Author's response to reviews

Title: Evaluating the impact of a novel restricted reimbursement policy for quinolone antibiotics: A time series analysis

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Version: 3 Date: 3 July 2012

Author's response to reviews: see over
Response to reviewer:

In your answer for reviewer you state that FQ use for URTI had significantly dropped by 116.1 per 1000 index visits (which is 16% decrease). On the other hand in the abstract and in the manuscript you wrote only a drop of 16.1 per 1000 index visit. (which is a 1.6% decrease). Which is the correct? 1.6% is may be statistically significant, but clinically insignificant, while 11.6% is significant in both sense!

We apologize for this typo in our response letter. The 16.1 per 1000 was correct. We believe that we have been careful throughout the manuscript to emphasize that we observed either no effect, or a small effect on quinolone prescribing overall.

Results
It is also not clear why the overall FQ decrease for URTI (-33.6 per 1000 index visit) can be smaller than the levofloxacin decrease for URTI (-62.9 per 1000 index-visit). The same problem stands for FQ/ciprofloxacin use for UTI. (-16.1 vs – 69.1 per 1000 index visit).

We confirm that this information is correct. We noted a large reduction in the use of ciprofloxacin for urinary tract infection (a level change of -69 per 1000), and levofloxacin for URTI (a level change of -62.9 per 1000) but we noted a corresponding increase in the use of some of the other newer quinolones (as we noted later on in the paragraph).

We had provided in the previous response letter figures illustrating this (i.e. levofloxacin use declining, but an increased use of moxifloxacin) — below, I attach one of the figures that we had included in response 1:

Prescribing of levofloxacin, moxifloxacin and other antibiotics after unique visits for Acute exacerbation of Chronic Bronchitis
Hence, the overall reduction in rate of use was smaller for the quinolone class (level change of -33.6 and -16.1 per thousand, respectively compared to the above numbers), but was larger for the two targeted quinolones of interest for the indications illustrated above.

Please refer to Figure 1a, 1b, and 2 in the submitted paper which illustrates the smaller impact on the broader quinolone class. We have now clarified this within the manuscript.

Page 12, there was no statistically ...in the monthly rate..” please delete the word „monthly” as the sentence referes to both level and slope changes.

Change made. Thank you.

It is very suprising that in the chart review more than 50% of the „billing indications” were false (were other type of infection according to the chart review). I skipped this info last time...It means that doctors would like to justify their AB use? or „cheat” to get reimbursement for the AB? Or why they underclassify e.g. URTI compared to the chart review? What are the reasons you suspect behind this phenomena? Please briefly touch this in the manuscript. (I know that the manuscript is already long but some parts are very detailed, so you may shorten it with referral to other articles e.g. statistical).

We do not think this information is particularly surprising, and indeed was one of the reasons why we felt it was important to do the chart review. Many previous studies have shown that diagnoses provided within physician claims are not always reflective of the reason for the clinic visit, sometimes because several patient problems were addressed during a single visit, and sometimes reflecting billing practices. For instance, as we note in the paper, infectious related claims increase in the fall of each year, likely reflecting visits for influenza vaccination. These patients would not receive antibiotics. As we note in the manuscript, physicians were not aware that their practices would be audited with respect to antibiotic use, so we do not think that physicians provided false claims information to deceive the prior authorization program.

To clarify, the purpose of the chart review was to more accurately determine the indication for use of particular antibiotics, to determine if there were other clinical reasons to justify use of quinolones that fell outside of the prior authorization program, and to supplement the information that was available from the much larger administrative cohort. We have included additional discussion of this within the limitations section of the manuscript.

Appendix 1: If it will be included in the publication (not clear whether it was only for me or not) the calculation method of the absolute difference should be written.

The appendix was provided for the reviewer’s information only.

Table 1.
Do I understand well that only 1/3 of AECB and less than half of people with pneumonia received any antibiotic treatment? These would be serious quality problems! Please explain this finding

As noted above, this likely reflects the following: a) physician claim inaccuracies (for instance, a patient who presents with cough and mild symptoms, may be billed as “pneumonia”, even though the physician is managing the patient more as an upper respiratory tract infection) (hence no antibiotic is
prescribed), b) patients being seen for ongoing preventative management of respiratory problems (not requiring antibiotics), and c) antibiotics are not always required in acute exacerbation of chronic bronchitis (it depends on the presentation), and d) pneumonia may be viral (not requiring antibiotics).

Discussion
Emphasize also the cipro reduction for UTI not only the levofloxacin reduction for respiratory infections.

This has been added.

Figures
Again in the text you refer to Figure 1, with panel A and B, but I can see Figure 1, 2, 3 and 4. on the last pages

I apologize. I think this problem relates to how the figures get uploaded. We will try to resolve this problem when we upload the figures on this next version, but I am sure that this problem can be dealt with during copyediting (if our paper is accepted).