Reviewer's report

**Title:** Genetic Diversity and Drug Resistance among Newly HIV-1 Diagnosed Individuals in Western Yunnan: Hot Area of Active Recombination in China

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**Reviewer:** Alessia Lai

**Reviewer's report:**

In this paper Dr. Chen and colleagues describe the HIV-1 genetic diversity and the proportion of drug resistance in a large case file of newly diagnosed subjects in China. The article is well written and the used methodology is adequate for the objective of the study. However, some major and minor points should be revised by the authors.

**Major Compulsory Revisions**

1. Why authors called drug resistance mutations “Surveillance drug resistance mutations (SDRM)s”?? Drug related resistance was defined by the presence of at least one resistance mutation from the WHO-recommended SDRM (Surveillance Drug Resistance Mutations) list for naïve patients. In the Abstract section, Methods paragraph, authors called HIV-1 drug resistance (HIVDR) or transmitted drug resistance (DR) so please change all acronyms with HIVDR or TDR in the case of transmitted drug resistance.

2. In the Abstract section, Conclusion paragraph, authors defined proportion of TDR alarming while in the same paragraph of the work they affirmed that there is a low level of resistance. The proportion of 4.3% (13/299) is actually low, so please delete alarming.

3. There are too many Figures and Tables. Figure 1 in the Background section can be deleted. Figure 2 and 3 may be grouped together. Figure 5 is not very useful and all the explanations are in the text, so delete it. Table 4 repeats the same data of Table 3, so delete it.

4. Delete the last two lines of the background because they are results. “Our data showed that drug resistance approached 4.3% among the new HIV-1 patients. Moreover, we found that new recombination emerged rapidly with the multiple subtypes co-existing in this area.”

5. Specify in the text that authors studied newly HIV-1 diagnosed individuals naïve for antiretrovirals.

**Minor Essential Revisions**

1. Change in the Abstract section, Results paragraph, the sentence “The proportion of URFs was second only to subtype C, including BC recombinations, CRF01_AE/C and CRF01_AE/B/C.” with “The proportion of URFs was second only to subtype C, including BC, CRF01/C and CRF01/B/C recombinants.”
2. I recommend to the authors make a minor revision in the marks and spaces in the text in particular near square brackets.

3. In the Background section, the paragraph “Since 2003 the local and national governments provided substantial financial resources for ART. Distribution of free ART has increased in Yunnan province. By the end of 2010, 19,512 of 83,925 PLWHAs received ART in Yunnan Province, 20% of which were in Dehong Prefecture. Therefore, HIV drug resistance survey in Yunnan Province to evaluate the prevalence of drug-resistant HIV strains is necessary. Such a survey would be of importance to formulate an effective ART regimen in individual patients, to delay the emergence of drug resistance within the population and to work towards developing a rational public health stratagem to control the HIV epidemic” can be repaired and added to the prior paragraph.

4. In the subparagraph of results don’t repeat “newly HIV-1 diagnosed individuals”, change it in “Demographic characteristics of patients” and “HIV-1 subtypes assignment”.

5. In the results subparagraph “HIV-1 subtypes among newly HIV-diagnosed individuals”, row6, data of subtypes are reported in Table 1 not Table 2, correct it. Table 2 must be mentioned after the sentence “Most of URFs (76.4%, 42/55) were detected in individuals infected through heterosexual contact.”

6. Clarify this sentence: “Strikingly, the prevalence level of URFs was equivalent to that of CRF01_AE, which suggests that frequent recombination among the main strains took place in the local area.” Which strains?

7. Clarify this sentence: “There was intermixing of subtypes/CRFs documented in the different infection routes.”

8. The authors affirmed that the proportion of the subtype C among IDUs was higher than that among the heterosexually transmitted population but the proportion of CRF01_AE in the heterosexually transmitted population was higher than that among IDUs; if there is any significant difference please report p-value.

9. Why authors defined BC recombinants as “new”? Necessarily they are new as well as recombinants, in addiction all recombinants have a different pattern, so delete new.

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.