PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Strategies to Increase Influenza Vaccination Rates: Outcomes of a Nationwide Cross-sectional Survey of UK General Practice
AUTHORS	Laura J Dexter, M Dawn Teare, Matthew Dexter, A Niroshan Siriwardena and Robert C Rea

VERSION 1 - REVIEW

REVIEWER	Madelon Kroneman Senior researcher NIVEL (Netherlands Institute of Health Services Research) Netherlands I have no competing interests to declare
REVIEW RETURNED	07/02/2012

GENERAL COMMENTS	General The study is a relevant study into influenza vaccination uptake. It mainly looks at the organisation of the influenza vaccination campaign at the side of general practices. The authors identify several issues that may contribute to increasing uptake rates. However, I think that the conclusions need somewhat more critical considerations. Since BMJ Open is targeted at an international audience, there will be readers who are not familiar with the UK health care systems. I would suggest explaining shortly what is the Quality and Outcome Framework, and what is a public health team, a primary care trust, and a primary care team and how these relate to each other. The study relates mainly to practice management of the influenza vaccination campaign. I would suggest including this information in the title. I would also expect a few words on this issue in the limitations of the study. Abstract I do not agree with the authors on putting deprivation, ethnicity and QOF scores under the heading of secondary outcome measures. These variables are to my opinion confounding variables, which should be included in the regression analysis to control for the effect of differences in these variables. Methods The authors make a division in vaccination uptake among those at risk under the age of 65 and those above 65 years of age. Although this is a logical division, it is nowhere mentioned explicitly in the methods section. Neither is there a justification for this division. The authors do not motivate the choice of the factors that may differentially affect vaccine uptake. I would expect the choice to be based on previous research. I am not familiar with the robust standard error method, so I cannot

	judge whether this is the appropriate method. A quick scan of the information available on the Internet seemed to indicate that the method is appropriate. The text under the heading 'Statistical analyses' can be written more concise: At the end of page 9, the authors state: "Multivariate regression analysis was performed on any 2 ore more results from the same group(s) of participants which showed significance at the 95% level on univariable analysis. I assume that the authors have included all significant univariate variables for each group of at-risk patients into one multivariate analysis and that confounding variables were added at this stage. I would suggest to clearly stating here which confounding variables are included in the analyses. Unclear is what is meant with 'participants'. Are these the different groups of practices (urban, semi-rural, rural) as mentioned under the heading 'survey development'? I assume that the authors here mean to identify the different age-groups (<65 and >65). These are not the participants of this study, but the vaccine uptake rate of these groups is the outcome measure. The participants are those in the practices who answered the questionnaire. Results Does the population < 65 years of age include or exclude pregnant women? I would suggest to change Table 1 into a table for the results of the under 65 and one for the over 65. Discussion Apparently, the practice software is not suitable to select all persons at risk within a practice, since the authors identify having someone in the practice who optimizes the selection as a positive step. I think it would be more efficient to adjust the practice software to optimize the selection process at the level of the manufacturer, instead of every practice doing this on its own. In the UK GP practices receive an extra payment if a certain level of vaccination is reached. Having this incentive as such will also influence uptake, although this cannot be tested, because there is no variation among the UK practices, they all fall under the same Quality and Outcome Framework. Since BMJ Open is an international journal, I would expect some discussion about this feature of the UK health care system. In the results section, the authors state that having an in-house or adapted search and producing a report on vaccine uptake may be the result of more motivated practice personnel. However, they see these steps as a possibility to increase vaccine uptake. I don't think that introducing written reports and a specific search increase the motivation of practice personnel, so I do not agree that these steps would automatically increase uptake. I think that trying to make personnel more motivated will have a better result. I do not think these two steps indicate two different strategies. The authors have concentrated on factors that may increase vaccination uptake. However, there may also be barriers experienced by practices that achieve low uptake rates. I would expect a few words on this in the limitations of the study. Minor issues In the Introduction, influenza is characterized as a preventable disease. Strictly spoken, this is not the case, as is mentioned in the discussion on page 18 (line 50). I would suggest a less outspoken formulation in the introduction. I would suggest giving the tables a short and clear title and providing the rest of the information in a footnote to the table.

	At page 13, the authors mention a Read code (line 21). I don't know what kind of code that is. Figure 2a: there are two outliers: on practice ordered in 2011-2012 almost 4000 vaccines, while less than 1000 were administered in the year before. Another practice administered over 3000 doses in 2010-2011, but ordered zero in the next year. I doubt whether these are real observations or whether there are errors in the data collection.

REVIEWER	Professor John Watson Head, Respiratory Diseases Department Health Protection Agency 61 Clindale Avenue London NW9 5EQ United Kingdom No competing interests
REVIEW RETURNED	20/02/2012

THE STUDY	This is a survey of systems and practice in general practice and does not directly involve patients I am not a statistician. The methods seem appropriate to me but I an sure you will wish to have the formal view of a statistician
GENERAL COMMENTS	An interesting, well conducted and helpful study. Only minor comment that is that non-Uk readers, and some non-GP UK readers, will be unfamiliar with QOF.

VERSION 1 – AUTHOR RESPONSE

Responses to reviewer: Madelon Kroneman

General

QOF is now defined on page 9. The section describing the teams and their relationships has been modified (page 8). The reference to primary care trusts has been removed as it is not essential and is likely to be obsolete soon (page 8).

The manuscript is now entitled: "Seven steps to Increase Influenza Vaccination Rates: Outcomes of a Nationwide Survey of Strategies used in UK General Practice" (page 1). There is also modified discussion, to acknowledge this approach, on page 16.

Abstract

The heading "secondary outcome measures" and its text has been removed (page 3). These factors were independently correlated with vaccine uptake to determine the extent of their association with the primary outcome measure. Some of these factors have been included in the analyses, as already stated.

Methods

The division in vaccination uptake among those at risk under the age of 65 and those above 65 years

of age has been clarified within the methods section (page 9).

We can confirm that the factors investigated in the questionnaire were, as surmised by the reviewer, based upon feedback from the expert providers, as explained in the methods section (page 8).

We have attempted to clarify the section headed “statistical analyses” as suggested (pages 9-10).

Results
We can confirm that the population < 65 years of age includes pregnant women, as now explicitly stated in the methods (page 9).

We have now split the results in Tables 1a and 1b as requested and modified the table layouts accordingly (pages 30-33).

Discussion
The reviewer notes that it might be more efficient to adjust the practice software to optimize the selection process at the level of the manufacturer, instead of every practice doing this on its own. The complexities (and, in some cases, the unspecific nature) of the current UK guidelines for eligible patients mean that each practice can apply the guidelines slightly differently. A member of staff who is thoroughly familiar with the IT system is likely to benefit the practice on a wider scale than for the flu vaccination alone. However, we accept that the ideal solution in the longer term would be to ensure that the guidelines, and the manufacturers’ standard searches, are more specific and robust in the first instance.

As previously noted, we have now defined and referenced the QOF system on page 9.

The reviewer notes that “the authors state that having an in-house or adapted search and producing a report on vaccine uptake may be the result of more motivated practice personnel. However, they see these steps as a possibility to increase vaccine uptake. I don’t think that introducing written reports and a specific search increase the motivation of practice personnel, so I do not agree that these steps would automatically increase uptake. I think that trying to make personnel more motivated will have a better result. I do not think these two steps indicate two different strategies.” We agree that the relationship between staff motivation and practice performance is neither simple nor exclusive. Individuals may have different motivations and their interaction within a larger team may produce variable outcomes. We do not argue that introducing written reports and/or tailoring the practice search strategies would necessarily increase motivation. However, in practices where these actions are not already undertaken, their introduction would ensure that staff become more aware of the practice’s performance and the underlying mechanisms that influence it. Having found a highly significant correlation of these strategies with increased vaccine uptake, we propose that increased awareness and knowledge may help to increase staff motivation. However, our study was not designed to measure motivation per se or its effects in isolation. We agree that this would be an interesting (though challenging) area for further study.

The potential barriers experienced by practices that achieve low uptake rates are discussed on page 16-17.

Minor issues

The reference to Read codes has been clarified (page 13).

The reviewer notes that there are two outliers in Figure 2a. Inevitably there will be omissions in the data submitted by practices; however there are also likely to be instances where practices are newly

opened / closing / merging and this is also likely to produce outliers in the overall seasonal data. As the data was anonymised before analysis (as a condition of the study), we are unfortunately unable to determine the exact sources or causes of the particular cases mentioned.

Responses to reviewer: Professor John Watson

As previously noted, we have now defined and referenced the QOF system on page 9.

Many thanks for giving us the opportunity to amend our manuscript, which is attached.

Yours faithfully,

Laura Dexter.

VERSION 2 – REVIEW

REVIEWER	Madelon Kroneman Senior researcher NIVEL (Netherlands Institute of Health Services Research) Netherlands I have no competing interests to declare
REVIEW RETURNED	27/03/2012

GENERAL COMMENTS	Dear editor, I have reviewed the paper and most of the issues that I raised in the first review have been solved, however, there are some issues that remain in this version. The title The title states that the paper provides seven steps to increase influenza vaccination rates. I would advice to change this in: 'Strategies to increase influenza vaccination rates'. Firstly because I think that Identifying patients through a modified manufacturer's search program and Identifying patients through an in-house search program do not provide two different steps. Secondly because I think that some of these steps (such as a special search or a written report to review uptake rates) more have to do with motivation of practice personnel than that introducing this strategy would increase vaccination uptake. The authors have written a balanced reaction to this in the response to the reviewers and I would suggest they include this in the text as well: "*We agree that the relationship between staff motivation and practice performance is neither simple nor exclusive. Individuals may have different motivations and their interaction within a larger team may produce variable outcomes. We do not argue that introducing written reports and/or tailoring the practice search strategies would necessarily increase motivation. However, in practices where these actions are not already undertaken, their introduction would ensure that staff become more aware of the practice's performance and the underlying mechanisms that influence it. Having found a highly significant correlation of these strategies with increased vaccine uptake, we propose that increased*

	awareness and knowledge may help to increase staff motivation. However, our study was not designed to measure motivation per se or its effects in isolation. We agree that this would be an interesting (though challenging) area for further study." Identifying eligible persons through modified or in-house searches: The authors argue in their response: "*The complexities (and, in some cases, the unspecific nature) of the current UK guidelines for eligible patients mean that each practice can apply the guidelines slightly differently. A member of staff who is thoroughly familiar with the IT system is likely to benefit the practice on a wider scale than for the flu vaccination alone. However, we accept that the ideal solution in the longer term would be to ensure that the guidelines, and the manufacturers' standard searches, are more specific and robust in the first instance*." I do not see how the guidelines for 65+ patients could be applied slightly differently. It should be easy for IT systems to identify all 65+ patients based on their birthday, which, I assume, is know in each practice. I assume that in the UK the guideline states that all persons of age 65 and over are eligible for influenza vaccination. Thus selecting patients based on their age should be a simple strategy that can be easily included in standard practice software. If there still remains a positive effect of adapted search strategies, there may be either a spurious relationship, or something else, such as patients receiving a different invitation, in which they are not invited because of their age but because of morbidity or an other cause that cannot be identified in this study may explain the results. Simply advising practices to apply a modified search strategy to increase vaccination uptake in 65+, without an understanding of the mechanism that leads to this higher uptake seems not appropriate to me. Minor issue: In Supplementary Table 2, the first factor (Lead member of staff for planning seasonal flu vaccination) the baseline is set as Yes and the comparator as No. I wonder whether this is correct, since the positive outcome of the regression coefficient would than indicate that having no lead member is associated with higher vaccine uptake rates.

VERSION 2 – AUTHOR RESPONSE

"The title states that the paper provides seven steps to increase influenza vaccination rates. I would advice to change this in: 'Strategies to increase influenza vaccination rates'."
* We have altered the manuscript title (page 1).

"I think that some of these steps (such as a special search or a written report to review uptake rates) more have to do with motivation of practice personnel than that introducing this strategy would increase vaccination uptake. The authors have written a balanced reaction to this in the response to the reviewers and I would suggest they include this in the text as well."
* We have included this discussion on page 18.

"Identifying eligible persons through modified or in-house searches: I do not see how the guidelines for 65+ patients could be applied slightly differently. Simply advising practices to apply a modified search strategy to increase vaccination uptake in 65+, without an understanding of the mechanism that leads to this higher uptake seems not appropriate to me."
* We have altered our discussion to address this concern in two areas of additional text on pages 17-18.

* Supplementary Table 2 has now been corrected (page 37).