Reviewer's report

Title: Malaria case-management in the era of artemisinin-based combination therapy across 15 northern states in the Sudan

Version: 1 Date: 20 September 2011

Reviewer: Beth Kangwana

Reviewer's report:

Major Compulsory Revisions

The author must respond to these before a decision on publication can be reached. For example, additional necessary experiments or controls, statistical mistakes, errors in interpretation.

1) Under methods, survey design, line 6-7 ‘From each stratum a simple random sample of facilities was drawn in proportion to the size of the stratum’: Could the authors provide the ratio of facilities to size of stratum that was used to select the sample? I feel this important information especially for purposes of replication.

2) Under results, sample description: The authors mention that 4,140 patients were screened, of which 2,433 patients were (197) referred, (61) admitted or hospitalised, (362) pregnant’ (420) follow up visits, (50) aged 2 months, (41) less than 5kg, (1,365) presented without fever. The numbers add up to 2,496 instead of 2,433. Could the authors please clarify the discrepancy.

3) Under results, health facility and health worker readiness to implement ACT policy, paragraph 2, line 3: it states that ‘At least one of the four AL weight-specific packs was in stock at only 9.0% of facilities’. Table 1 shows AL (at least one pack) =24.6%. Could the authors please clarify the discrepancy.

4) Table 3: could the authors review their numbers. Under ‘treatment for test positive patients’, ‘other antimalarials’, there is total of 14 patients, yet under footnote b, it describes antimalarials for only 13 patients. The same problem exists in table 4.

Minor Essential Revisions

The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

1) Table 4: Could the authors please check the ordering of their footnotes. I think the second ‘a’ should be ‘b’?

2) Under methods, indicators and definitions, paragraph 2, line 3, suggested
change of ‘non-pregnant patients aged 2 month’ to ‘non-pregnant patients aged 2 months’

3) Under discussion, malaria case-management practices, paragraph 3, first line, suggest changing from ...refer to patients’... to refers to patients

4) Under discussion, study limitations, in the last sentence of this paragraph it states that the authors do not know if patients were prescribed the appropriate drug dosage component of antimalarial treatment. I wanted to confirm if this also true for health workers explaining what to do if vomiting took place. Do the authors know if all patients that were explained on what to do if vomiting took place were given the correct advice? Also from this manuscript, it is not clear what the correct advice should be?

5) Table 1: Could the authors annotate on the table that the RDTs listed under ‘availability of malaria diagnostics on survey day’ are non-expired RDTs, as written in the text.

Discretionary Revisions
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These are recommendations for improvement which the author can choose to ignore. For example clarifications, data that would be useful but not essential.

1) Under results, sample description: I feel that displaying the data provided on a table will make it easier for readers to scan through the numbers.

2) Under methods, study design, second line: the authors mention ‘non-government public health facilities’. Could the authors please provide some clarification on this phrase as it is not clear to me how the facility is a public facility yet is owned by a non-governmental organisation.

3) In the text, the authors mention ‘significant difference’ for example under results, malaria diagnostic and treatment practices, paragraph 4 and 5. I assume the authors are referring to real differences observed between percentages as oppose to statistical significance, based on confidence intervals that do not overlap. In which case this seems fine. However if the authors mean statistical significance, could they rephrase this to ‘apparent significant difference’ since no hypothesis testing was carried out.

4) Table 2, under pre-service training, could the authors list in the footnote who these ‘other cadres’ are

Minor issues not for publication

N/A

**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 am an employee of KEMRI Wellcome Trust Research Programme, where some of the authors are based, and I am part of Prof R Snow’s group. However, I have been based in London for one year and have not had involvement with the study described in this paper nor with similar facility surveys conducted by the group.