Reviewer’s report

Title: Validating the Johns Hopkins ACG Case-Mix System in Swedish primary health care.

Version: Date: 7 April 2006

Reviewer: rumana omar

Reviewer’s report:

General

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

More details are required about the sampling method used in this study. Is the study population part of a larger sample group, where a stratified sampling was carried out using age as strata? Was the sampling disproportionate i.e. older age groups were over sampled? If that is the case what proportion was sampled from the other age groups? If the sampling weights are known the authors maybe required to adjust for the disproportionate sampling to estimate the correct standard errors. It is possible to do that using the software STATA. Basically the oversampled group would have to be down weighted to correct the standard errors.

In the covariables section, rather than stating a software command “alpha”, the authors should briefly describe and state the statistical terminology and provide a statistical reference, either from a book or from a published paper and not quote a reference from a software manual.

It would be useful to know if the SCB questionnaire and the questionnaire developed by Ware et al were validated or not.

In table 2 the number of participants dropped as more covariates were added to the model. Is this due to missing values for some of the predictors? If that is the case the authors should present a table with the list of predictors and the percentage of missing values for each predictor. It would also be helpful to provide some basic description of the participants with missing predictors to ensure that no bias has been introduced through missingness.

The model performances should be compared across the same group of participants and hence the number of participants should not vary across the fitted models.

The authors discuss the predictive use of the model. However they have only assessed the discriminatory ability of the model and not how well the model accurately predicts the outcome. This could be done by using either a Hosmer Lemeshow test or using the Cox Miller method. These results along with ROC areas and sensitivity and specificity results would give a better picture of the model’s performance.

What do the author’s exactly mean by participation rate being about 60%? If the non-participation was mainly amongst the elderly group who are likely to have a higher number of prescriptions, this would result in covariate dependent missingness. In that case age should be included in all the models presented regardless of its statistical significance, otherwise the results could be biased.

If the authors wish to comment on how useful the RUB groups are in predicting the outcome, then
they should present a model with all the variables included in model C excluding RUB and compare its performance with that of Model C.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

It would be extremely helpful to have page numbers in the manuscript.

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Discretionary Revisions (which the author can choose to ignore)

**What next?:** Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

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

**Quality of written English:** Acceptable

**Statistical review:** No