Author's response to reviews

Title: Cross sectional study of Performance Indicators for English PCTs: Testing Construct Validity and Identifying Explanatory Variables

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Version: 3 Date: 20 April 2006

Author's response to reviews: see over
Dear Dr Norton

**MS: 1267269462941576 - Cross sectional study of Performance Indicators for English PCTs: Testing Construct Validity and Identifying Explanatory Variables: Re-submission**

We are pleased to re-submit the above paper for consideration for publication in BMC Medicine. We would like to thank the reviewers for their helpful comments and suggestions and have acknowledged their advice in the manuscript. A comprehensive account of our responses to these comments and details of changes made to our manuscript is set out below.

We hope that the changes we have made to our manuscript are acceptable and we look forward to hearing from you.

Yours sincerely

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Cross sectional study of Performance Indicators for English Primary Care Trusts: Testing Construct Validity and Identifying Explanatory Variables

Response to Reviewers’ comments

Reviewer 1: Onyebuchi A. Arah

Major Compulsory Revisions

1. Use of too many acronyms
   We have removed the following acronyms: AS, IH, IMD and PI; retaining NHSLA, PCT and QOF.

2. Brief overview of the methodological attributes of an ideal indicator
   We now summarise these attributes in the text and provide descriptions in (new) Table 1. We take these attributes and their descriptions from Pringle et al. (2002).

3. Discussion of the theoretical and methodological interpretations of what it might mean for a pair of indicators to be correlated
   We have expanded our discussion on pages 3-4 regarding the implications and limitations of correlations between pairs of indicators. We have also included a discussion of the possible correlations with health per se in the conclusion, as identified by the reviewer (Arah and Westert, 2005).

4. Descriptions of the indicators used
   We now list the six indicators in the text on page 5. We provide some information on each indicator in Table 2 (was Table 1) and a more detailed description of the composition of each indicator and its construction in a supplementary table. Detail about the source of each indicator is also provided in this supplementary table. None of the indicators (or explanatory variables) were transformed prior to analysis.

5. Regression results
   We have included a new table (Table 4) which shows the regression results for the final ‘step’ of the forward stepwise regressions for each indicator. The R² of each step in the stepwise regressions is shown in the supplementary data file.

Reviewer 2: Robert Gibberd

Minor Essential Revisions

1. Use of PCT abbreviation in title and abstract
   This abbreviation has been removed from the title and abstract.

2. Within unit variances across multiple indicators
   We have discussed the possible within-unit variances across multiple indicators in the introduction, as part of a more holistic approach to quality assessment.

3. Methods used to obtain data
   As with point 4 for reviewer 1, we have included a supplementary table which provides more detail about the performance indicators used in this study.

4. Effect of outliers/extreme values on scatter plots
   We have noted that the correlation coefficients are influenced by the outliers and have recalculated Pearson’s r for the sub-sample of PCTs whose scores fall within the 10th and 90th centiles of each distribution. This sub-sample includes approximately two-thirds of the total sample.

Discretionary Revisions

5. The utility of star systems
We have noted the possibility for further examination of the data to identify areas for improvement in the conclusion and are planning to use this idea with the 2006 Health Check data once this is publicly available.

6. Within PCT variances
We have included an analysis of the within PCT variances, noting that such an assessment relies on the construct validity of the indicators themselves.

**General**

We would like to thank both the reviewers for their helpful suggestions and have acknowledged their advice in the paper.