Author's response to reviews

**Title:** Improving antibiotic prescribing for adults with community acquired pneumonia: does a computerised decision support system achieve more than academic detailing alone? a time series analysis

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**Author's response to reviews:** see over
Response to reviewers

Date 18th June 2008

Dear Editors,

We thank you kindly for your efforts in having our manuscript reviewed and to the reviewers for their helpful comments

Our manuscript has been revised to address the concerns of the reviewers and our response to each of the points raised is presented below

Reviewer 1

Major revisions
Abstract
1. time period explanations added in methods
2. reworded first line of results as requested

Introduction
1. Objectives section reworded to contain a general aim and then specific aims as requested
2. The Methods title has been moved to cover the design, setting, participants sections as suggested

Intervention
1. We did not intend to suggest that the guideline content was different in the third time period. We meant that the fact that it was presented electronically was new. We have added a sentence that says that the recommendations were consistent across all time periods. The word ‘new’ has been removed from the sentence ‘a new guideline was deployed’ to avoid confusion.
2. The timeline information has been moved to the intervention section

Methods
1. We have stated the number of patients included in this random review and clarified that the clinician performing the review was a doctor.
2. Ethics committee approval was obtained and a sentence explaining this has now been added

Statistics
1. We have now explicitly used the term time series analysis in this section as requested

Results
1 and 2. We have deliberately not used the term ‘statistically significant’ in our description of the comparisons because what one reader views as significant, another may not. This is evident in the p value for AD vs CDSS in choice of antibiotics for ICU. A p value of 0.051 would be viewed by many readers as so close to the arbitrary cut-off of 0.05 that
they would consider it important. To say it was “not statistically significant” would be too simplistic. By presenting the p values we allow the reader to decide for themselves. We believe this to be a more scientific and transparent way of presenting our findings rather than applying an arbitrary cut-off of 0.05 and labelling findings as significant or not. We hope that the editors would be comfortable with this position.

Discussion

1. We have added a line describing the rate of rotation of staff through the ED

2. We have added a sentence justifying why we included those patients who received additional antibiotics over and above what was recommended. Our researchers were not in a position to judge whether an antibiotic was unnecessary without knowing the detailed clinical information for each individual patient. We endeavoured to ensure that patients at least had minimal effective therapy. We did not intend to make any judgements about superfluous therapy – this would be inappropriate without more clinical information.

3. We have added the reference suggested as it strengthens our point about the need for information from hospitals outside the USA without sophisticated systems. The reference to Thursky K (one of the authors of this paper) is a detailed review of previous work in this field.

Minor Revisions

Abstract
Formatting corrections made as suggested

Intervention
Reference provided in place of abbreviation TG (thankyou for noting our oversight)
-We have clarified that doctors and pharmacists were the targets for the academic detailing
- SARS is defined as severe acute respiratory syndrome

Outcomes
The last sentence has been moved to the intervention section as advised

Statistics
No method is actually required to calculate a sample size for a time series analysis. We know that on average, at least 6 data points are required per time period, but beyond that there is no sample size calculation that is relevant to report.

Results
1. The tests used are described in the first sentence of the statistics section. We used a chi squared tests and analysis of variance (ANOVA) methods for tables 1 and 2
2. We have clarified that the percentages have been calculated using ‘patients’ as the denominator – see change to title of table 3.

4. We have tried to clarify which are the solid and which are the broken lines using better description in the footnote below the figure.

Discretionary revisions

Abstract

Word number constraints mean that a description of the number of data points in the abstract is difficult to add, and we have elected not to make this change.

We have added a comment about AD in the conclusion of the abstract

Reviewer 2

Reviewer 2’s response is somewhat disappointing. We think it suggests that the reviewer perhaps has not considered the issues involved in evaluating behaviour modification. One does not expect behaviour change to follow a single straight line over time. Indeed as our manuscript discusses, the gradient may decline over time as it may be harder to reach the last group of clinicians whose behaviour is more resistant to change. The figures 1 and 2 do in fact show that the gradient becomes less steep with time. (In other situations, the gradient may increase with time as clinicians see what everyone else is doing and are therefore more amenable to adopting change).

As the statistical reviewer has confirmed our methodology is sound, as did our own statisticians, we stand by the validity of our study and the conclusions drawn. We do not think that an ‘eyeball test’ of a graph with a simplistic assumption about a trend is an appropriate way to make interpretations about these data. Figure 2 in fact provides the true trend from the pre intervention period that does not support the reviewer’s eyeball test. The trend is not a single straight line following a trajectory from the baseline period.

Reviewer 3

We appreciate this reviewer’s interest on very relevant and practical questions about our system.

We have added a line describing that ethics committee approval was obtained, but written consent from clinicians or patients was not required. Indeed this would have potentially biased our study by changing clinician behaviour.

It is difficult for us to know for how many patients the system was used. This is because clinicians could access the information via a ‘browse’ function without logging in a patient specific UR number. While we know how many times the system was looked at, we do not know whether this was ‘self-education’ or in response to a particular patient. Interestingly, our users saw this as a valuable attribute of the system. They wanted to be able to look information over in their own time without needing to log in a particular patient.
Unfortunately we cannot report on the concordance between recommendations and prescription for specific patients because of the ability to ‘browse’ the guideline discussed above.

Our study is focused on empiric antibiotic selection, and no patient had a known pathogen at the time of antibiotic prescription in the emergency department. [We did collect data on likely causative pathogens, but can report that these were identified in only about 15-20% of patients – we did not intend to comment on this within the scope of this current manuscript].

We did not collect data on drug side effects or complications, as the clinical details beyond the emergency department management were not comprehensive enough to make informed comment. Length of stay has been reported in table 1.

We agree that readers may want more information about the system. We would be happy to direct them to a website (with the editor’s permission) and/or provide our email addresses to deal with enquiries.

The system was installed very simply. Education is an ongoing process, but occurs within the clinicians and pharmacist’s current everyday duties

**Reviewer 4**

We thank reviewer 4 for his comments

We have added a sentence discussing multiple testing issues in the discussion, Sensitivity to outliers is mentioned in the results section as requested.

We would be happy to provide any additional information or make further changes as required by the editors

Once again we thank you for your efforts in reviewing out manuscript

Regards

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