Author's response to reviews

Title: Field evaluation in Chad of community usage of CD4 T lymphocyte counting by alternative single-platform flow cytometry

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Author's response to reviews: see over
Dear Editor,

Please find to your attention the revised version of the manuscript #1675375457824822 entitled: “Field evaluation of community usage of CD4 T lymphocyte counting by alternative single-platform flow cytometry in Chad”, by Koyalta and colleagues.

Thank you for willing to consider a revised version of our manuscript.

Thank you also for the comments from the Reviewer #3. We have responded to him on a point-to-point basis below. These comments have improved the paper, and likely helped us to better understand the scientific issues that the paper brings out. We hope that is reflected in the revised paper we have now submitted. In addition, and as requested, the readability of the manuscript has been improved by correcting the whole text by a native English-speaking researcher of our lab. The references of the revised version of the manuscript have been updated, and the authors items have been checked.

We trust that the revisions we have made, and our point-by-point response, deal with any remaining concerns and that this manuscript is now suitable for publication in BMC Health Services Research.

Thank you very much for considering our manuscript.

Yours sincerely,

Dr Donato Koyalta
Answer to the Reviewer

Reviewer's report
Title: Field evaluation of community usage of CD4 T lymphocytes counting by alternative single-platform flow cytometry in Chad
Version: 2 Date: 11 July 2013
Reviewer: Deborah K. K Glencross

Minor Essential Revisions:

The reviewer congratulates the authors who have provided an insight into the logistical and difficulties of implementing a CD4 lab service in Chad, additionally documenting the use of flow cytometry in certain levels of service delivery, whilst reserving new POC systems only to consolidate service in lower impact areas across the very wide area of Chad.

1. Several grammatical errors (including use of commas, long sentences, or use of inappropriate/incorrect words, etc needs correction throughout the manuscript. The manuscript therefore needs a thorough editorial review. Not all grammatical etc errors are documented. The authors are therefore advised to consult an editor to assist them in improving the readability of their manuscript. Attention to this small detail will serve to strengthen the impact of this work.

Some examples are indicated below:

- e.g. p6, under results, 'The evaluation of the routine usage of the 8 Auto40 flow cytometers implanted.... (Surely the authors mean "implemented".
- p7...top of the page.... 'Despite very high temperatures outside, (no need for a comma) and the frequent presence of dust, analyzeurs (? do authors mean the analysers themselves? or the operators? not clear) in non-contained pieces (no sure what this means, ? do they mean rooms?() etc...
- Also p7: sentence that starts 'Nevertheless, running water... (Sentence is not understandable). The issue of the distilled water vs. cartridges? Needs to be written more clearly in the discussion as well. Perhaps a simple sentence like "The manufacture of locally produced distilled water could potentially significantly impact on reducing reagent costs, especially as the Auto40 instruments are not deployed in fixed lab sites and not on mobile units, where manufacturer recommended sheath fluid recycling cassettes are cartridge are necessary." could suffice? (End of first paragraph, p7)
- p7, second paragraph: Sentence that reads: "Lyophilized and heat resistant..... Were privileged (? not correct word, ? should read: 'promoted'? or 'preferred'?"
- p8, third paragraph: Sentence that reads: "In the present study..... The installation and extended usage.... sentence needs revision.

Our reply: We corrected all of the points raised by the referee in the text. To perform the language quality, the manuscript has been fully corrected by a native English-speaking researcher of our lab.
In particular, the first paragraph of the Results section has been partly re-written, as suggested.

In the discussion, the reviewer disagrees with the comment that cutting the number of antibodies will half the costs. Perhaps the authors could point out, that the cost of antibodies is in actual fact minimal (their reference #15, #16 , #17 refers) and that actual costs reduction can only be brought about with active pressure on manufacturers and more frequently, their agencies, to reduce administrative/ logistical and related costs which act to inflate reagent costs.

**Our reply:** We do agree with the reviewer’s comment. We have added in the Discussion section the following sentence: “In practice, cost reduction on reagents for CD4 T cell counting could only materialize with active pressure on manufacturers and likely their agencies, in order to reduce production, administrative and logistical expenditures acting to inflate the costs of laboratory intrants in resource-limited settings.”

Also in the discussion, perhaps an additional sentence or two could emphasize that the technology is easily implemented and maintained by technicians. This is an important point, especially in the context of resource- poor areas, where skills may frequently be scare and scientists/ biologists either lacking or drawn to research orientated centres. Train- the trainer could be introduced where technicians teach other technicians and promote local knowledge and use of flow cytometry, to be used along with other clinical pathology instruments (in other words, flow cytometry is not reserved for research centres only but becomes part of routine clinical pathology setup at levels other than tertiary centres, especially instruments like FACSCount).

**Our reply:** To acknowledge the reviewer’s comment, we have added these two sentences in the Discussion section, as follows: “Of major interest is our finding that the A40 technology may be easily implemented and maintained by technicians. Indeed, well-trained technicians were able to use the Auto40 flow cytometer with low intra- and inter- run variability of less than 10% [Mbopi-Keou et al. 2012a; Mbopi-Kéou et al., 2012b], This value was comparable to other published reports using single-platform flow cytometers [Cassens et al., 2004; Pattanapanyasat et al., 2008], and is considered acceptable in routine clinical practice [Pattanapanyasat et al., 2008]).

W.r.t. the very last reviewer comment addressed, it is likely that this reviewer wanted the authors to make use or refer to free EQA programmes, e.g. QASI (Health Canada - www.qasi-lymphosite.ca, Cytometry B Clin Cytom. 2010 Jan;78(1):41-8 and Cytometry. 2002 Apr 15;50(2):111-6) or perhaps AFREQAS (currently administered through the SA NHLS Quality Assurance Division, ref: Cytometry B Clin Cytom. 2008;74 Suppl 1:S69-79). Participation is free provided financial need shown and can benefit these sites enormously.
Our reply: In the present observational report, the external quality assurance was not addressed, as it is currently always the case in Chad. However, the remark of the referee is very important. To address the reviewer’s concern, we have added the following sentence in the Discussion section, as follows: “The lack of external quality control programmers, such as those proposed for resource-limited settings by QASI [Cytometry B Clin Cytom. 2010 Jan;78(1):41-8 ; Cytometry. 2002 Apr 15;50(2):111-6] or AFREQAS [Cytometry B Clin Cytom. 2008;74 Suppl 1:S69-79], is another flaw and likely stems from the lack of operational national network of laboratories in Chad”.

To convey the impact of distribution of the Chad lab network, and distance between centres, it would be of value to insert an indicator of distance on the map provided in Figure 2. Also important to indicate the size of the health care centre (perhaps by number of patients seen per month? or similar indicator). If not, the map gives the impression that e.g. there are only two health care centres in the Borkou_ennedi_tibesti area? Surely there are more?

Our reply: The distance scale has been now shown in the map provided in Figure 2. Only the health care centers involved in caring HIV infected patients are shown in the map. We have mentioned this specific minor point in the legend of the Figure 2.

Discretionary Revisions:

The reviewer believes it would be of interest to read why mobile units are not used (just a sentence or two to help readers understand if it is just the Apogee that are not used on the mobile units, or is it that mobile units are not used at all? and if so why not? e.g. Too expensive to maintain perhaps?

Our reply: To acknowledge the reviewer’s remark, we have commented this point in the Discussion section, as follows: “However, although the mobile unit concept of HIV infection diagnosis and treatment involving community health workers would be particularly adapted for isolated populations living in remote villages, as previously shown in Cameroon [Mbopi-Keou et al., 2007], the Chad health care system has not yet been capable of implementing a coherent program of “mobile” health care for decentralization.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Our reply: The English corrections have now been made, as requested.

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