Reviewer's report

**Title:** Efficacy of serial C-reactive protein and newborn scale of sepsis for screening of neonatal sepsis at Muhimbili National Hospital, Dar es Salaam

**Version:** 2  **Date:** 23 July 2014

Reviewer: Alison Talbert

**Reviewer's report:**

Major compulsory revisions

1. Title needs changing to reflect both components of study: screening of different methods of diagnosis and antimicrobial resistance to pathogens in neonatal sepsis.

   Efficiency is not the right term; I suggest accuracy.

2. Methods para 1 Study participants: clarify if they had 1 or more signs predictive of neonatal sepsis. Ref 19 gives predictors of severe illness not a WHO case definition. In your results you only mention fever, reduced muscle tone and fast breathing, were the other predictors not assessed?

3. Methods para 2 Description of Rubarth's newborn scale of sepsis. The reference to it (20) was unclear. I only found the scale from a Google search. It seems to be from a PhD thesis. The methods section needs to list the 13 parameters measured as well as where the scale was developed, which was the original study population. Has it been validated elsewhere?

4. Methods para 8 Statistical analysis needs to mention that ROC curves were plotted. Need to mention the different cutoffs, calculate area under the curves and compare the different curves to see if there is a statistically significant difference. Chi and t-tests were performed on which categorical variables? - They are not reported in the results.

5. Results section needs reorganizing. Generally there is repetition of results in text of the results section and figures and tables

   Para 2 and 3 I suggest removal of figures 1 and 2. Also figure 2 duplicates results of table 2

   Para 4, 5 and 6. Likelihood ratios - remove "both were statistically significant with a p value of <0.01"

   Para 4 Remove Figure 3 from parentheses on last line, discuss ROC curves in para 8 when comparing Area under curves

   Para 5 Remove mention of figure 3 and discuss in para 8

   Para 7 Need to compare ROC curves using area under curves.

   Table 3 remove % from each row and place in heading. Indicate that Confidence
intervals are 95%. Remove p value column - this refers to what?

Table 3 Calculate likelihood ratios for combinations of CRP1 and CRP2, RNSOS and CRP1, and RNSOS and serial CRP

Table 4 Give numbers of bacterial isolates tested against each antimicrobial in each study

6. Discussion Need to mention that the gold standard here was isolation of bacterial pathogen on culture but that this may be insensitive.

7. Discussion Limitations of RNSOS? You have not discussed how easy it would be to use in practice. In a tertiary hospital with blood gases to measure pH and sophisticated haematology lab machines with automated WBC differential and flow cytometry it should be possible if time consuming, but it would not be widely applicable in less resourced African hospitals.

8. Conclusions Clarify what method of screening you suggest. You imply CRP and RNSOS to start antimicrobial treatment then a second CRP to discontinue treatment 12 hours later - if so state this. Discuss the consequences of high resistance rates to antimicrobials and suggest solutions in practice.

Minor essential revisions
1. Abstract para 1 background insert scale after newborn
2. Abstract methods sentence 2 introduce acronym RNSOS after Rubarth’s scale of neonatal sepsis. Change antibiotics to antimicrobial
3. Abstract methods sentence 3 change assesses to assessed
4. Abstract conclusions sentence 4 remove truly
5. Methods para5 sentence 2 change positive to raised and insert to be after likely
6. Ethical considerations Insert Muhimbili University of health and Allied Sciences before acronym MUHAS
7. Discussion para 1 sentence 2 change likely hood to likelihood

**Level of interest:** An article of importance in its field

**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.