Reviewer’s report

Title: Insulin Resistance and its Association with the Components of Metabolic Syndrome among Obese Children and Adolescents.

Version: 3 Date: 13 May 2010

Reviewer: Sophie Hawkesworth

Reviewer’s report:

I would like to thank the authors for taking on board the various comments made by the reviewers and for making changes to the manuscript. I still have a few comments on the latest version of the manuscript which are outlined below.

Major compulsory revisions

1. The manuscript would benefit from greater clarity of the purpose of this study. It seems that the hypothesis is that IR is associated with components of the metabolic syndrome in obese children, whilst I have reservations about this design I am happy to accept the authors previous explanation. However I feel that although the aim is clearly stated in the background section it is not clearly answered in the discussion. I suggest reordering the discussion so that it begins by answering the question that the paper set out to address.

2. I also think the wording throughout the manuscript but particularly in the abstract and discussion is misleading. You have presented cross-sectional data here so you are unable to say whether IR augments the risk of developing MS as this would require prospective data. All you can say is that increasing IR was associated with an increasing number of components of the MS in this population. What you are really showing is the clustering of metabolic disturbances in obese individuals.

3. In line with this comment, I would be cautious in the discussion of using the word ‘explain’ when talking about an association that you have reported. Rather than stating that ‘IR can explain the alterations in lipid profile etc’ I suggest rewording to ‘IR is associated with…’ as these have quite different meanings.

4. Figure 1 seems to be unnecessary in this manuscript. As I understand your study aims, you are primarily interested in the effect of IR (explanatory variable) on the odds of having the metabolic syndrome (outcome variable) and this analysis had been presented in Table 4. In contrast Figure 1 is presenting the effect of having components of the metabolic syndrome on the level of IR, which is the reverse association.

Minor essential revisions

1. Please be consistent with the use of either boys and girls or men and women throughout the manuscript. For example on page 8 you use both terms and this
is confusing for the reader.

2. Please state in the methods the statistical tests you have used to investigate the differences in metabolic variables between boys and girls.

3. In the discussion on page 11 you state that ‘The increase in BP in this population’. What is this an increase in relation to? Do you mean raised BP in individuals with IR compared to no IR? If so this isn’t shown in the data. Please clarify.

4. Again on page 11 there is mention of ‘the lower prevalence of MS reported in this study’. Lower in relation to what? Please clarify.

5. On page 12 you state that the prevalence of ‘metabolically healthy but obese individuals’ is 9.7% in adults and go on to state that this population does not have a family history of T2DM. Which population do you mean here? Are you talking about a particular study? I think the word population is confusing here and I am not sure I understand the point you are making. Please clarify.

6. Thank you for discussing briefly the limitations of cross-sectional studies. Are there any other limitations of your particular study that could be raised here?

7. In the conclusions and abstract you state that as IR increased so did BP but this is not shown in your data in Table 3.

8. In the conclusions you also state that HOMA values under 3.4 were associated with a decreased risk of also having MS. I would argue that the data in table 4 actually show that HOMA values above 3.4 are associated with an increased risk of having MS compared to the lowest percentile of HOMA values, which is subtly different from how you have worded it.

9. In the abstract you state that ‘among those who presented disorders an increase in IR augmented…’ However, your analysis presumably includes all individuals not just those with metabolic disorders defined by the various cut-offs?

10. In the abstract you state that as IR increased HDL levels decreased but in Table 3 there was very little association between these two variables and if anything HDL increased as IR increased.

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

**Quality of written English:** Acceptable

**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