**Reviewer’s report**

**Title:** Relationships between child well-being, deprivation and duration of emergency admissions for common presentations in North West England: an analysis of hospital episode statistics

**Version:** 1  **Date:** 2 November 2011

**Reviewer:** Sonia Saxena

**Reviewer’s report:**

The authors describe associations in 10 PCTs in NW England between EARs for 3 common conditions in children aged 0-18 years and area based deprivation measures.

The question posed by the authors is well defined but I have concerns about the methods and the validity of the conclusions. The primary question of whether there is any association between overall emergency admission rates in children and deprivation is not clearly answered in the manuscript in its current format.

Major concerns and revisions to improve the accuracy of reporting and presentation of results/ conclusion are listed below:

**Major concerns**

1. The paper is limited by aggregate level analysis that may mask individual level differences. Individual level analysis of deprivation is possible using postcode to ascribe deprivation and other measures. The authors should describe this as a limitation and 'go up a level' by being very clear that the findings relate to the PCTs and that results cannot be generalised to individual children but should rather focus on potential explanations at area level.

The discussion strays into areas that cannot be explained by such analysis and this should be removed.

2. The authors should try and justify their focus on 3 types of admission. The reference cited is rather old (2001) and predates the changes in out of hours in 2004 and most of the large scale rises in EARs. Why would disadvantage affect 3 common conditions rather than all admissions?

3. Tables 1-3 are basic descriptive data breakdowns of potential explanatory factors by PCT. However Table 4 the only real analysis in this paper and shows multiple subset analyses of up to 7 different indicators and admission rates of varying LOS.

Are so many comparisons needed? Some of these are repetitive - why show 0 or 1 days, 2 or 3 days and 0-3 days?

With so many indicators some of these are bound to result in statistically significant findings by chance alone. The authors would improve the paper if they presented one primary outcome and examine just a few key secondary outcomes.
4. The authors seem to be implying LOS is a marker of severity of illness but do not explicitly state this as an explanatory factor. If they did this they could suggest that illness severity is greater in deprived areas? As it currently stands this is mentioned in places (title, results, discussion) but is hard to follow whether this is an incidental finding that has been presented in the results

5. The methods description is not accurate. HES does not include other measures of deprivation to my knowledge. The authors have linked ONS and geographical data to HES at PCT level and this should be more clearly described

Minor but essential revision

The structure of the Discussion is rather at odds with the stated research questions and is instead focused on what the authors found in 2 sections: longer admissions being associated with deprivation and shorter admission not associated. Both sections then go on to restate the findings which is rather repetitive

1. The Discussion should restate the main findings before going into limitations.
2. It contains several irrelevant and unsubstantiated statements that should be removed: e.g 'It is possible that diet affects growth and development and risk of infection...' Most of these are not supported by reference to appropriate literature or the analysis presented here.
3. The authors should describe why they think longer stays are associated with geographically deprived areas
4. Revise double negatives/ poorly scanning sentences: 'However, the lack of relationship with shorter admission suggests that deprivation is not a factor in whether parents seek and professionals arrange short term hospital care.'
5. The Discussion should not report data that are not presented: Table available from author on request. These findings are in any case rather vaguely alluded to and do not add anything to the paper
6. Conclusions
First sentence is rather vague: '...which is consistent with deprivation adversely affecting illness severity' could be rewritten
'...suggesting admission rates for severe illness are higher in deprived areas' should relate only to what can be concluded from findings and avoid speculation about other explanatory factors

Discretionary revisions
Age groups should be described as 'children aged under 5 years' rather than under 5

Title: this should be revised to reflect the analysis presented and either the research question revised or the duration of admissions be removed
Level of interest: An article whose findings are important to those with closely related research interests

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’