Reviewer's report

Title: Evaluation of chemiluminescence, toluidine blue and histopathology for
detection of high risk oral precancerous lesions: a cross-sectional study

Version: 2 Date: 19 December 2011

Reviewer: Chaya S Moskowitz

Reviewer's report:

Comments for the authors:

Major compulsory revisions

1. While Bland-Altman plots are a good way of visually assessing agreement,
   Pearson's correlation coefficient is not a valid method for quantifying agreement.
   There have been multiple papers on this topic. Valid approaches include
   quantifying agreement using an intraclass correlation coefficient from an
   appropriately specified model or the concordance correlation coefficient.

2. There are multiple lesions per patient included in the analysis, but no mention
   is made of how this clustered data is handled in the analysis. Methods that take
   into account this correlation should be used, but it's not clear that this was done.
   This comment pertains to all of the analyses done including the limits of
   agreement on the Bland-Altman plot.

3. Generally a kappa statistic is calculated to show agreement among readers
   across categories of a variable. The presentation of kappa statistics within
   categories of the reference standard is therefore confusing and has me
   concerned that it was not calculated correctly. What is the kappa statistic for
   agreement between pathologists for the reference standard overall?

4. The interpretation of the AUC in the discussion ("a 9%-11% improvement over
   a single evaluation in the accuracy of diagnosis of a high risk lesion") is not quite
   correct. The AUC can be interpreted as the probability that if 2 lesions are being
   considered, one high risk and one low risk, the high risk one gets the higher
   score. But it should not be interpreted as quantifying the accuracy of diagnosing
   a high risk lesion.

5. It seems as though 2 different LCA analyses were done, although this was a
   little confusing. If it is the case, the rationale was not clear.

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
No to all