Reviewer’s report

Title: The impact of social deprivation on mortality following acute myocardial infarction, stroke or subarachnoid haemorrhage: A record linkage study

Version: 3 Date: 23 January 2015

Reviewer: David Rehkopf

Reviewer’s report:

Thank you for the opportunity to review this manuscript which uses a record linkage approach to examine the relationships between social deprivation and mortality after acute myocardial infarction, stroke and subarachnoid hemorrhage. The methods and results are very clearly explained, and the discussion is appropriate to the findings of the study.

Major Compulsory Revisions.

1. For the results presented in table 2, the authors focus on interpreting whether odds ratios of high deprivation versus low deprivation differ between strata. This is fine to present, but it seems that the question they propose is not whether these differ from the null, but whether the estimates in strata differ from each other. That is, effect modification. The authors should clarify their intent here, but from my perspective at least testing for interaction would be more useful to present and interpret. For example, in a number of cases (e.g. hospital size for stroke) odds ratios are very similar, it just happens that for one of them the results are not quite statistically significant. This does not mean that the associations with social deprivation differ in these contexts.

2. Why are the one year follow-up rates described in the methods not shown in Table 1 or Table 2? Also, in Table 2 the title indicates that mortality at 7 days should be shown but this is not shown in the table.

Minor Essential Revisions.

1. In a few places the authors write “affected” but throughout it would be more accurate to say correlated with.

2. It would be useful to have a discussion of what “hospital size” is suggested to be capturing. Is this being used to proxy quality of care?

3. It would be more accurate to right “higher” rather than “increase” when describing the results since the analysis is not actually looking at change in social deprivation as the exposure. Similarly when the term “decrease” was used.

4. In limitations, I think that it would be more accurate to say that area social deprivation is a mixed exposure that due to economic segregation is correlated with both individual and area characteristics.

5. The discussion paragraph that begins “Our study found no trend over time…”
should be clarified. Does this mean no differential grand over time? The following sentences in this paragraph don’t seem to fit with the first paragraph. Either way, what is meant here should be clarified.

**Level of interest:** An article whose findings are important to those with closely related research interests

**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.