Reviewer's report

Title: Perinatal complications and socio-economic differences in cerebral palsy in Sweden - a national cohort study

Version: 1 Date: 6 September 2007

Reviewer: Nigel Paneth

Reviewer's report:

General

The topic of SES gradients in CP risk has not been extensively studied, but this paper is among a few which have contradicted the traditional view that they do not exist. By the standards of most health outcomes, the results show a modest SES gradient favoring the most economically privileged. However, the paper is not as convincing as it might be because of a few issues in analysis and presentation. These are;

1. The terminology used for CP is awkward. The authors consider CP that is associated with severe head injury, malformation syndromes and chromosomal aberrations separately from all remaining cases of CP, which are described in tables as "unspecified" CP. I have not seen the term "unspecified CP" ever used in the literature, and the term does not convey any clear meaning to the reader. In fact, the authors have excluded one cause of post-natal CP (head injury) without excluding others (post-natal meningitis, near-drowning, severe dehydration) and have excluded one subset of CP (congenital malformations) that has come to be recognized as an unexcludable component of CP. Malformations cannot be excluded from CP because neuro-imaging is required to diagnose the 10-15% of all CP who have an underlying brain malformation. A more sensible approach might have been to separate (if possible) congenital from post-natally acquired CP. CP from head trauma is in any case quite low in their data, but malformations are at about the rate expected as contributors to CP (12%), and to remove them from the main analysis is to render the data less comparable to other datasets than one might wish.

2. The major difficulty in inference, which is acknowledged by the authors in the discussion, is that only hospitalized CP is counted in this study, which they estimate is about 75%-80% of all CP cases. The authors raise but discount the possibility that variations by social class in hospitalization could account for their results. I would not be so sure. The only way to be certain is for the authors to show child hospitalization rates by social class in the same data set, and perhaps adjust in some way for any excess hospitalization they see by social class.

3. A bit of a subtlety, perhaps, but I see a different SES gradient pattern in their restricted analyses shown in Table 3 from their overall findings. Overall, there does appear to be a gradient across all 5 levels of SES. But for children grouped...
as having any of the three strong perinatal risk factors, the gradient does not seem to operate within the 3 lowest SES categories. Risk only declines in going to levels 4 and 5. As this observation is true for each of the 3 categories (preterm, asphyxia, SGA), it may not just be a reflection of small numbers, but an observation worthy of the authors' attention and discussion.

4. The tables (and some language) are not as clear as they could be (see below0

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

The authors must address the problem of hospitalization per se as having an SES gradient

The authors must present a more coherent and better justified categorization of CP than in the current paper

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

The abstract presents not the unadjusted OR's for the effect studied, but the OR's emerging from the first and fourth adjusted models. It would be better to show the unadjusted model, and the adjustment model the authors most favor in the abstract.

The abstract should also specify where the SES is cut off so as to provide one OR. The tables, which gives OR's across a gradient, do not show the same OR's as do the tables.

In the tables, the statistical models should be more clearly explained. Thus Model 1 should be described as an unadjusted "model" (or just as the unadjusted result, since what is a model without any modeling?).

Tables after Table 1 should include descriptors of the SES levels, since the numbering (1 = low; 5 = high) is the reverse of what is customary in the English language literature, and the numbers alone are likely to confuse readers used to the SES numerical gradient going in the opposite direction.

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Discretionary Revisions (which the author can choose to ignore)

The authors make no comment on the large sex difference - 1.8/1.3 - about 40% higher for boys, the highest published sex ratio for CP I have seen. Could hospitalization patterns play a role here too?

The metropolitan/rural gradient is also interesting, especially in light of the likelihood that hospitalization might be commoner in urban areas with
presumably easier access to hospitals. This gradient, which is virtually identical in size to the sex gradient, might also be discussed.

**What next?**: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

**Level of interest**: An article of importance in its field

**Quality of written English**: Needs some language corrections before being published

**Statistical review**: No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests**: No competing interests