Reviewer's report

Title: Predicting mortality with biomarkers: a population-based prospective cohort study for elderly Costa Ricans

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Reviewer: Martin Tobias

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Excellent paper, but could be improved by a little more discussion of the following points

Study cannot tease apart effects of national income versus effects of age. Do the findings reflect a middle rather than a high income population? Or do they simply reflect an old versus a middle aged population?

Justify / explain in more detail why SES wasn't adjusted for, and why this is OK (would the findings have differed if confounding by SES was controlled? Was there confounding anyway?)

To what extent could the findings reflect selection of survivors? What proportion of deaths occurred in Costa Rica at younger ages? Would a sensitivity analysis be helpful to confirm that selection bias could not have been quantitatively important?

The model was not a good predictor of the outcome - the authors themselves describe the fit as 'lousy'. Given this, is the model not limited in its ability to evaluate the performance of individual biomarkers as predictors of the outcome (especially cardiovascular mortality, which is further constrained by relatively small number of deaths)? More discussion of model goodness of fit and consequential predictive ability might be helpful for the reader.