Reviewer’s report

Title: Are measures of wasting affected by hydration status in hospitalized children? A repeated measures study

Version: 1 Date: 29 June 2011

Reviewer: Steve J Allen

Reviewer’s report:

This is a well conducted study that will be of great interest to a wide range of readers. It addresses a clinical problem that is common and important in developing countries and that has not received sufficient attention previously. The paper is very well written and the data are presented clearly. The demonstration that about 1 in 5 children with signs of dehydration are misclassified as severely wasted on admission because of dehydration (using either MUAC or WFLz) is an important finding.

I would like to raise a few issues that I was unclear about.

Major Compulsory Revisions

1. An important issue that is not fully addressed in this study is that the clinical signs of dehydration and malnutrition overlap – so a critical issue is the reliability of the diagnosis of dehydration in malnourished children. In this study, 81 children had lost weight by 48 hours suggesting that they were not in fact dehydrated at baseline (assuming that they were assessed as no longer dehydrated at 48 hours). It would be important to know how many of these 81 children were classified at baseline as malnourished. In these children, it would be reasonable to conclude that dehydration was diagnosed incorrectly. This is directly relevant to clinical management as rehydration may then be deleterious.

2. As well as the overall effect of dehydration on the reliability of the 3 parameters of wasting in the whole cohort of children, it would be useful to also present this information in just those children in whom dehydration was confirmed – i.e. excluding the 81 that had lost weight at 48 hours. Although this information would have limited relevance to clinical practice, it would give a more accurate estimate of the effect of rehydration on nutritional parameters in confirmed dehydration cases.

3. The misclassification of wasting according to index used is presented in table 3. Related to the above, removing the children whose weight fell would help to clarify how children moved between nutrition classifications following rehydration.

4. In the discussion (top of page 13), the authors state that their findings contribute to the debate on appropriate treatment for dehydrated malnourished children regarding oral versus IV fluids. However, no data are presented on the route of rehydration. Also, the value of the findings of this study to this debate
seems limited because data regarding the reliability of individual clinical signs at baseline (table 1) according to “true” hydration and nutritional status as assessed at 48 hours are not presented.

Minor Essential Revisions

1. Children with kwashiorkor were excluded. What were the criteria for kwashiorkor? Was this the presence of nutritional oedema alone or were other clinical signs of kwashiorkor required? If signs additional to oedema were required, could the weight loss in some children be due to loss of oedema?

2. The potential clinical importance of the findings could be explored more in the discussion. How might clinical management be adversely affected in the 1 in 5 dehydrated children misclassified as severely malnourished on admission? Also, as above, the possibility of the incorrect diagnosis of dehydration in malnutrition could be discussed.

3. It would be useful to add the denominators in the “change” column for WFLz in table 3.

4. Correct “including” to “included” in 5th sentence of “Study participants” section.

5. Check syntax in last sentence of 4th paragraph, Discussion.

Discretionary Revisions

6. In the discussion, some mention of the apparent importance of sex as an independent predictor of change in nutritional index (table 2) would be useful. Does this have a reasonable explanation? If not, why might it have occurred in the analysis?

1. Is the question posed by the authors new and well defined? - Yes

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work? - Yes

3. Are the data sound and well controlled? - Yes

4. Does the manuscript adhere to the relevant standards for reporting and data deposition? - Well reported but no details given re data deposition.

5. Are the discussion and conclusions well balanced and adequately supported by the data? – Mostly; but see comments

6. Do the title and abstract accurately convey what has been found? - Yes

7. Is the writing acceptable? - Yes

Level of interest: An article of outstanding merit and interest in its field

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