Reviewer's report

Title: World Health Organization fracture risk assessment tool in the assessment of fractures after falls in hospital

Version: 2 Date: 29 September 2009

Reviewer: Terry Haines

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The authors have made quite substantial revisions to this manuscript and should be congratulated on this. I now have a smaller number of concerns that require addressing before I would recommend this manuscript as being suitable for publication.

1) Major essential revision

The 10 fold cross-validation method is listed in the analysis approach with reference given to a text on genetic micro-array analysis. No description is provided for the reader of what this approach actually entails, and it is difficult to see from the results section how employment of this technique has changed the results. The authors must fully describe this technique and how they have applied this to their dataset.

In my initial review I raised the issue of development and validation datasets in relation to scanning for cut-off points leading to overly-optimistic results. As the STRATIFY has pre-established cut-off points that were applied this concern is not relevant to this instrument. Rather it is for the FRAX instrument where I am concerned that scanning for cut-off points has occurred as it has not previously been employed in this setting for this purpose. It appears from the methodology that the cut-off for this has been selected based on reviewing the ROC curve. Hence a validation dataset that is independent of the dataset that was used to develop this cut-off point is required as results generated from the dataset from which this cut-off point was selected are likely to be overoptimistic.

2) Major essential revision.

The authors now state that the STRATIFY has poor accuracy, but I question the standard by which this appraisal has been made. The AUC for the STRATIFY in predicting fallers was higher than that of the FRAX in predicting fractures, so I am afraid that you cannot conclude on one hand that the STRATIFY was poor in predicting fallers while at the same time saying the FRAX is suitable for use in clinical practice.

In my initial review I highlighted the results in other studies that were poorer than the initial study and the published opinion of the author who created this instrument. I did so because I wanted the authors to justify why they selected this instrument for investigation in the first place. I did not want this to influence the authors’ interpretation of their own results and their conclusions. Previous
authors have argued that instruments with imperfect results are of no use though this is not always the case [Journals of Gerontology: Medical Sciences. 63(5):543]. Recent economic modelling has demonstrated that instruments with predictive accuracy at similar levels to that observed for the STRATIFY in the present study are still capable of making falls prevention programs operate more efficiently [Medical Care. 2009;47(4):448-56]. In light of this information, the authors need to reconsider how they have appraised both the STRATIFY and the FRAX and they need to be consistent in their interpretation of results.

3) Minor revision.
Discussion section – the authors suggest a program of providing hip protectors yet there is evidence that many hospital patients may be non-compliant with this intervention [Age & Ageing. 2006 35(5):520-523]. This should at least be acknowledged as a limitation of this approach.

4) Written English
Several of the revised sections require grammatical review. For example “Most of fallers did not suffer from injuries, but only 2.8% of the fallers suffered peripheral fractures in our study” Should instead read A majority of patients who fell did not injure themselves and only 2.8% of patients who fell incurred a peripheral fracture.

I would suggest again a thorough proof reading of this document.

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: No, the manuscript does not need to be seen by a statistician.

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