

## **Summary Report of Abhishek Mallela, Short-term Visitor, August 18-23, 2014**

There exists an important question of whether initiation of HIV treatment during ongoing tuberculosis treatment in co-infected individuals is appropriate. Delaying HIV treatment until tuberculosis treatment completion may pose risks of death and HIV transmission, while immediate HIV treatment initiation causes complications, including IRIS (Immune Reconstitution Inflammatory Syndrome), due to a high pill burden of antiretrovirals and antibiotics. Using a system of differential equations, we studied effects of early versus late ART (Antiretroviral Therapy) initiation on new HIV infections, AIDS deaths, new IRIS cases, and IRIS deaths. We observed that the total burden (sum of new IRIS cases, IRIS deaths, new HIV infections, and AIDS deaths) depends on the strength of ART and the timing of ART initiation during the TB treatment course. Optimal controls related to ART in the presence of ongoing TB treatment were investigated.

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