Reviewer's report

Title: Computer-aided assessment of diagnostic images for epidemiological research

Version: 3 Date: 23 August 2009

Reviewer: Karen Drukker

Reviewer's report:

This manuscript has considerably improved with respect to a previously reviewed version.

I think the authors are doing themselves a disservice, however, with the uninspiring abstract (discretionary revision). The abstract fails to clearly state the purpose and relevance of this research. The 'background' and 'conclusions' are especially weak since they are too general and don't even seem to necessarily relate to the work presented in the paper and definitely don't generate any excitement for the reader. This manuscript deserves a better abstract inviting readers to read further.

In the methods section the authors explain image segmentation to obtain the pupil area of interest. However, this paper does not appear to use this segmentation since the pupil boundary is known. Inclusion in the Methods section in its current form is hence misleading (minor essential revision).

The description of the use of a cutoff value to distinguish between normal and abnormal for use in ROC analysis is unclear (minor essential revision). The authors state that a cutoff value for the severity score of 3 was used to determine the area under the ROC curves. It is unclear in the current form whether this cutoff was applied to the known 'truth' severity score to divide the images into 2 'truth' categories normal/abnormal or (incorrectly) to the scores given by the reviewers/CAD algorithm. Also, why was the threshold value set at 3? The reported areas under the curve are extremely high (around 0.98), which is unusual but would also imply that the reviewers really don't need any help from a CAD algorithm. Please explain.

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

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

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

Declaration of competing interests:
I declare that I have no competing interests