Reviewer's report

Title: Baseline Hospital Performance and the Impact of Medical Emergency Teams: Modelling vs. Conventional Subgroup Analysis

Version: 2 Date: 26 October 2009

Reviewer: Sara Brookes

Reviewer's report:

The authors have not adequately responded to my comments.

In the MERIT study the primary outcome was the “aggregate incidence of the three adverse events”, however, for the authors analysis they consider the “change in incidence of adverse events”. I do not agree that a change score is more interpretable - it would surely be more appropriate to mimic the primary outcome used in the main study. Also, from a statistical point of view, using an analysis of covariance approach where follow up scores are compared adjusting for baseline is more powerful, producing more precise estimates that are unbiased (Frison & Pocock 1992). Moreover, the authors not only use change scores as the outcome they also adjust for baseline. This is an over correction of baseline differences and could lead to an over-estimate of treatment effect.

As I also explained previously the authors are comparing a formal test of interaction between treatment and a continuous effect modifier with subgroup specific tests, which dichotomise the effect modifier. The latter does not directly test the differences in treatment effect across the two subgroups and so the authors are not comparing like with like. There is much literature demonstrating that subgroup-specific tests are misleading and should not be performed, so I do not see it’s value here (Brookes, JCE 2004; Rothwell, Lancet 2005).

If there is any comparison of methods to be made here it should perhaps be between two formal tests of interaction: one which treats the effect modifier as continuous (as they do) and one which dichotomises it but incorporates it as a proper interaction term in a regression model.

Level of interest: An article of limited interest

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests.