Reviewer's report

Title: Trends in CD4 counts in HIV-infected patients with HIV viral load monitoring while on combination antiretroviral treatment: results from The TREAT Asia HIV Observational Database

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Reviewer: Jens JL Lundgren

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Zhou and colleagues describes factors influenzing CD4 changes after commencing ART. The main finding is that the CD4 slope remains positive also in patients without complete viral suppression. The study is of interest as patients are from Asia (an area where this question has not previously be described in) and the statistical analyses are done carefully and comprehensively by colleagues known for their expertise.

Major comment:

1. The ability of ART to cause CD4 gain - also in patients without complete viral suppression - has been the focus of several analyses previously. The list of references included in the current version does not include the most recent publication by Mocroft et al in Antiviral therapy. That paper suggested that the CD4 slope was affected by which drugs were used (PI > NNRTI; non-ZDV > ZDV). Suggest that the authors carefully review that paper and consider including additional variables in their multivariable models.

2. The clinical implications of the findings are not sufficiently discussed in the present paper in my opinion. WHO used previously a viral load of >10,000 copies/mL as indication to switch, but it is generally agreed that if one does do viral load monitoring, when switches should be done more quickly after time of viral failure. Was the time from viral failure an independent determinant of CD4 slope? If one is solely using CD4 cells for monitoring, then this paper is in line with others underlying that indeed one can have considerable duration of viral failure without meeting CD4 criteria recommended by WHO for switch of ART to second line.

3. Suggest to have the authors consider displaying the main table as a figure in stead.

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

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the
statistics.