Efficacy of antiretroviral therapy in Africa: effect on immunological and virological outcome measures: a meta-analysis

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CRD summary
This review investigated efficacy of antiretroviral therapy on immunological and virological measures of human immunodeficiency virus. The authors concluded increased CD4 count and maintenance of undetectable viral load demonstrated that antiretroviral therapy can be effective in Africa. Potential biases, lack of consideration of study quality and possible inappropriate pooling of studies mean these conclusions should be viewed with caution.

Authors' objectives
To investigate the efficacy of antiretroviral therapy on immunological and virological measures of human immunodeficiency virus (HIV) in Africa.

Searching
PubMed was searched for English-language studies. Search terms, but not dates, were reported. The reference lists of relevant papers were searched for additional studies.

Study selection
Studies (design not specified) of antiretroviral therapy naïve adult patients with HIV-1 status in which more than 50% of the study population took triple therapy (all antiretroviral therapy) and that reported CD4 count and/or undetectable viral load (UDVL) at specific time points after initiation of antiretroviral therapy were eligible for inclusion. Included studies were of cohort or observational study design. Mean age ranged from 31 to 41 years. In most of the studies more than 50% of participants were women. Paediatric data were included in two papers. Not all participants in all studies were antiretroviral therapy naïve and in some papers antiretroviral therapy naïve status was not reported. Dual and triple therapy were included. One study included HIV-2 patients. It appeared that one reviewer selected papers for the review.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Data were extracted for CD4 count, viral load at baseline and percentage UDVL (defined as less than 400 copies/mL) at baseline, then at three-month intervals up to 24 months or more. CD4 data were assumed to be the mean value (even if reported as a median). Sample size was calculated from the number of tests conducted at each time point. If these data were not available, it was assumed that all participants were tested and the participant number was used in calculations. Data were extracted by one reviewer and checked by the same reviewer subsequently.

Methods of synthesis
The mean data were pooled in meta-analyses for each outcome. No further details of the meta-analytic methods were reported.

Results of the review
Twenty-nine studies were included in the review (n=26,235). Study size ranged from 25 to 16,198 participants. Data were from 12 countries.

CD4 count increased at all time points except 18 months (mean and 95% confidence intervals were reported for each time point in the paper).

UDVL was above 64% for all time points and peaked at six months (74.7%), although this could not be defined as the highest UDVL as 95% confidence intervals overlapped for all time points after baseline. The number of studies that provided data at each time point ranged from two to 28.
Authors' conclusions
Antiretroviral therapy can be provided effectively in Africa, as demonstrated by the increases in CD4 count and maintenance of UDVL.

CRD commentary
The research question was supported by inclusion criteria for participants, intervention and outcomes. But, studies that did not fulfill the inclusion criteria were included, which suggested that subjective decisions were made during study selection. The authors did not report any attempts to identify unpublished studies and sought only English-language papers; they may, therefore, have missed relevant studies due to language and publication biases. Data extraction was performed by one reviewer, which increased the possibility of error and bias; the process of study selection was not described. Methodological quality of the primary studies was not assessed, so their reliability and, therefore, the reliability of the synthesis was unknown. One large study provided more than half the number of participants, which may have weighted the results where it was included (which was unclear). Statistical heterogeneity was not assessed and the studies may have been clinically heterogeneous (for example, children were included and not all patients were antiretroviral therapy naïve). Due to potential biases, a lack of consideration of study quality and possible inappropriate pooling of studies, the authors' conclusions should be viewed with caution.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that a robust randomised controlled trial in a variety of different settings was required.

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