Author's response to reviews

Title: Accuracy of parents in measuring body temperature with a tympanic thermometer designed for home use

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Author's response to reviews:

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Re: MS 1970624638441912

Dear Editor,

I am submitting the revised version of this manuscript. The reviewers comments have been addressed as follows:

Reviewer 1 (Naja E. Mackenzie) - September 13, 2004
Major compulsory revisions
1. We agree that analyzing our data using the Bland-Altman method is a very useful method of demonstrating if the differences between the sets of readings are related to the height of the temperature, and have now analyzed the data using this method (Figures 2-4). We have left in the analysis looking at the mean absolute difference, as we feel that this is a useful number for the clinican to know (i.e. When a parent reports a temperature, how often will it differ from the "true temperature" by more than 0.5 degreesC?). We agree this is not the standard way to look at scientific measurements, but feel is is more useful than the mean difference, which can be a low number even if a measurement is very inaccurate as long as the "way too high" readings balance the "way too low" readings.

2. We agree that it is unexpected that tympanic thermometer readings would ever be higher than the true temperature, and were surprised that parents obtained higher readings than nurses in 25 of the 60 cases. We now comment on this in the discussion - pointing out the fact that it shows the nurses may not have always used ideal technique.

Minor essential revisions
1. We now comment on the fact that parents might have performed better had they had time to practice using the thermometer. However, one problem is that even with practice, they are never able to validate the readings they obtain to determine if their technique is correct. We agree that we should have asked if parents had ever used a tympanic thermometer before to determine if this improved their performance.
2. We now clarify that readings were all done in the same ear, and were usually all done within 5 minutes. We now mention in the discussion that it would have been ideal to wait at least 2 minutes between readings as we agree with the reviewer that this was a flaw in our study design. We clarify that probe covers were always changed.

Reviewer 2 (Shaul Dollberg) - September 2, 2004
We agree with the reviewer that inaccurate readings are often obtained from tympanic thermometers. When compared to pulmonary artery readings, tympanic readings are reasonably accurate (reference 2), but the problem is that the thermometers are often not used according to the instructions. As the reviewer points
out, there can be unsurmountable barriers to appropriate use, such as proper placement in an unco-operative tiny infant. We discuss the idea that since the parents sometimes obtained higher readings than the nurses and it is highly unlikely to get a falsely high reading with a tympanic thermometer, the readings obtained by the nurses may not always be accurate. In the conclusion, we have emphasized that these thermometers may be used as screening tools by parents, but that the actual numbers measured are probably not accurate.

Yours sincerely,

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