Reviewer's report

Title: Factors Determining Outcome of Children Hospitalized with Severe Pneumonia

Version: 3 Date: 26 September 2008

Reviewer: Matti Korppi

Reviewer's report:

This is a well-written paper on the risk factors of pneumonia in <5 years old children in a setting of a developing country. The outcome measures were the need of a change of antibiotics, the need of hospitalization for more than 5 days, the need of mechanical ventilation and mortality. The diagnosis of pneumonia was clinical according to WHO guidelines. A large number of risk factors were prospectively collected. The primary outcome measure was the need to change antibiotics, and the sample size calculation was based on this outcome. Overcrowding at home, lack of breast feeding and an abnormal chest radiograph finding were the most important risk factors for the complicated course of pneumonia.

There are some aspects which the authors should clarify.

First, the first line antibiotics and their alternatives were rather broad-spectrum drugs, chloramphenicol, ampicillin+gentamycin, cefuroxime and amoxicillin clavulanic acid were all accepted. So, the rationale of the change of antibiotics as an outcome measure is a little bit difficult to understand, since the second line antibiotics were not substantially better, not very much broader nor more specifically directed. Perhaps the rationale is that these children were not improved within 48 hours, which is an important matter. This 48-hour rule should be discussed.

Second, an abnormal chest radiograph was an independent risk factor. In western countries, an abnormal radiograph is the criterion of pneumonia, and cases with no radiological infiltration are not considered as pneumonia at all. The authors should refer to the new papers from Pakistan, which have presented, that the WHO criteria select a large number children into the pneumonia group, though they don’t have pneumonia at all. In addition, radiological pneumonia was present in the small minority of the cases. In western countries, bronchiolitis and wheezy bronchitis are more common than pneumonia, also more common causing hospitalization. This may be true also in developing countries.

The authors say in the material part that they measured serum electrolytes, but the results are not presented. Hyponatremia is often considered as a significant risk factor for a complicated course of invasive infections like pneumonia.

The discussion part should not include statistical details from other studies, such as odds ratios or risk ratios by two decimals and their confidence intervals. E.g.
the expression 3-fold is enough, not OR 3.23, 95% CI 1.66-6.28.