Reviewer's report

**Title:** Five-year trends in epidemiology and prevention of mother-to-child HIV transmission, St. Petersburg, Russia: results from perinatal HIV surveillance

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**Reviewer:** Yusuf Ahmed

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Five-year trends in epidemiology and prevention of mother-to-child HIV transmission, St. Petersburg, Russia: results from perinatal HIV surveillance

This study provides information on the trends in the epidemiology and prevention of mother-to-child HIV transmission in St. Petersburg based on an enhanced perinatal surveillance system. This has enabled the authors to describe the trends in social, perinatal, and clinical factors influencing mother-to-child HIV transmission stratified by history of injection drug. The historical driving force of the HIV epidemic in males in Russia has been male injection drug users, though now the epidemic is evident in increasing numbers in other groups, particularly females of reproductive age. This has led to the stratification based on the women’s injection drug use history, an important aspect though not one that necessitates to be reflected in the title.

An important strength of the study is that the enhanced perinatal surveillance system, on which the trend analysis is based, captures information in over 90% of HIV infected women giving birth in St. Petersburg. However, those women non-captured (i.e. delivering in low-risk maternity hospitals) are implied to be women with not as high an HIV prevalence as the others (and if infected, not with manifest HIV disease). Universal HIV testing of pregnant women (or of documented status) would address that concern. The authors state that: ‘nearly all women in St. Petersburg and Russia deliver in medical facilities, and there has been high coverage with antenatal and natal HIV screening ...’, the reader is accordingly supposed to infer a virtual universal coverage regarding women knowing their HIV status. The sustained strategy for opt-out is then to maintain such a high coverage and also capture, with rapid testing in labor, any of those that are missed through non-use of prenatal services.

The authors acknowledge that standard HIV case reporting underestimates the HIV prevalence in women of reproductive-aged women, but that birth data are more comprehensive. This has implications on the indicator related to HIV-infected women giving birth. The authors suggest that the decreasing birth rate in HIV-infected women may be due to decreased fecundity as a result of decreased fertility desires and/or improved family planning services. A personal communication is cited to state that there was no increase in abortions amongst HIV-infected users. Although pregnancy intendedness had decreased in both IDU and non-IDU women giving birth, at the end of the reporting period (2008)
there were still 30.2% and 46% respectively with an unintended pregnancy giving birth, reflecting an as yet substantial unmet need.

The surveillance system shows that though an increasing proportion of HIV-infected women are on some form of antiretroviral drugs (ARVs either as prophylaxis or for their own need), by the last reporting year (2008) there were still 12.1% non-IDU and 29.5% IDU women that had no prenatal care and hence no ARVs (presumably up to the time of labour).

The perinatal transmission rates show a trend in reduction in both IDU and non-IDU groups but infant HIV follow-up is by no means comprehensive (about 60% overall for 4 years of surveillance).

From a program perspective, the study has highlighted important areas that need strengthening and which include increasing family planning uptake, earlier use of ARVs and increased infant follow-up. The women with no prenatal care, in both groups, points to efforts required to ensure that HIV-infected women enter the formal health system to enable specific PMTCT interventions to be effected. It more importantly points to the value of the surveillance system in program management which not only requires population, facility, and health systems indicators but also in the ability to capture and analyse individual level characteristics to better inform program. An important value of the paper is in this aspect – for the surveillance system to be able to assess and modulate program strategies in reducing PMTCT.

Major Compulsory Revisions/Clarifications

1. In the discussion and conclusions the authors should frame the value of the enhanced perinatal surveillance system regarding its assessment of trends in perinatal transmission on the fact that about 60% of the infants were followed up. Do the authors have any reason to suggest that the trends would not show such an effect had there been a wider coverage of infant follow-up? For example, are there any important differences between the populations that have infant follow-up as opposed to those that do not? At the very least, the authors should mention in the discussion whether this was the case or not.

2. Similarly, since the data are available, the authors could report on any difference(s) in characteristics between women that are IDU and non-IDU. This could be on pooled data over all years, or taking the last surveillance year. If the authors feel that Table 1 cannot accommodate yet another column for this, any important findings could be narrated instead of tabulated.

3. The authors have described how data is obtained for the enhanced perinatal surveillance system (medical abstraction and through interview for self-report of injection drug use, pregnancy intendedness and other factors). Do they feel that any others characteristics could be added? (Partner’s IDU history, if relevant). The authors should mention in the discussion how feasible it would be to duplicate the system in other cities? Would resources be available to administer such a system?

4. Is the enhanced perinatal surveillance system linked to any other registration
system? Can it be? Or is it only linked to the maternity hospital records? Is there any infant registration or other systems that could be linked to the mother?

Minor Essential Revisions

Minor issues not for publication

1. Email addresse: Akatova_Natasha@hotmail.com appears to be the common email address for NA, NAB, GVV, and AAY. Unless this is intentional, correct change to the correct address for NAB, GVV, and AAY.

2. WCM. Check whether Bill_Mmiller@unc.edu is correct. Are there supposed to be two ‘m’s?

3. Background; Para 2; instead of

- Many barriers to effective perinatal prevention relate to either behavioral characteristics of HIV-infected women themselves (e.g., use of family planning, initiation of prenatal care)....

State:
Many barriers to effective perinatal prevention relate to either behavioral characteristics of HIV-infected women themselves (e.g., suboptimal/inadequate use of family planning, late initiation of prenatal care)....

4. Methods; Para 1;

Instead of: Therefore, the number of HIV cases in the general population are severely underestimated [3].

Suggest
Therefore, the number of HIV cases in the general population is severely underestimated [3].

5. Results; Para 7

The overall rate of perinatal HIV transmission during that period was 4.0% (CI 2.7%#5.8%) and 7.0% (CI 5.5%#9.0%) among non-IDUs and IDUs, respectively.

Since this is a new paragraph continuing on from results of the 4-year period (2004-7) in the previous paragraph, suggest:

The overall rate of perinatal HIV transmission during the 4-year surveillance period (2004-2007) was 4.0% (CI 2.7%#5.8%) and 7.0% (CI 5.5%#9.0%) among non-IDUs and IDUs, respectively.

6. Acknowledgements and Funding; first sentence

‘The enhanced perinatal surveillance system in St. Petersburg was established and supported by the Elizabeth Glaser Pediatric AIDS Foundation, the St. Petersburg City AIDS Center, USAID/Moscow, and CDC.’...

This is repeated at the end of the section. Suggest remove the latter repetition.
7. Figure 4.
Spelling of prophilaxis should be prophylaxis

8. References
#9 - Year of article missing (it is 2010)

Discretionary Revisions/clarifications

1. The system focuses on perinatal transmission and its determinants. Within the current context in Russia, prevention of mother to child transmission may depend predominantly on perinatal transmission as opposed to those infected subsequently (e.g. though breastfeeding or other means). Accordingly, it is assumed that on remote follow-up of infants born to HIV-infected mothers, HIV status (if infected) would be a reflection of perinatal transmission. The authors may want to comment on this.

2. The authors may wish to comment whether any specific programmatic adjustments (to increase HIV testing in pregnancy or labour, increased ARV uptake, increased family planning uptake) have occurred over the years based on the enhanced perinatal surveillance system.

3. Can the trend in a higher proportion of those over 30 years of age (IDU and non-IDU) be explained by better coverage of those in that age group, increasing (and/or) more recent HIV infection in that demographic or that they were not tested in previous pregnancies in the past?

4. Noted that age category of <21 years is used. Is there any reason for this preference as opposed to <20 as used in general demographic categorizations? (Noted that numbers are small, but how may this have affected the trend?)

5. It is interesting to note that there is a trend of a slight of increase in the proportion of injection drug use during pregnancy (Table 1) despite a decreasing proportion of such women over the surveillance period. Does this mean less HIV-infected women with a history of ever use of injection drugs are giving birth, but those that do are more prone to report current pregnancy injection drug use?

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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

Declaration of competing interests:

This reviewer previously worked with one of the co-authors (Densie J Jamieson) over 2 years ago, but not on any work related to this paper.