Author's response to reviews

Title: Nation-scale adoption of new medicines by doctors: an application of the Bass diffusion model

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Author's response to reviews: see over
Dear Prof. Steffen Flessa,

Please accept the second revision of our submission, titled “Nation-scale adoption of new medicines by doctors: an application of the Bass diffusion model”, prepared as a research article for BMC Health Services Research. We have modified the manuscript according to one referees’ comments. The files attached include a revised manuscript, a highlighted version of the manuscript indicating where significant changes have been made, and an additional file with a new table replacing a figure.

Our response to the referees is attached as part of this document.

My co-authors include international experts in the areas of health informatics (Prof. Enrico Coiera, UNSW), patient safety (Prof. Bill Runciman), pharmacology and drug information (Prof. Ric Day, UNSW), and health services organisational research (Prof. Jeffrey Braithwaite). We hope that our work will make a valuable contribution to BMC Health Services Research.

Kind regards,

Adam Dunn
Response to Referees:

“Nation-scale adoption of new medicines by doctors: an application of the Bass diffusion model”

We thank the editor and reviewers for their further input on the manuscript. What follows are our responses to the referees’ comments in order, and references to the corresponding changes. Page numbering relates to the highlighted version of the revised manuscript. Paragraph numbering starts from the first new paragraph on each page.

Reviewer 1:

“The authors revised the points I mentioned in the review to my satisfaction. I have no new comments to the revised manuscript and can agree with the publication of the manuscript without further revision.”

We thank the reviewer for her review.

Referee 2:

“I have reviewed carefully the changes and noted that inaccuracies on statins have been deleted and that more information has been given on the methods. However, there are still gaps in the description of the methods such as who has classified the adoptions into two groups (external forces dominant or not) and on which criteria. It is very important given that, if I understand the model, this factor is only one of the two variables that are included, the first one being the ATC group.”

The definition for ‘external forces dominant’ follows from van den Bulte & Stremersch (reference 40 in the manuscript) – a p-q ratio of 1 distinguishes externally-dominated adoption curves from internally-dominated adoption curves. We have modified the manuscript to state this explicitly (Page 5, Paragraph 2).

“I still don’t understand the utility of such a model which does not seem to have any predictive value. As mentioned in my comments on the first draft, I don’t see much the point of a model which does not include the key factors that may at least partly explain differences in adoption rates, such as relative effectiveness, innovation grade, crowding of the therapeutic class, patented or not, prices, promotional spending, restrictions of use etc.”

Social factors are considered fundamental to influencing individual changes in prescribing behaviour (as cited in several examples in the Background section). The Bass diffusion model attempts to discern social contagion drivers from external factors (such as the key factors described by Reviewer 2), and this was the focus of the present study, as stated in the aims.

The “key factors” described by the reviewer may seem like intuitive factors to test or account for when examining adoption but no correlations have yet been identified in any rigorous quantitative study (see for example, references 26, 46, and 27 in the manuscript). Alternatively, social contagion has been formally identified in a model of a single prescription medicine, after accounting for marketing effort (see reference 55 in the manuscript). We modified the Discussion to make this point more clearly (Page 8, Paragraph 2).

“The last paragraph in the discussion is very confusing (confusion between comparative effectiveness and cost effectiveness? What is the meaning of returning to the “seminal work”, what is the relation between time to saturation and system inertia?),”

We have modified the final paragraph in the discussion to remove the confusion and better represent Reviewer 2’s concerns about external factors that are assumed to influenced patterns of adoption (Page 8, Paragraph 3).