patients undergoing anti -TB therapy clinical trials at these sites.



Figure 2: MBL assay theory training at KCRI

The audit tested the availability and standard of TB and molecular biology laboratory facilities; and the human resource. It was reassuring to find that mycobacteriology facilities are of very high standard due to the experience the sites have had performing TB clinical trials and providing diagnostics service to the Hospitals (See the link on the website for movie 1 - sputum homogenization at MMRC TB lab).

Molecular-based analysis for TB is taking its place alongside molecular virology and parasitology that are already established at some of the sites (See figure 3, HIV RNA extraction at MNIH).



Figure 3: HIV RNA extraction at MNIH

The WHO aims to reduce the incidence of TB to 50% by 2015. Improving treatment outcome is one of the ways to achieve this target. We are playing our part to achieve this target through application of molecular tools to improve patient treatment outcome.