Reviewer's report

Title: Outcome of HIV-associated Pneumocystis pneumonia in hospitalized patients from 2000 through 2003

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Reviewer: Hansjakob Furrer

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The authors have adequately responded to the many comments but failed to convince me about the reliability of the data in all the sections that concern HAART. For me these are Major compulsory revisions

1. Abstract: “One hundred and seven patients received HAART before hospitalization”. In the patients studied HAART was not used properly in many patients, since there was no patient with undetectable HIV RNA, thus many of these patients were on failing ART. This is likely to be a very small and difficult to follow proportion of the HIV-infected population (e.g. in our cohort 95% of patients on ART have HIV-RNA <400). The conclusion should rather be that PCP occurs mainly in patients on failing ART or patients not receiving ART.

2. If these patients were on failing ART and continuing ART was not associated with a in hospital survival benefit, then the conclusion should be that continuing a failing ART is not associated with in improvement hospital mortality.

3. One further problem is the main endpoint “in hospital mortality”, since median hospitalisation time was 8 days (range 1-89). To study the effect of an intervention (e.g. starting or recommencing ART) on mortality one should either do a survival analysis (e.g. Cox model with the time updated covariate (“on ART”), or if a logistic regression model is used one has to study mortality within a defined time period (e.g. 30 days, 90 days …). If follow-up time is that heterogeneous the data in logistic regression are not interpretable, because it is likely that a considerable proportion of patients died outside the hospital within the 90 days after leaving the hospital.

4. Furthermore, time on HAART during admission was median 6 days before patients left the hospital or died. Pathophysiogically it is very unlikely to see an effect of ART in 6 days, and if there was one this would likely be due to confounding factors not evenly distributed between the HAART- and non-HAART-receiving patients and not captured by the rudimentary multivariable model (e.g. not containing CD4 counts, a-a gradient etc).

Minor essential revision

5. Page 11, 2nd paragraph: IRIS: The first description of PCP IRIS was published in 2002. Therefore, it is unlikely that this diagnosis would appear in the charts of this county hospital 2000-2003. Either the authors have to try to find IRIS cases out of the clinical follow-up in the charts or skip this notion.
In conclusion the influence of starting, recommencing or continuing HAART in patients with HIV-associated PCP cannot be investigated with the presented data.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

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