Reviewer's report

Title: Cerebrovascular function and cognition in childhood: a systematic review of transcranial doppler studies

Version: Date: 7 November 2013

Reviewer: Stella Stabouli

Reviewer's report:

The study by Bakker et al is an interesting paper revising studies on the association of TCD measurements with cognitive function in childhood and adolescence.

Major Compulsory Revisions

1. Please comment on reproducibly and intra-subject variability of TCD measurements. The references should be updated and include more data on this issue in healthy children as well in special populations (e.g. children with sickle cell disease).
2. Please refer briefly to cognitive function tests used in pediatric populations.
3. Page 5: Please provide references for PRISMA guidelines.
4. Which of the parameters (if any) measured by TCD was more frequently associated with impaired cognitive function?
5. In the studies including children with SCD (table 1) it seems that age is a significant factor as TCD parameters were mostly associated with cognitive performance in ages <4 years-old, but not in ages of 8-12 years. Please comment.
6. In the discussion please comment on the strengths and limitations among different studies on the associations of TCD measures with cognitive performance. Did all studies used validated measures of cognitive function? Were the same devices used in all studies? How could the different methodologies used in the studies, affect the interpretation of results among studies? In studies finding relations between TCD measurements and impaired cognition were the results corrected for other confounders possibly associated with cognitive function?
7. Conclusion: the sentence on obesity and hypertension seems irrelevant at the conclusion. The sentence should be omitted or the authors should previously in the manuscript provide data from studies on TCD, hypertension and cognitive function the results.

Discretionary Revisions

Table 1 would be more convenient to read if it was spliced in 3 different tables e.g. table 1 for children with SCD, table 2 for premature infants and table 3 for
ftCD

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare that I have no competing interests