Reviewer’s report

Title: Estimating the BMI-Mortality Relationship: A New Approach

Version: 2 Date: 16 November 2011

Reviewer: Patrick Royston

Reviewer’s report:

The authors have attended carefully to my earlier comments. The revised manuscript is a definite improvement. I particularly like figure 5, which shows how poor and potentially misleading the quadratic and categorical models are.

Major compulsory revisions
None

Minor essential revisions
1. The two comments in the Discussion on the Cox model are inapposite. First, the Cox model assumes proportional hazards, not proportional odds. Second, although technically it is correct to say that the model requires distinct failure times, in practice well known adjustment methods are available in software to cope with tied failure times, so this is not a real limitation in my view.
2. Again in the Discussion, the comment, described as a limitation, about possible non-constancy of the mortality rates across the four year study period could easily be checked empirically, and I think it should be. I would be surprised if there was much change over such a short period.

Discretionary revisions
1. Figure 1 (and possibly also figure 5) would be even more informative if some measure of uncertainty of the fitted curves was included, as has been done in figure 3. Probably this could be done only for one curve in each graph. Maybe it would also help to see the binned estimates in the top panels of figure 1.

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

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests