Reviewer's report

Title: Methods of Competing Risks Analysis of End-Stage Renal Disease and Mortality among People with Diabetes

Version: 1 Date: 16 April 2010

Reviewer: M Schumacher

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Review by Prof. Schumacher:

The manuscript presents an interesting case study on the development of end stage renal disease (ESRD) in patients with diabetes. Since death without previous occurrence of ESRD is a competing event, statistical methodology for time-to-event data has to be applied that takes competing risks into account. This is explained and exemplified with data from a cohort study of patients with diabetes.

Major points:

1. Since the manuscript is intended for a methodologically orientated journal, background given in the introduction could be shortened. The regression models considered should be more precisely defined.

2. There is absolutely no need to include the Lunn-McNeil model since this is a special case of the cause-specific hazards model making an extra, but unnecessary assumption (that, by the way, seems to be violated in the data example). So I suggest to skip that model completely.

3. The cause-specific hazards and the subdistribution hazards models are more or less presented side-by-side without discussing relationships and potential differences. This should have a more prominent role in the manuscript, see e.g. references [2] and [40] and the recently published paper Grambauer N et. al.: Proportional subdistribution hazards modeling offers a summary analysis, even if misspecified. Statistics in Medicine 2010, 29:875-884.

Minor points:

4. In references to Fine and Gray [15] the latter is often misspelled.

5. p.18. 2nd line f.a.: “Comparing the CIF curves is analogous to the log-rank test and is identical to the log-rank test in the absence of competing risks [36]” (not “censoring”!)

6. p.19, 4th line f.a.: The statement on software availability is not correct, please give the actual status.

7. Tables 1 and 2 should be merged into one table.

8. Table 3 should be skipped.

9. Figure 2 and 3: part (c) should be skipped.
In conclusion, I recommend a major revision of the manuscript.