Author's response to reviews

Title: A sexual health quality improvement program triples chlamydia and gonorrhoea testing rates among young people attending Aboriginal primary health care services in Australia

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Author's response to reviews: see over
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Dear Editorial office,

MS: 1929627042143489. A sexual health quality improvement program triples chlamydia and gonorrhoea testing rates among young people attending Aboriginal primary health care services in Australia

Please find attached responses to the comments provided by the reviewers and a revised manuscript for consideration.

Please contact me if you have any questions.

Kind regards

Simon Graham
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Reviewer 1 - John Saunders

Major Compulsory Revisions:

1. Line 135: Could you provide a reference to any outputs from SHIMMER please? If there are none then perhaps a reference to your study website? Some further information about SHIMMER and STRIVE and their relationship to this study would be useful for readers. Currently I think it is unclear exactly how the three parts relate to each other.

Line 148: The authors have referenced three SHIMMER conference presentations.

Lines 153-179: More detail has been provided about SHIMMER and STRIVE, how they relate to each other and how they use similar quality improvement processes to achieve increases in STI testing rates. We have also included Table 1, which details the STI testing strategies.

The QIP used in SHIMMER was adapted from another QIP project known as STRIVE (STIs in Remote communities: ImproVed & Enhanced primary health care trial).[25] STRIVE is a cluster randomised control trial in 68 remote Aboriginal primary health care centres in Northern Australia. The aim of STRIVE is to decrease the prevalence of chlamydia, gonorrhoea and trichomonas among 16-34 year olds through a QIP process that increases STI testing and improves management. The QIP process in STRIVE included;

1. The extraction of attendance and STI testing data from the electronic patient system;
2. Developing indicators based on local STI guidelines in Aboriginal people and producing reports based on these indicators by, gender and age group;
3. Incentives based on performance;
4. A coordinator (nurse or sexual health physician) visiting the Aboriginal primary health care centres every 6-months to present STI reports;
5. Use a systems assessment tool to review their STI program more broadly; and
6. Facilitate a conversation with clinic staff to develop STI testing and management strategies and document these into an action plan.

SHIMMER involved a similar QIP process to STRIVE, except;

1. A sexual health physician and project manager visited the ACCHS more frequently (every four to six months (a total of five visits per ACCHS over a two year period);
2. Indicators were based on national STI guidelines;
3. SHIMMER provided an annual payment to each ACCHS that was not performance based; and
4. A clinical audit was conducted to examine the reasons why 15-24 year olds attended the ACCHS and what types of consultations included chlamydia and gonorrhoea testing.

The STI testing and management strategies developed by the clinic staff during the visits were specific to each ACCHS to account for the different clinic sizes, staffing levels and resources (Table 1).
Table 1: Examples of STI testing and management strategies developed by the ACCHSs

<table>
<thead>
<tr>
<th>Goal</th>
<th>Strategy</th>
<th>Responsible person</th>
</tr>
</thead>
<tbody>
<tr>
<td>To increase chlamydia &amp; gonorrhoea testing</td>
<td>Add chlamydia &amp; gonorrhoea testing to the adult health check template</td>
<td>Practice manager</td>
</tr>
<tr>
<td></td>
<td>Offer more Adult Health Checks to 15-29 year olds</td>
<td>All clinic staff</td>
</tr>
<tr>
<td></td>
<td>Offer testing to any females or male aged 15-29 years</td>
<td>All clinic staff</td>
</tr>
<tr>
<td></td>
<td>Offer testing to any women aged 15-29 years who attends for a Pap smear, a pregnancy test, contraception or antenatal care</td>
<td>All clinic staff</td>
</tr>
<tr>
<td></td>
<td>Place laminated reminders to test 15-29 year olds near urine pots kept in consult rooms and stock room. Attached laminated reminder to test where pregnancy kits are kept</td>
<td>All clinic staff</td>
</tr>
<tr>
<td></td>
<td>Place laminated reminder to test next to contraceptive devices (e.g. Implanon, contraceptive pills)</td>
<td>Practice manager</td>
</tr>
</tbody>
</table>

| Improve STI re-testing                     | **Anyone who tests positive** for chlamydia and/or gonorrhoea - enter recall into patient system for a re-test 3 months after treatment | All clinic staff            |
|                                           | **Anyone aged 15-29 years who tests negative** - Enter recall into patient system for re-test in 12 months. | All clinic staff            |
|                                           | **Place laminated signs** in treatment cupboard to enter recall into patient system for a re-test 3 months after treatment of chlamydia or gonorrhoea | All clinic staff            |

*An Adult health check is a general health assessment used by ACCHS.

2. Lines 140 to 152: I think this section should be placed in the background section. It does not really relate to methodology but is useful in setting the context for the study.

We agree. Lines 81-92. This section has been moved from the methods section to the introduction section as suggested.

In 2011, the Australian Bureau of Statistics (ABS) estimated that there were 669881 Aboriginal people, which accounts for 3% of the Australian population.[6] The number of Aboriginal people varied across the Australian jurisdictions with the largest residing in New South Wales (NSW) (208476) followed by Queensland (188954).[6] The median age of Aboriginal people was 21 years compared with 37 years in non-Aboriginal people,[7] with a higher proportion of Aboriginal compared with non-Aboriginal people living in non-urban areas.[8] Aboriginal compared with non-Aboriginal people have higher rates of chronic and communicable diseases and unemployment; and lower levels of home ownership, school completion and life expectancy.[8] As a result, the Australian government has released a number of national strategies to reduce the disparity between Aboriginal and non-Aboriginal people, including the **Fourth National Aboriginal and Torres Strait Islander Blood Borne Viruses and Sexually Transmissible Infection Strategy, 2014-2017**.[9]
3. Section titled “Quality improvement program”: I think that this section could more clearly explain the QIP components. Currently it is difficult to fully understand and, I think, would not enable other researchers to develop an equivalent intervention, nor to assess comparability to their own QIPs. In particular, what were the distinct components; what indicators of success were used; how was training delivered to staff; how frequently was data fed back to staff; how many visits were made and by whom; what strategies were developed; how were strategies implemented; who delivered the training and why were they chosen?

Please see response 1, Lines 153-179 and Table 1 above.

4. Line 169: Could you expand on the importance and impact of having the meetings delivered by an Aboriginal man please. I suspect this draws on theories of communication/ peer-led interventions/ homogeny/ diffusion of innovations/ popular opinion leaders but it would be important to acknowledge this if other researchers are going to develop similar models.

Please see Lines 177-190. The authors have added a paragraph regarding the inclusion of Aboriginal people in the delivery of SHIMMER, referenced the national guidelines on the ethical conduct of research with Aboriginal people and referenced a program delivered by Native Americans to Native American communities which was successful.

The STI testing and management strategies developed by the ACCHS clinic staff during the visits were specific to each ACCHS to maximise the success of the strategies to increase STI testing rates (Table 1). The project manager was an Aboriginal man who co-delivered the intervention with a sexual health physician. The ethical conduct of SHIMMER was guided by the Australian National Health and Medical Research Council Guidelines for Ethical Conduct in Aboriginal and Torres Strait Islander Health Research.[26] This document strongly encourages research projects to have a project reference group or committee where Aboriginal people are active members in all aspects of the research project including the design, implementation, and interpretation of the results.[26] Peer-based interventions and health promotion is a well-accepted means of reaching marginalised communities. In the US, breast cancer programs delivered by Native American health workers to Native American communities increased the recruitment of Native Americans in the program, increased breast cancer screening, re-screening, and decreased perceived barriers to screening. This study also observed increases in knowledge regarding Pap tests, cervical cancer and awareness of cervical cancer issues.[27, 28]

5. Line 362: Again, I do not feel that the QIP process has been adequately explained and therefore could not be introduced by others into primary health care services. Please elaborate on the process and be explicit in what the components are.

Please see response 1 Lines 153-179 and Table 1.
6. What are the limitations of the study?

Lines 319-339: A number of limitations were already included in the discussion section. However we have expanded this section below:

There are a few limitations to consider when interpreting our findings. Firstly, only four ACCHS participated in SHIMMER, as a result our results may not be generalisable to all ACCHS in NSW or Australia. Secondly, our study was based on attendance and testing data that was entered into the electronic patient records system, therefore if consultations or testing were not entered into the system it may have resulted in our study over or under-estimating the testing rates and positivity in the ACCHS. Thirdly, it is possible that young people could have also been tested for STIs at other health care centres in these regional towns, which would result in our study underestimating the testing rates. However we do not think this would have been common as other studies have demonstrated that young Aboriginal people prefer to attend ACCHSs for STI testing.[30] Also a recent study included data from six ACCHS and 25 general practice centres in Australia and highlighted that only 1% of 16-29 year olds who attended general practice centres were Aboriginal compared with 85% who attended the ACCHS.[31] This study also highlighted that the chlamydia testing rates among the young Aboriginal attendees were 20% at ACCHS and 4% at general practice centres.[31] Fourthly, we could not determine if the 15-29 year olds were local residents or visitors from other communities. If we were able to focus on just local residents the proportion of 15-29 year olds tested in this study may have been higher. It is acknowledged that the repeat visits by the sexual health physician and the project manager could have impacted upon the testing rates as the ACCHS clinic staff knew the researchers would return on a regular basis to monitor their progress. Finally, our evaluation focused on the impact of the QIP on STI testing rates and did not involve a process or economic evaluation.

Minor Essential Revisions:

7. Line 56: I think that the word “regression” is missing from this sentence.

Line 54. Correction made.

8. Line 75: Reference [2] is from 2008. This could be updated with more recent diagnosis rate data from Public Health England. The 2013 datasets are currently available online.

Line 75. More updated references have been included. These are References 1-3.

9. Line 93: The UK guidelines that have been referenced do not recommend annual testing of 16 to 24 year old females as stated by the authors. The reference used gives advice on which type of specimen should be used. I wonder if it would be better to reference the National Chlamydia Screening Programme guidance which recommends opportunistic screening in sexually active 15 to 24 year olds (male and female) annually or on change of sexual partner.

Lines 101-102: The suggested UK reference has been included.


10. Line 96: It was not clear to me which organism testing is recommended for in Aboriginal people – chlamydia or gonorrhoea.

Line 103-110: The authors have added gonorrhoea testing to make this statement more clear.

Australian STI guidelines for Aboriginal people recommend gonorrhoea testing in 15-39 year olds where the prevalence is high,[14] for example in remote areas of Australia.[1] Also improvements in laboratory testing has influenced gonorrhea testing in Australia with a recent study finding that between 2007 to 2012 there has been a 32% increase in laboratories using duplex nucleic acid amplification to test for chlamydia and gonorrhea.[15] Using this testing equipment allows a urine or swab specimen to be tested for both chlamydia and gonorrhoea at the same time, even if a test for only one organism was requested.

11. Line 101: is “tail” the correct word to use here?

Line 118: this word has been corrected to ‘trialed’.

12. Line 104: Consider using (ACCHS) after the first use of Aboriginal Community Controlled Health Services and then continuing to use the abbreviation thereafter.

Line 114: Agree. The authors have used the term ACCHS throughout the manuscript.

13. Line 113: Is there a suitable reference that could be used for the definition of quality improvement programme?

Line 119-120: Another reference (Number 19) has been added to provide more detail about how quality improvement programs have been developed and the process they follow.

14. Line 116: The sentence beginning “The was achieved...” should begin with “This”.

Line 125: This error has been corrected.

15. Line 119/120: Should there be some extra words before “…described above…” in the sentence “In Australia, a sexual health QIP used a similar process (to the one) described above...”?

Lines 128-130: The authors have amended the sentence to read:

In Australia, a sexual health intervention was introduced in primary health care centres in a regional area which used a similar process described in the US study.[21]

16. Line 124: Were these financial incentives?

Line 133: the authors have added “financial incentives” to this sentence to be clearer.

17. Lines 179 and 236: spelling of gonorrhoea

Line 195: the spelling of gonorrhoea has been corrected.

18. Line 179: March 2012 to February 2013

Line 196: This time period is correct and the reason why is explained in the evaluation design section.

19. Line 180: March 2010 to February 2011

Line 195: This time period is correct and the reason why is explained in the evaluation design section.

20. Lines 188, 202, 203 and 284: six and not “6”

Lines 204, 205, 219, 227. The number ‘6’ has been changed to the word six.

21. Line 196 and 286: two and not “2”

Lines 212 and 221. The number 2 has been changed to the word two.

22. Line 203: July to November

Line 205: The period ‘1st July and 30th November’ has been changed to ‘1st July to 30th November’.
23. Line 238: p=0.05 or less

Line 260: This has been changed from Statistical significance at 0.05 or less to statistical significance at p<0.05.

Discretionary Revisions

24. Do you have any health economics analysis?

Lines: 337-339. Finally, our evaluation focused on the impact of the QIP on STI testing rates and did not involve a process or economic evaluation.

25. What was the potential impact of the researchers (person, and visits) on testing rather than the QIP components?

Lines: 335-337. The authors have added a statement acknowledging this as a potential factor that could have influenced testing rates.

It is acknowledged that the repeat visits by the sexual health physician and the project manager could have impacted upon the testing rates as the ACCHS clinic staff knew the researchers would return on a regular basis to monitor their progress.

Reviewer 2 – Melissa Kang

Discretionary revisions:

1. Paragraph 2 in Methods overlaps slightly with some parts of the Introduction and I think would be better subsumed into the Introduction (eg line 81 and line 140 state the same facts, but use different references). Describing the population of interest in this study would fit better in the introduction, as would the policy context for this study which currently also sits in Methods (line 148-152).

Lines 81-92: The authors agree. The description of the Aboriginal population has been moved from the Methods section to the introduction and the policy context as suggested.
2. Paragraph 4 in the Introduction (beginning line 100) – describes ‘primary health care centres’ and reports on Medicare data from GP visits (ref 16) which potentially covers ACCHSs and other services where GPs provide services that are not traditional general practices. It would be helpful, especially in an international journal, to explain that most ‘primary health care centres in Australia are in fact general practices, and also to report if available, any data about attendance by Aboriginal young people (16 – 29 years) specifically to ACCHSs compared with general practices (or other services, such as sexual health clinics or youth health services). This would better contextualise this study within this population and setting. This is also important for the Discussion (line 304) – the authors state that ‘...this may have resulted in our estimates of testing rates being an underestimation of the true testing rates’, and to be able to appreciate the possible scale of this would be useful.

Lines: 328-332. The authors have added information and a recent reference about the attendance of young Aboriginal people in general practices and ACCHSs in Australia.

A recent study included data from six ACCHS and 25 general practice centres in Australia and highlighted that only 1% of 16-29 year olds who attended general practice centres were Aboriginal compared with 85% who attended the ACCHS.[31] This study also highlighted that the chlamydia testing rates among the young Aboriginal attendees were 20% at ACCHS and 4% at general practice centres.[31]

3. Results – Attendance
Presumably the increase in number of 15 – 24 year olds attending was not significant? Attendance also relates back to my earlier comments about settings, range of primary health care services and testing rates – and what implications might be from this study to improve testing rates in the population (and not just within ACCHSs).

The reviewer is correct, there was not a significant increase in the number of 15-24 year olds attending the ACCHS between the before period compared with the QIP period.

(Lines 328-332). In response to the second suggestion by the reviewer, the authors have also included attendance information and a reference to the methods to address the second point which can be found in response number 2 above.

(Lines 389-397). In response to the suggestion regarding the setting and improving the testing rates not just within ACCHS, we have included the paragraph below and Table 1 which details the testing strategies which can be utilised in general practice clinics.

Some aspects of the quality improvement process used in SHIMMER could be used in other primary health care settings or general practice clinics (visits, reports, feedback), as currently being utilised in the Australian Chlamydia Control Effectiveness Pilot (ACCEPt) project – a trial of chlamydia screening in general practice clinics.[35] However some of the STI testing strategies developed by the ACCHS in SHIMMER are specific to Aboriginal people, such as adult health checks, which saw an increase in the testing rates however these are
not offered in general practice clinics. The other testing and management strategies listed in Table 1 could be used to increase STI testing and improve the management of STIs in general practice clinics.

Minor essential revisions

Line 56 Logistic (regression - missing)

Line 54: Authors have corrected this with “Logistic regression”.

Line 101 ‘tail’ – tailor

Line 118: this word has been corrected to ‘trialed’.

Line 114 ‘Pediatric’ – British/ Australian spelling? And lower case?

Line 123: The authors have changed the spelling to ‘paediatric’ clinics

Line 116 ‘The’ – this

Line 125: The authors have change the word ‘The’ to ‘This’.

Line 135 (called SHIMMER) – suggest remove brackets

Line 147: The authors have removed the bracket from around the word SHIMMER.

Line 161 style comment: ‘how we extracted this data is described...’ suggest ‘the data extraction process is described...’

This statement in the manuscript has been removed due to the change in formatting this paragraph to include a description of the STRIVE trial.

Line 381 ‘We would like to thank the...’ – ‘the’ is repeated

Line 422: the authors have removed the word ‘the’ from this sentence.