Author’s response to reviews

Title: FRAX (R) tool, the WHO algorithm to predict osteoporotic fractures: an analysis of its discriminative and predictive ability in a Spanish female cohort (FRIDEX).

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Author’s response to reviews:

Barcelona, August 31th, 2012

Dear all,

Please find enclosed our manuscript “FRAX® tool, the WHO algorithm to predict osteoporotic fractures: an analysis of its discriminative and predictive ability in a Spanish female cohort (FRIDEX)”. This paper was already submitted at your journal and the current reедакtion includes the answer to Editor’s comments.

We would appreciate your re-considering it for publication in the BMC Musculoskeletal Disorders as a Research Article. As requested in the
Instructions for authors, we state that the manuscript reports an original primary research.

All the authors carefully read the manuscript and fully approve of it. The article is original. We would of course be ready to provide further information about our data and methods you so desire.

Correspondence about the manuscript should be addressed to me.

Thank you very much for your kind attention. We look forward to hearing from you.

Best regards,
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Editor’s comments:

I just would like to ask the authors change one thing. In the conclusion, they write that ‘FRAX without BMD for major and hip fracture demonstrates a good discriminative capacity ...’. This is NOT true. The AUC value for FRAX without BMD was 0.693, and with this value, they can only claim ‘poor’ discrimination. Only when AUC values in the range of 0.8 and 0.9 they can claim ‘good discrimination’.

We would be grateful if you could address the comments in a revised manuscript and provide a cover letter giving a point-by-point response to the concerns.


Conclusions
FRAXTM without BMD for major and hip fracture demonstrates a good discriminative capacity with the AUC ROC for Spanish women but its predictive capacity does not adjust well with the current algorithm leading to under diagnosis for major fracture and hip fractures. Simple models based on age or BMD alone predicted 10-year risk of major and hip osteoporotic fractures, as well as more complex FRAXTM models.

Conclusions
The current version of FRAX® for Spanish women without BMD analysed by the AUC ROC demonstrate a poor discriminative capacity to predict major fractures but a good discriminative capacity for hip fractures. Its predictive capacity does not adjust well because leading to underdiagnosis for both predictions major and hip fractures. Simple models based only on age or BMD alone similarly predicted that more complex FRAX models.

Main text. Discussion, page 15. Third paragraph.

The FRAX tool can therefore be considered to present with a poor discriminatory capacity for women to have major osteoporotic fractures within 10 years, with this capacity being good for hip fractures without the need of determining the BMD, although this improves somewhat with its determination. The FRAX tool shows a scarce predictive capacity of the risk of fracture and predicts less than 50 % of those which occur. The reason for this underdiagnosis may be because the Spanish cohort introduced as the reference in the FRAX tool is not representative of the current female population since these women present significantly more fractures than those actually predicted by the FRAX tool.

Main text. Discussion, page 17. First paragraph.

In summary, as a conclusion, FRAX without BMD demonstrates a poor discriminative capacity for major fractures and a good discriminative capacity for hip fractures with the AUC ROC for Spanish women but its predictive capacity does not adjust well with the current algorithm leading to underdiagnosis for major fracture and hip fractures. On introducing the values of the L1-L4 T-score in the FRAX tool, the result did not provide an improvement in the discrimination of vertebral fractures measured with the AUC-ROC. Simple models based on age or BMD alone predicted 10-year risk of major and hip osteoporotic fractures, as well as more complex FRAX models.