Reviewer's report

Title: Cost, affordability and cost-effectiveness of strategies to control tuberculosis in countries with high HIV prevalence

Version: 1 Date: 30 May 2005

Reviewer: dick menzies

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RE: Cost, affordability and cost-effectiveness of strategies to control tuberculosis in countries with high HIV prevalence
First Author: Christine Currie

This modeling analysis compares seven different strategies for reducing burden of TB and HIV in Kenya. The most striking finding is that improving TB case detection rates or TB cure rates, particularly improving both, would have lowest cost and be most cost effective. Provision of anti-retroviral therapy (ART) would be very expensive although would provide substantial gains in terms of DALYs. Treatment of latent TB infection would have minimal benefits and would be very expensive.

These findings are reassuring in that they confirm the suspicion of many that using low cost AFB smears to diagnose TB patients, and low cost standard short course regimens to treat TB patients are by far the most cost-effective means to reduce the burden of TB in high TB and HIV prevalence setting.

Strengths of the study
1- Clearly the greatest strength is that this is a highly experienced team who have performed a number of economic and other modeling analyses in the past and have access to rich sources of data.
2- The authors made use of data gathered recently in Kenya regarding patient, family, and health system costs for diagnosis and treatment of active TB. The referenced study was carefully performed improving the precision of estimates of these costs.
3- The results are important and of interest in informing the current debate over priorities for public health spending in countries with high HIV and TB. The findings reinforce the importance of insuring that basic TB services AFB smear microscopy and standardized short-course therapy are not jeopardized by diversion of resources into provision of ART.

Major compulsory revisions:
1- I find the model rather opaque. I do not have ready access to the article references in which the model is described in greater detail, therefore more detailed description would be useful such as describing the rates of TB annually and the different HIV clinical stages and HIV uninfected. Or the authors could provide this as a supplement.
2- It is unclear to me if they have explicitly modeled impact of these interventions on TB transmission. As I understand the paper, they do not appear to have done so. This limitation should be discussed more carefully in the discussion.
3- My biggest concern is in regard to the cost estimates; in particular the assumptions around the increased costs associated with increased case detection or increased treatment success. It is unclear why a 50% increase in costs is a reasonable assumption, might there not be some more substantial initial implementation costs in order to enhance either case finding of treatment success followed by recurring costs. I would have thought that they could incorporate some costs for initial
DOTS implementation, taken from other countries such as China or India where DOTS expansion involved enormous initial spending for training and infrastructure in order to achieve increased case detection and treatment success. At minimum the costs should be varied more widely and some acknowledgement of a greater initial cost to step up these parameters on a national level should be included.

4- Cost of treatment of HIV related conditions and for ART are referenced as taken from a paper published in The Lancet. It would be useful to see the actual parameters from this paper that the authors used in this analysis. It would also be useful to see a greater variation in the costs for ART. Given the highly politicized debate over costs for ART at the present perhaps these costs could be varied more widely and some threshold analysis considered at which provision of ART might be cost saving if the annual cost for treatment were low enough.

5- Drop-out rate for ART ranged only from 5% to 20%. This is extremely low for daily, presumably self-administered, therapy. This should be varied more widely, ie up to 50%. Also the authors should discuss the potential problems of drug resistance developing with self-administered therapy. Alternatively they could consider the costs of DOT for ART.

Minor essential revisions:
6- The results are presented largely in Figure form rather than in Tables, this makes it seems somewhat harder to digest. A Table of the main results would be helpful.

Minor discretionary revisions:
7- A useful reference the authors may wish to consider for TB progression in HIV states is a study by Wood and colleagues in South Africa published in The Journal of Acquired Immunodeficiency Syndrome 2000; 23: 75-80.

Dick Menzies

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:
I declare I have no competing interests