**Reviewer’s report**

**Title:** Five-year trends in treatment changes in an adult cohort of HIV/AIDS patients in Ghana: A retrospective cohort study

**Version:** 0  **Date:** 16 Jun 2017

**Reviewer:** Seth Inzaule

**Reviewer's report:**

In this article the authors have assessed the patterns of treatment changes through a five-year period in Ghana. This is indeed vital for programmatic aspects especially in pharmacovigilance and efficacy of the different available regimens. The following issues however may need to be further addressed to increase the clarity of these findings:

**Major comments**

1. It is not clear whether the objective of this study was to assess the determinants for treatment modifications as indicated in the background and cover letter. Indeed this could have been a key finding of public health significance as understanding the reasons for these changes would give direction for public health response. At the moment the paper seems to have mainly shown the trends of response to the WHO guidelines for treatment change from stavudine-based regimens. If this is the main focus as is also seen in the discussion then perhaps the authors would revise the article in this direction as it appears that they were limited to assess both the reasons and the determinants for treatment modifications. I would also suggest that the authors also report the exact switches that were made. This would also help distinguish between treatment modifications due to the guideline change, other toxicities in the drug combinations, TB-coinfections or other drug-to-drug interactions as well as switches due to treatment failure.

2. In addition it would be good for the authors to also revise their analysis to reflect the adoption of the guideline changes. In the current analysis, the time on treatment and the Kaplan-Meir analysis are discussed as being random events while in reality they were triggered by a change in the guidelines. If this is not taken into consideration it confounds the interpretation of the analysis.

3. The authors note that disease severity was associated with increased treatment change. This possibly suggests that such patients were either at risk of side effects or drug
contraindications due to opportunistic infections. In general this highlights the need for information on the exact reasons for treatment modifications, which the authors should discuss further as a key limitation of their study. This could also give a framework to discuss the need for incorporating pharmacovigilance into routine data collection as advised by WHO.

Minor suggestions

1. It would be good for the authors to cite in the references the source and the date accessed for the guidelines in references 15-17 & 23 and the policy brief (reference 4)

2. It is not clear whether the rates given in the 2nd last paragraph in introduction reflects the incidence rate or mother-to-child HIV transmission rates.

3. The word 'median prevalence' in the same paragraph in introduction is also confusing. Its better for the authors to just give the prevalence as the term median may denote a different concept and ideally prevalence denotes mean.

4. It would also be good for the authors to give the absolute numbers in addition to the percentages in the results sections.

5. The statements in study outcome and data analysis pertaining the type of treatment change for patients on d4T appears contradictory. In the section of study outcome it appears that this was determined by laboratory tests but in the latter it appears that all patients were switched to TDF.

6. The statement on death rates comparisons of the different regimens in the discussions need to be qualified by a statistical test as the percentages for deaths among patients on AZT vs d4T appears to be similar.

7. The explanation given for low death rates in the study in particular referring to the type of patients seen at the referral center is confusing. Ideally it would be expected that more deaths are seen at the referral center because it received more complicated (sicker) cases. Perhaps they need to reword this to reflect the quality of services offered at the referral site.
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Yes

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