Reviewer's report

Title: Does comorbidity explain the ethnic inequalities in cervical cancer survival in New Zealand? A retrospective cohort study

Version: 1 Date: 15 November 2010

Reviewer: John Condon

Reviewer's report:

The research question is an important one regarding the well-documented survival disadvantage for Maori and Pacific women with cervical cancer in New Zealand, and for other population subgroups with low cervical cancer survival rates such as Indigenous women in other countries. The question posed by the authors in relation to co-morbidity as a possible contributor to this disadvantage is well defined. The methods are well described and appropriate, given the limitations of conducting a retrospective study using existing data sources that required data linkage. The data used and the data linkage process have limitations and are less than ideal, but these limitations are identified in the manuscript and the potential biases that might have resulted are adequately considered (with one exception, see below). The data linkage and analysis methods have made the most of the available data and this research design is an efficient means to investigate this research question.

The authors describe the previous work in this area which has led to this study, the manuscript adequately reports the study methods and results, the discussion and conclusion are well balanced and the interpretation of the results is soundly based on the data. The manuscript is clearly written, concise and easily understood; the title and abstract accurately convey what has been found.

There are no major deficiencies in the study design, application of the research methods, presentation and interpretation of results, but there is one significant limitation which needs to be more adequately addressed.

Minor essential revisions

1. One of the main potential weaknesses of the study is the large proportion of women excluded from analysis because of missing data. The cohort consisted of 2323 women who met the inclusion criteria but 24% of them were excluded from analysis because information on FIGO stage was not available in their medical records and 5% were excluded because of missing place of residence information that was necessary to derive NZDep (31% were excluded in total). Note that the text (Results, para 2) states that 555 women had missing data on FIGO stage but Table 1 states that this was 621 women – was there some overlap with missing place of residence?

The distribution of co-morbidity index scores for the women with missing FIGO stage and those with missing NZDep was in the mid-range of results for those
with data for these variables (Table 1), and the authors comment that the women without FIGO stage had similar ethnic and SEP distribution to those that did have FIGO stage data, but there is no other comment about the potential effect of excluding 31% of the cohort.

The women with missing data on FIGO stage and place of residence are not markedly different with regard to co-morbidity levels (compared to women with data recorded), but they may be different in relation to cancer survival. However, the main research question is not how much lower cancer survival is for Maori and Pacific than Other women; it is whether co-morbidity explains some or all of these differences. In that context, the exclusion of 31% of the cohort may not lead to potential biases because the survival differences are being measured with and without adjustment for co-morbidity in the same group of women (the 69% with complete data), although it is possible that the association between co-morbidity and survival is different for women with missing data compared to those with complete data.

After mulling this for some time, there appears to be minimal potential for bias. However, the authors should comment explicitly on this issue rather than leave the reader to either work it out herself or be left lacking confidence in the results. It might be helpful to undertake some ‘sensitivity analysis’ by undertaking multivariate analyses without the FIGO stage and NZDep variables (separately) with and without the women with missing data for each variable, to see whether these restricted analyses were sensitive to the exclusion of the women with missing data.

Discretionary revisions.
2. Results para 1: the authors comment that ‘...the percentages were similar in Asian ... and ‘Other’ women...’. The percentages in Asian women would be more accurately described as lower than in Other women, particularly when the size of the difference between Asian and Other women is compared to that between Maori and Other women (which is not described as ‘similar’).

3. Results para 4: The list of 13 individual conditions and their HRs are not needed in the text – the HRs for all conditions are in Table 3 and the 12 conditions included in multivariate analysis are specified in Table 4.

4. The ‘Conclusions’ paragraph repeats points made in the previous paragraph (almost word for word) and could be deleted.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

I declare that I have no competing interests.