Reviewer's report

Title: A Reference-frame for blood volume in children and adolescents.

Version: 2 Date: 9 August 2005

Reviewer: Colin H Jones

Reviewer's report:

General

---------------------------------------------------------------------------------------------------------------

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

Aim – 1) to provide data for blood volume in normal children. The studied population had suffered from steroid responsive nephrotic syndrome. Can this population be considered normal, considering the effects of steroids on body composition and their underlying renal disease? Why didn’t the authors use a genuine disease-free control population? This is discussed, but are the arguments robust enough?

Background – need to explain F-cell ratio more carefully. The authors question the ethics of using isotope measures in healthy children, but then report such a study in nephrotics in remission. How do they justify this? The use of formulae to estimate LBM is criticised, but this study also uses this approach (albeit with a different set of formulae).

Methods - please explain the administration of potassium iodide. Please use either erythrocyte volume or red cell volume, not both.

Results – are the statistical differences in the ratios of volume to various parameters of body composition related to differences in red cell/plasma/blood volume or to differences in the derived body composition equations/nomograms? The highly significant differences by gender for V/BMI and V/BW for some Tanner stages and not other stages (despite the similar differences in mean and SD) make one suspicious that the differences are not genuine, but represent statistical error. The differences by V/BSA make me suspect that the BSA nomogram accounts for the differences. Could an expert medical statistician comment on this?

Is the correlation between blood volume and any parameter of size surprising? Wouldn’t you expect this relationship to be present (bigger individuals have a larger blood volume)?

The authors emphasise that one of the superior aspects of their study over previous data is that a fixed F-cell ratio has not been used, but has been calculated from the measured volumes. However they do not discuss differences between the measured ratio and the fixed ratio and how this influenced their results.

Discussion – the authors offer valid reasons to use nephrotics in remission as their normal population. Can they clarify that prior steroid administration had not influenced body composition?

Conclusion – the authors principle aim was to provide a normal range for blood volume in children. Do they need to provide regression equations that would allow others to derive a normalised blood volume for a child according to age and gender?
Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

There are a number of grammatical corrections needs throughout the manuscript.

Discretionary Revisions (which the author can choose to ignore)

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

**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

**Declaration of competing interests**: 'I declare that I have no competing interests'