Reviewer's report

Title: Identification of losses to follow-up in a community-based antiretroviral therapy clinic in South Africa using a computerized pharmacy tracking system

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Reviewer: Gregory Bisson

Reviewer's report:

This is an interesting operational research study looking at an important issue. I think the question has broad relevance to ART scale up and the iDART program might be useful in tracking patients.

Major compulsory points:

One possible issue with the study design and patients is that the relationship between pharmacy delay and LTFU status may differ according to time on ART. Given that many who are lost to follow-up are later found to be dead, and given the early timing of most first-year deaths after ART initiation in sub-Saharan Africa, being late by a few days may be more predictive of true LTFU when this occurs in the first month of ART compared to later months. Furthermore, I suspect that to the degree that LTFU represents deaths patients with low CD4 counts may have a different relationship between iDART delays and true LTFU status. So, the test characteristics of definitions for LTFU plausibly vary by time on ART, baseline CD4 counts, and perhaps other characteristics not measured here (like employment). If this is true, then the point that simple monitoring strategies may have important subtleties in accuracy is an important point. This would suggest that automated strategies for flagging loss to follow-up, etc, need to be more complex. Perhaps the authors can either look at time on ART and baseline CD4 count as a possible modifiers of the test characteristics of delay for LTFU. If not, I think these limitations should be discussed.

What was the rationale for starting the definitions at 6 weeks and not earlier? Delays clearly related to outcomes. If one aims to prevent rather than identify bad outcomes should not an earlier delay be examined?

I would like more detail on the goals of this approach. Is the goal of this system to identify patients to trace who may be nearly lost but still recoverable? Or is it more to monitor program outcomes? This is addressed to some extent but I think this could be much clearer.

It would seem to me that there could be a survivor bias in this cross sectional design. The patients who make it into the cross sectional design exclude many who have suffered early adverse outcomes. The rationale for use of the cross sectional design vs the cohort design would be helpful to know. Can the authors address possible survivor bias that analytically using data at hand (eg through sensitivity analyses)? If not, this is a possible limitation that should be addressed.
in the discussion. This relates to my first point, above.

The optimal delay to use depends on the resources available and planned to be expended for tracing patients, and the extent to which a program feels it can attempt to prevent deaths among those who have pharmacy delays. So, while I appreciate the author's personal perspective that one threshold is "too nonspecific", I think the manuscript should address the fact that choosing between cut-points depends on many factors and there is unlikely to be a universally ideal threshold that fits for all clinics. In a setting where many patients have cell phones and a few minimally trained can use a land line to call patients all day, then setting a threshold earlier than was examined here (eg, 4 weeks), which might capture 100% of those bound for future LTFU, might be feasible.

Minor point:

I think the discussion could be considerably shorter as it seems repetitive of the introduction.

Jeff Stringer's group has a paper recently released from the American Journal of Public Health looking at this issue that the authors might want to evaluate in light of their findings.

**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:**

No competing interests.