Reviewer’s report

Title: Do expanded seven-day NHS services improve clinical outcomes? Analysis of comparative institutional performance from the "NHS Services, Seven Days a Week" project 2013-2016

Version: 0 Date: 08 Nov 2016

Reviewer: Deirdre Thornlow

Reviewer's report:

Thanks for the opportunity to review. It is important to determine the quality of care after undertaking large changes in care delivery; however, the fidelity of the change that occurred among the Trusts is not assured. The authors note that 'all forms of service reorganization were considered,' (p 10) which leads to evaluating hospitals that differed in how they reorganized to attain 7-day coverage. I would argue that it is not appropriate to lump these facilities together as the changes made within each are not uniform or standardized.

The time period of the reorganization also differs among Trusts. While the authors note there was a two-year lapse between the initiation of the Forum to their collection of data, the actual time from implementation of changes within the Trusts to the time of data collection may have varied with some changes being in place 18 months to others less than one year. This variability in the time may have affected their abilities to adapt to changes and thus may have affected clinical outcomes.

The values in Table 2 differ from the values noted within text. For example, Table 2 numbers do not appear to align with those reported in the first results paragraph which describes Trusts that had implemented seven-day changes and those which had not. This value is first reported as 81 had instituted changes on page 11 line 184, then as (n = 72) and (n=61) on lines 201 and 202 page 13 but (n = 74) and (n = 63) on line 259 page 15.

I have observed funnel plots used to detect publication bias in meta-analyses reports, but not in reports of this nature.

The conclusion - 'differences in seven-day clinical service provision contribute little to improving these outcome measures' cannot be concluded from this study b/c the actual 'seven-day provision' is not well defined. Further, the authors acknowledge that the 'heterogeneity in the measures taken by individual trusts to reorganize,' have not largely improved metrics across the English NHS.

I do not think Figure 1 is necessary. It is my understanding that these Trusts have been excluded from analyses so therefore are not diagramed on the scatter plots. If I am incorrect in this
assumption, perhaps these facilities can be displayed on scatter plot with assigned symbols that differ from other Trusts so as to differentiate them.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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