Reviewer's report

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

Version: 1 Date: 24 February 2012
Reviewer: Eleanor Brindle

Reviewer's report:

This is an excellent paper, and the findings are intriguing. It fills important gaps in knowledge in two important ways: first, as the authors note, it is rare to see this kind of study conducted anywhere other than wealthy countries; and second, their analysis is helpful in deciding which biomarkers give the most payoff, and how that might vary by the characteristics of the study population (the middle-aged versus the elderly, for example). It also provides a first step toward thinking about the mechanisms behind the relationships between biomarkers and morbidity or mortality outcomes. I suggest only some editing for clarity and the minor revisions noted below.

Major Compulsory Revisions
NONE

Minor Essential Revisions
1. Line 73, spelling mistake: interleukin
2. Throughout the paper: CRP results are reported in units of ml/l; the convention is mg/l or mg/dl. Is this an error, or is there some justification?
3. Line 416: It's not clear what “mortality presented before” refers to.
5. Line 442: Here it says the models in table 3 use 480 deaths, but the table 3 caption says 564 deaths. Please clarify.
6. Line 597, spelling mistake: intervene
7. Line 657: Change the phrase to read “However, the great majority…”
8. Line 686, spelling mistake: inflammation
9. References: numbers 3 (line 750) and 11 (line 772) on the list appear to be missing page numbers
10. References: the author list is incorrect for number 12 (line 773).
11. Figure 1: y-axes should be labeled
12. Figure 4: Moving the plot of functional markers (grip strength, etc.) to the upper left panel would make the order of panels in the figure match the order of discussion in the text.
Discretionary Revisions

1. In the introduction, the authors quite correctly note that most studies using biomarkers to predict mortality come from rich countries, and that we are lacking information on mortality in developing countries. Filling that gap is a key strength of this paper, but given the relatively good health of elderly Costa Ricans, it is hard to evaluate whether these results should be expected to be an anomaly. Can you comment on how mortality might be expected to compare in this sample versus other less developed countries? There is some mention of mortality in Taiwan in reference to the SEBAS study, but a more general comment on how Costa Rican mortality patterns in the elderly differ from those in other developing countries would be helpful.

2. I’m not sure that figure 1 is necessary. The text in the paragraph beginning at line 316 is probably adequate alone.

3. The paragraph beginning at line 329 could be moved to the discussion section.

Level of interest: An article of outstanding merit and interest in its field

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

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.