CORRESPONDENCE

Enhancing the impact of antiretroviral scale-up on the HIV-associated tuberculosis epidemic in Malawi

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In the June 2014 issue of this *Journal*, Kanyerere and colleagues presented a valuable analysis of routinely collected national programme data from Malawi, providing evidence of an impact of antiretroviral treatment (ART) scale-up on the human immunodeficiency virus (HIV) associated tuberculosis (TB) epidemic at a country level.¹ Between 2004 and 2012, ART was scaled up rapidly, such that 41% of all Malawians estimated to be living with HIV were receiving treatment in 2012. During the same period, national TB notifications decreased by an average of approximately 4% per year. A causal relationship with ART scale-up cannot be proven. However, the strong temporal relationship between ART scale-up and trends in TB notifications, and also the disproportionate reductions in HIV-positive notifications, new smear-negative cases and recurrent disease collectively, make this very plausible.

Potential confounders could include an improvement in TB programme performance in this time period,² with higher cure rates resulting in reduced TB transmission and secondary cases. However, any such improvements could conceivably be mediated in part by ART scale-up, representing an additional mechanism whereby ART may confer a beneficial impact on TB control. Immune recovery during treatment of HIV-positive TB cases may improve sputum smear conversion rates and reduce treatment failures and deaths, with a corresponding improvement in the overall cure/completion rate.³ Using an ecological analysis of data from different districts or regions in Malawi, the relationships between ART coverage, TB programme outcomes and trends in TB notification rates could be further explored.

The reported findings are encouraging, and provide the first evidence of the impact of ART on the HIV-associated TB epidemic at a national level in Africa.⁴ However, as approximately 60% of TB notifications in Malawi in 2012 were people living with HIV,^{1,2} how might the impact of ART on TB prevention be enhanced? While the median CD4 cell count at which ART is started has increased over time in many African countries, including Malawi, the majority of patients still present with low CD4 counts, and often with TB as the first manifestation. There is therefore a critical need for high HIV testing coverage so that HIV is diag-

nosed earlier during the natural history of the disease, thereby allowing ART to be started before TB develops. The earlier ART is started, the greater the TB preventive effect.⁴

Although ART reduces the risk of TB substantially in treated cohorts, rates remain above background, even among those with optimum CD4 count recovery.⁵ TB incidence rates during ART could be reduced by starting ART at higher baseline CD4 counts, by optimising CD4 count recovery through adherence support and by adjunctive use of isoniazid preventive therapy (IPT). The latter can be readily co-administered with ART, providing an additive impact.⁶

To guide and monitor the implementation of these strategies, useful indicators to collect (nationally or at sentinel sites) include the proportions of new HIV diagnoses that are made due to patients presenting with TB (i.e., HIV diagnosed too late) and the proportions of HIV-associated TB cases that occur either pre-ART (i.e., ART started too late) or during ART. In addition, the timing of the latter would be informative, as TB cases presenting during the first 3 months of ART largely reflect failure of baseline TB screening, whereas later incident disease represents that which is potentially preventable by improving ART outcomes and by use of adjunctive IPT.⁴ Such data may provide further insights into how ART can be better implemented to control the HIV-associated TB epidemic.

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