Reviewer's report

Title: Evaluation of a Portable Hemoglobin Photometer in Pregnant Women in a High Altitude Area: a pilot study

Version: 1 Date: 2 April 2009

Reviewer: Mads Nybo

Reviewer's report:

The authors describe an evaluation of the Hemocue instrument used in pregnant women at high altitudes. They investigate 69 women and measure their haemoglobin concentrations at the portable haemoglobin photometer and compare this to measurements performed at routine haematology equipment at the laboratory. They find a mean difference of -2.1 g/l and a specificity around 77% and conclude that the photometer can not be recommended for this use.

As mentioned in the background paragraph, this is not entirely new knowledge, as earlier investigations have been conducted at 1500 meters over sea level. Despite the higher altitude in this study the impact of the findings could be questionable, but I will let the Editor decide this. I have some remarks on the study:

Major Compulsory Revisions

As mentioned in the manuscript, Sysmex measures haemoglobin in a whole blood mode (p. 4, l. 91). However, the author later describes the measurement performed in capillary blood (p. 5, l. 111): Is this correct? If so, is the Sysmex equipment calibrated for such measurements? On the other hand, if measurement indeed was performed in whole blood (as expected), the authors must describe the studies that guarantees the possibility of comparing capillary haemoglobin with full blood haemoglobin at these altitudes: This does not concern the measurement principle more than the algorithms implied in the point-of-care-equipment that “recalculates” the capillary value to a full blood value: This does not normally introduce a bias, but is this algorithm suitable for people living at high altitude, often with a considerably higher hematocite value? As hematocite values are not mentioned in the paper, I find it important to be assured that this is previously investigated.

I find the Results section very redundant: The findings are few and do not deserve almost 2 pages. I think the paper would gain much by a more concise description of the precision data: If necessary, most of the calculations could be shown in a table.

I find the conclusion rather confusing: If the device cannot be recommended for use in this setting, how can it then be used for screening? I am aware that restricted resources can be an issue, but again, wrong diagnosis can indeed be catastrophic, both in human and economic terms. Therefore, the authors must
point out, which values (negative predictive values?, sensitivity?) that allows this recommendation.

Minor Essential Revisions
Why is the name of the POCT instrument (HemoCue) investigated not mentioned in the abstract?

When mentioning sensitivity, specificity etc. in the abstract, the referral method must be mentioned.

The external quality control system used at the laboratory analyzers should be described.

As hydration changes dramatically during pregnancy, the authors needs to mention the gestational week of the pregnant women.

The haemoglobin concentration is not “the most accurate index for detecting anemia” (p. 8. l. 179) – anemia is defined by the haemoglobin concentration!

**Level of interest:** An article of limited interest

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests