Reviewer’s report

Title: Treatment outcomes of patients who migrate for HIV care in the province of British Columbia, Canada, from 2003 to 2012: a retrospective cohort study

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Reviewer: Hartmut Krentz

Reviewer’s report:

This paper attempts to quantify the extent to which PLWH are migrating to seek HIV care within BC and its effect on virologic suppression, longevity, and mortality. The authors define ‘migration for care’ as ‘the movement from the HA where the PLWH resided to the HA that he/she received care’. The authors conclude that moving to a larger center was significantly associated with lower all cause mortality rates and slightly higher life expectancies.

General Issues to Note:

1. The findings presented in this paper are based on two important assumptions – 1) patients living with HIV move to a larger center in order to receive better care for their HIV disease (presumably because there are more physicians available in the larger (i.e. HA3) centers), and 2) patients who move to the larger centers experience lower levels of mortality and longer life expectancies presumably due to better HIV care. The first assumption is stated numerous times throughout the paper but never supported by data that patients did indeed move for health reasons only. The authors discuss ‘migration indicators’ (in Methods) based primarily on the notion that if there is a different in the address of where the patient resides and where they received HIV care then the patient must have migrated to get that HIV care. The authors do not indicate how they actually know that patients moved from one HA to another specifically for HIV care. There are numerous reasons – many not related to health – that patients move as pointed out by Gill and Krentz (AIDS Patient Care and STDs 2015 29(7)). The authors do not state how many of the patients who moved actually moved because of their health – all? 75% 50% 25%? The underlying premise of the paper that patients migrate to seek care is thus weak and is totally unsupported in this paper. Many people migrate from smaller centers to larger centers in BC and elsewhere for economic, personal, or other reasons. How did the authors determine that these HIV infected patients all move seeking better HIV care over the 10 years? Did they control for other factors? This is a serious flaw and major weakness that undermines all interpretation and analysis of the data.

2. The second outcome measure used (viral suppression appears not to be impacted) is all cause mortality. The underlying assumption in this paper is that those patients who moved to larger centres had less chance of dying because they migrated. Once again, the supportive evidence is weak at best. How many deaths are due to HIV related conditions versus non HIV related conditions? How
many from trauma vs. illness for example? Crude all cause mortality rates are often higher in rural areas regardless of HIV status. The authors imply mortality is decreased because of the migration (and supposedly better care) but other factors (some factors are discussed in the limitations but not all) can and do contribute to decreasing mortality other than HIV care as the paper seems to indicate. The authors may want to consider using only HIV related deaths or other HIV related health outcome markers.

3. The authors also use a bit of ‘sleight of hand’ to estimate the number of deaths in the patients deemed LTFU. While the statistical approach may be valid, one wonders why the authors couldn’t simply find LTFU patients who had died in BC in the BC Vital Statistics Agency database. If they had died after leaving HIV care, they should be listed in this database; an attempt should be made to investigate this database before estimated the number of LTFU patients who may or may not have died.

Abstract –

1. The first sentence of the results presents data on physician availability across all HAs, however, this is not discussed in the methods section. This needs to be addressed in the methods section.

2. In the conclusion section it is stated that the ‘life expectancy of PLWHs is increasing over time, and the continued migration of these individuals can potentially overburden the resources of receiving HAs, however, this is not the focus of the paper and nowhere in the paper does it address (with actual data) potential burdens to the receiving HAs. It is misleading to include this statement in the conclusions section.

Background –

1. Line 68 – ‘…HIV care has increasingly shifted to decentralized community-based medical practices’ needs references.

Methods –

1. Lines 101-102 – How do the authors deal with patients who move or migrate out of BC? It needs to be clearly addressed here. (Note – the clinical and demographic profiles of people who formally move are different from those who are LTFU as recent studies have shown).

2. Line 123 – The authors need to quantify what is meant by ‘experienced clinical staff’. How is that defined? Do they include nurses for example?

3. Line 131 – What is meant by …on a ‘continuous basis’?

4. Lines 148-159 – Can this analysis be reconciled with the BC Vital Statistics Agency data on deaths within the province?

5. Lines 162-164 – Physician availability/accessibility was not previously
discussed as a potential driver of migration nor are there any previous references alluding to this point. This issue needs to be addressed first before it can be included here in the discussion. How or why is physician availability directly related to seeking care among HIV patients? Where is the previous evidence for this point?

Results-

1. Lines 202 and 203 – the statement ‘…PLWH migrated to HA3 to receive care, …’ is not supported by data. These people may have migrated to HA3 but there is no evidence provided that they categorically migrated to receive care. As stated earlier, there may be many non health related reasons why they move. Receiving care in the new HA may be just a side effect of the movement.

2. Lines 212-214 – How many patients moved (rather than LTFU) out of the province during this time period?

3. Lines 227-228 – It is interesting that in HAs 1,2, 3, and 4 had similar life expectancies regardless of where PLWH live or sought care (and no differences in viral suppression rates) as presented here yet the premise of the paper is that key differences are seen based on migration patterns. Mortality rates may be different but the underlying cause of mortality is not explored in detail.

4. Lines 233-242 – This discussion on the STOP HIV/AIDS initiative seems irrelevant to migration patterns unless it can be documented that patients moved to HAs specifically for this program. This documentation is not provided in this paper.

Discussion-

1. Line 245 – This statement – ‘our results demonstrate that there is a substantial number of PLWH seeking medical care …’ is not accurate because it has not been shown that patients are moving specifically for medical care; patients may be migrating but it still is not shown that they are moving for health reasons.

2. Lines 248-249 - The authors speculated that physician availability was a driver for migration patterns but once again this is not supported by actual data.

3. Line 250 – The statement that physicians working outside HA3 were caring for fewer PLWH than previously believed is not supported. ‘Previously believed’ by whom?

4. Lines 256-257 – How do the authors account for significant decreases in mortality rates in HA2 where the stop HIV/AIDS was not initiated?

5. Line 259 – The statement ‘We hypothesized that receiving community-based HIV care would be associated with better outcomes, …’ is not accurate. It is alluded to in the introduction but is not stated as a hypothesis.

6. Lines 272-274 – The third point is self promoting and self gratifying (especially
as the authors are all working in HA3) and is not supported by any evidence and should be removed. This type of statement should never appear in an academic paper.

7. Lines 289-290 – The statement that continual migration of these individuals can potentially overburden resources, while potentially accurate, is not supported by any evidence in this study. This would be okay in the discussion section but it also appears in the Abstract giving it more importance than the data used to support it (which there is none).

**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:**

No competing interests of any kind.