Author’s response to reviews

Title: Massive single visit cervical pre-cancer and cancer screening in eastern Democratic Republic of Congo

Authors:

Justin Paluku Lussy (justin.healafrica@gmail.com)

Tamar Carter (tecarter2@gmail.com)

Miriam Lee (mje@bigpond.net.au)

Susan Bartels (susanabartels@gmail.com)

Version: 1 Date: 09 Dec 2018

Author’s response to reviews:

Reviewer reports:

Lin Zhu, PhD (Reviewer 1): This study examines a cervical cancer screening campaign in the Democratic Republic of Congo. It evaluates the screening intervention, and the findings generated important policy and research implications. Cancer screening interventions and studies in understudied and underprivileged countries like this one is urgently needed.

The authors could consider addressing the following issues to further improve the quality of this paper.

1. The authors provided a detailed description of the screening procedures, which is very important. However, it would also be interesting to have more details on the recruitment strategies. One of the challenges of cancer screening campaigns or interventions is to recruit those in need, and as we know from previous studies, those who were most underprivileged are usually the hardest to recruit or reach. This could be addressed in the Methods section, and/or the Discussion section. What kind of message was included? Was is culturally tailored? It's provide some implications for future studies.

Thank you for raising this important point. Some additional details about the recruitment message have been included in the “Study setting and patients”. In summary, cervical cancer risk factors, symptoms, risks of cervical cancer and finally the dates of the screening were included. The message was culturally appropriate (developed by local health care providers at HEAL Africa) and was delivered in French and Swahili at local churches across a number of denominations as well as on local radio programming for two weeks.
2. Related to the previous point, community-based participatory research has proven to be effective in promoting cancer screening in underprivileged populations, such as low-income, ethnic minorities in the US. Some example articles are included below. These studies were conducted in collaboration with faith-based organizations, similarly to this study under review. It'd be interesting to see how this approach could be explored to expand the efforts to promote screening and vaccination. The authors should consider discussing this point in this article.


Thank you for suggesting theses relevant articles. They have been included in the Discussion.

3. The authors mentioned that there are strong need for HPV vaccination. Did the study actually measure the knowledge/awareness of HPV vaccination? When the HPV vaccine is available in DRC, what would be some good strategies to promote the vaccination? This might also be a good discussion point.

We have now included a brief section about the HPV vaccine in the Discussion. In summary, we did not measure knowledge / awareness of the HPV vaccine in this study.

John Condon (Reviewer 2): This paper describes a pilot of a short, intensive screen-and-treat strategy for cervical screening (implemented as two one-week screening campaigns) in a resource-poor environment in which there is no prospect of a permanent cervical screening program. The paper describes the rationale for the screen and treat strategy, its implementation (including recruitment process and clinical service), and basic demographic characteristics of the women screened and their screening results. The paper is clearly and concisely written. Data collection was limited but appropriate. Statistical analysis was appropriate for the available data. The screening program was apparently implemented effectively, demonstrating that, in this hospital at least, this strategy is feasible.

Overall, this is a well written paper that provides important information for cervical screening and similar health initiatives in Democratic Republic of Congo and other very resource-poor
areas. It is a useful contribution to the public health literature, particularly for resource-poor countries for which reliable evidence is scarce.

There are several aspects of the paper that need to be improved.

1. The research questions for the research component of the project are not articulated. There appear to have been three research questions relating to: the feasibility of the screen and treat strategy; the prevalence of CIN/SCC in this population; and risk factors for CIN/SCC in this population. The research questions and the study design to investigate each question should be explicit.

We agree with this suggestion and the research objectives (testing feasibility and determining prevalence) have been stated at the end of the Introduction.

2. The feasibility question is addressed in regard to the organisation of and resources required for the campaigns, recruitment strategy and number of participants, and clinical processes. However, there is no mention of cost or impact on routine services (which are presumably highly over-worked).

We have added a few sentences to the Discussion explaining the associated costs. In essence, the biggest costs was for the histopathologic examinations since all staff at HEAL conducted the screening within the confines of their regular duties at the hospital, the colposcopes were donated by the partner institution and the visiting physician from Australia volunteered her time.

3. It is quite an achievement that 644 women (440 from within Goma) screened over nine days, but there is no mention of the size of the population eligible for screening or of the participation rate in the eligible population; is there any (even approximate) information available of the size of the adult female population of Goma?

You raise a good point and we have included the estimated population of Goma (approximately 1.5 million) in the Introduction. The last census in DRC was in 1984 and so unfortunately there is no reliable recent data.

4. The context in which these campaigns arose is also important, as is what the pilot study indicates about the potential sustainability of the screen and treat strategy. Who initiated this program and why? Was it a local or external priority? Could it have been conducted without the input of the Australian gynaecologist? If not, was there a training component for local staff and has the experience of these two campaigns made it locally sustainable? Was there a substitution strategy of training nurses or others to do the screening (such as those mentioned in the Discussion), instead of relying only on (rare) gynaecologists? Has the experience of these two campaigns resulted any plans to use this strategy in Goma or elsewhere in DRC?
The screening program was initiated by HEAL Africa Hospital (as indicated in the Introduction) and it was initiated to address the need outlined in the earlier part of the Introduction. Additional details about the training program at the beginning of the first screening are now included in the Methods.

5. The finding that 39.75% of women reported abnormal cervical bleeding in the previous year is overlooked. This is mentioned in the 'Results' (L185) as "A majority of the patients did not report a history of abnormal bleeding (60.25%)…", but is 40% prevalence of abnormal bleeding in a one-year period unusual? There is no further discussion of why this might have been so commonly reported; was the abnormal bleeding a motivator for these women to seek screening (the paper did not mention asking about the reason for attending), in which case the prevalence of cervical abnormalities in participants would overestimate (because of selection bias) prevalence of cervical abnormalities in the Goma population.

Thank you for raising this important point. Lines 327 -331 in the Discussion also address this issue with the following statements: “Abnormal vaginal bleeding was also frequently reported by patients with non-CIN / non-SCC cervicitis. Cervicitis is common in sexually active women and may be related to sexually transmitted infections (STI). However, STI testing was not included in the screening and additional investigation is needed to delineate the non-neoplastic causes of abnormal bleeding and cervicitis in our patient population.”

We have added this selection bias to the limitations section.

6. The association of abnormal cervical bleeding with prevalence of CIN/SCC is discussed as the proportion of women with/without CIN/SCC who reported bleeding (L203). The cervical pathology might be causing the bleeding, but it is the abnormal bleeding (not the cervical pathology) that a woman might notice and act on. Consideration of the predictive value of abnormal bleeding to indicate cervical pathology (neoplastic or inflammatory) is needed, particularly with 40% of screened women reporting abnormal bleeding (although this might also be affected by selection bias).

The positive predictive value of abnormal vaginal bleeding was 7.81%. This has been added to the Results in line 233.

Minor corrections

7. The two screening campaigns are sometimes described as a program, sometimes as a pilot (e.g. L101 & L106); this should be consistent.

Two uses of the word “pilot” have been changed to program. Thank you.
8. L690 "… reduced prevalence…” and L72: "…cervical cancer prevalence…”: should this be "incidence" rather than "prevalence"? Reference 4 reports incidence and mortality rates, not prevalence. I have not checked references 3 and 5.

Those two uses of “prevalence” have been revised to “incidence”. Thank you for the correction.

9. L72-73: cervical cancer incidence in developing countries is reported in ref 4 as 17.8 per 100,000, not 15.7 (ref 4 table 1).

Updated to 17.8 per 100,000. Thank you.

10. The numbers included in the text of the Results section should be considerably reduced. There are too many numbers included in the text, most of which duplicate the numbers reported in the Tables. This unnecessarily reduces the clarity and flow of the text.

Some of the numbers have been removed as per this request. We hope that this improves readability.