PEER REVIEW HISTORY

ARTICLE DETAILS

TITLE (PROVISIONAL)	Barriers to uptake of evidence from systematic reviews and meta-analyses: a systematic review of decision makers' perceptions
AUTHORS	Wallace, John ; Nwosu, Bosah; Clarke, Mike

VERSION 1 - REVIEW

REVIEWER	Duncan Chambers Research Fellow CRD, University of York, UK I have no competing interests.
REVIEW RETURNED	19-Apr-2012

THE STUDY	Inclusion criteria: You say that 'all decision makers were included'. Do you actually mean all health professional decision makers? Would a study of barriers to patients using systematic reviews to inform decisions about their own health (e.g. whether to take a vitamin supplement or to take aspirin to reduce cancer risk) have been included? It would be helpful to clarify this. The search was admirably thorough but it is not sufficient just to list the search terms. The search as reported is not repeatable. Please explain how the terms were combined or include a sample search strategy (could be included as an appendix). I would also like to see the list of excluded studies as I am far from sure that the search terms used would capture all relevant studies. For example, I would have thought Rosenbaum et al.'s user testing of the Cochrane Library would probably meet your inclusion criteria. References: In the Introduction, page 4 line 20, a more up-to-date reference is needed for the statement about sources of information used by physicians. I think it would also be helpful to reference the Cochrane protocol on interventions to increase uptake of systematic reviews somewhere in the Introduction.
RESULTS & CONCLUSIONS	The way the results are presented is inconsistent and doesn't follow the scheme set out in the methods. I suggest relating the barriers more clearly and explicitly to the groupings of knowledge, attitudes and behaviour. Results tables (probably Table 1) should indicate what review resources were evaluated in each study (systematic reviews in general, Cochrane Library, DARE etc.). I also think it would be helpful to see what specific barrier(s) were identified in each included study. The visual presentation of the flow diagram (Fig. 1) needs to be improved.

REPORTING & ETHICS	A PRISMA checklist is supplied but I have reservations over reporting of the search as noted above. Ethical approval would not be required for this research.
GENERAL COMMENTS	I have a few suggestions about use of language in the Introduction. Page 3, line 52: 'studies can increase the likelihood of their use'. It would be better to say something like that researchers can increase the likelihood of their studies being used. You start off by talking about systematic reviews then change to 'evidence synthesis' (page 4, para 2). This could be confusing, especially in a general journal. The statement that 'evidence from SRs has not been widely adopted by healthcare professionals' is very sweeping and could do with stronger support or expressing in a more nuanced way. A minor point but DARE is the Database of Abstracts of Reviews of Effects (not Effectiveness): page 5, line 17. The Discussion contains a considerable amount of repetition of material from the Results. I recommend cutting much of this to make the Discussion more concise and easier to read. On page 27, para 2, you discuss the Cochrane Library and Cochrane databases. I suggest rewording this to make the distinction between the Cochrane Library and the CDSR clearer. Surely one of the barriers to use here is the fact that access is not free in all countries? I hope you will persevere and produce a revised manuscript as despite my reservations about some aspects of conduct and reporting, this review addresses an important topic.

REVIEWER	Jo Rycroft-Malone Professor of Implementation Research Bangor University UK
REVIEW RETURNED	25-Apr-2012

THE STUDY	There needs to be a clearly articulated review question, and some aspects of the approach needs more detail.
GENERAL COMMENTS	Thank you for the opportunity to review this manuscript. There is much activity in the development of systematic reviews, presumably with the expectation that they will be used in some way - as we know, this isn't often the case! Some ideas that might strengthen the manuscript: - It would be helpful for there to be some consideration of what - conceptually and/or theoretically- is different/similar about the evidence base about the uptake of evidence from systematic reviews, and the evidence base about what facilitates and hinders the use of evidence in a more general sense. I am not sure if there is any distinction, but if that's the case, there will need to be a clearer rationale for the particular focus of this review. - Were you defininig decision makers to include policy and service managers, as well as practitioner decision-makers? - I think it would be helpful to have a clearer review question early on in the methods section - or at the end of the introduction section. - You mention on p5 [of the review copy] of your paper ‘complete uptake’ (of evidence from reviews) - I'm not sure what you are meaning by complete uptake. Having some clear definitions about

	how you were defining use,utilisation, uptake of evidence from systematic reviews would provide some clarity around the exact focus of the review. - I also wasn't sure what you meant by ...studies that included usable data - the phrase usable data. - I'd like to see more information about the decision making criteria – what they were, and how they were used for the pool of potential papers to go from 1,726 to 27. The inclusion and exclusion criteria get lost in the narrative. - Was a review of quality undertaken on the included studies – what approach/tool was used? - A more detailed description of how the classification of barriers using the typology mentioned would aid transparency of the process used to reach the findings. - I think it would be useful for the findings to be discussed in the context of the wider literature on implementation, barriers and facilitators to evidence use etc. The findings are similar I think to what we already know about evidence use. - It would be useful to summarise the implications for what might be included in interventions to enhance uptake of systematic reviews (from your review), and how these may be different from those interventions designed to enhance the uptake of evidence more generally.

REVIEWER	Arminee Kazanjian Professor, School of Population and Public Health The University of British Columbia Canada Competing interests: None
REVIEW RETURNED	22-May-2012

THE STUDY	patients are not the subjects of study. This SR pertains to SR uptake by decision makers. Decision makers are the subjects of the study.
RESULTS & CONCLUSIONS	The analytic framework is not explicit in the paper, which affects its credibility. There appears to be an expectation that multiple barriers would be reported in each or most of reviewed studies. Most are focused on one or two, not the "theoretical up to six" barriers. No argument is developed regarding this, nor is there any literature cited. Yet, it is suggested, in the section on implications, that "a fuller range of obstacles" needs to be addressed by future research The implicit framework for the identification of themes appears to be a single Reference(Cabana 1999), presumably providing the knowledge, attitude, and behaviour platform for the analysis. However, for the analysis of the 2 qualitative papers, the authors state that "a different taxonomy may have modified our results" (Espeland & Baerheim 2003). I believe the analysis suffers due to the application of an existing framework for understanding barriers to clinical practice guideline adoption by physicians. Barriers/enablers to the use of SR and meta-analyses by a variety (and sometimes a mix) of health professionals warrant a different and original lens. Guideline documents and the implementation of such, usually be a professional association or a regulatory body, are quite different from that of seeking and implementing systematic reviews in a medical or nursing practice.

	The bibliographic data presented here include some on practitioners' use of evidence e.g. Young & Ward 1999; Melnyk et al 2004) and others that pertain to public health officials' information needs(Dobbins et al 2007). Also, some the surveys included in this SR solicit views and attitudes of the participants while others measure access to research evidence and its utilization. I suggest that the analysis could take into consideration whether the SR evidence being sought/considered pertains to system funding decisions, organizational operations decisions, or clinical practice decisions.
GENERAL COMMENTS	The application of an original and explicit analytic framework to the bibliographic data on barriers to the uptake of Systematic Reviews by various decision makers, would make an appreciable contribution to our understanding of this topic.

VERSION 1 – AUTHOR RESPONSE

Response to peer reviewers' comments by John Wallace
Reviewer: Duncan Chambers
Point 1 Yes, all decision makers were included in the systematic review. Decision makers included patients and I have now emphasized this by inserting in page 3: all decision makers, such as doctors, nurses, occupational therapists, policy makers and patients, were eligible.
Point 2 I have now included a sample search strategy in a table (Table 6) on page 25 showing how the search terms were combined, as advised by the peer reviewer.
I have also included a list of excluded studies (page 24) and refer to it on page 3: Thirteen studies that might possibly be expected to be included but are not, are outlined in Table 4, together with the reasons for their exclusion.
The Rosenbaum et al. (2008) study looked at 'user testing' of the Cochrane Library. This is a very important study but I was unfamiliar with the methodology that they employed: user testing. Practical difficulties the participants encountered in using the Cochrane Library were observed and documented by the researchers, rather than the views of barriers as perceived by the decision makers. The systematic review that we conducted was aimed at barriers as perceived by decision makers, rather than as observed in the behaviour of others, so the study did not meet inclusion criteria.
However, I do feel that we missed out on a rich source of evidence by initially not broadening our inclusion criteria to encompass user testing, though it would have increased heterogeneity. I will look again at our future research questions in this area so as to take advantage of this important form of primary research.
Point 3 A more up-to-date reference for sources of information used by physicians is included on page 2, as advised by the peer reviewer. When unsure about diagnostic and management issues, physicians routinely consult with a colleague or read from a text.5 In References: I added 5. Bennet NL, Casebeer LL, Zheng S, Kristofco R. Information seeking behaviours and reflective practice. J Contin Educ Prof 2006; 26(2): 120-7.
The Cochrane protocol on interventions is now included in the Introduction on page 2, (Murthy et al. 2011), again as advised by the peer reviewer: Interventions to improve the use of systematic reviews for clinical and commissioning decision making are currently being investigated (Murthy et al. 2011).
Point 4 I have now related the barriers more explicitly to the groupings of knowledge, attitudes, and behaviour using specific headings, as advised by the peer reviewer and used the headings: knowledge, attitudes, and behaviour and listed the appropriate barriers under these headings.
Point 5 Table 1 now indicates the review resources evaluated in each study (such as The Cochrane Library, DARE, etc) as advised by the peer reviewer.
The specific barriers identified by each included study are now specified in a new table (Table 8).
The visual presentation of the flow diagram has now been improved as advised by the peer reviewer.
The search terms used and how they were combined for two databases is provided and now reported

as tables 5 and 6.
Point 6 I have changed the sentence, ‘studies can increase the likelihood of their use’ to researchers can increase the likelihood of their research results being used on page 1, as advised by the peer reviewer. I have also changed the term ‘evidence synthesis’ to a systematic review on page 2.
I have changed the expression ‘evidence from systematic reviews has not been widely adopted by healthcare professionals’ to ‘The uptake of evidence from systematic reviews has been inconsistent’ on page 2, to make it less sweeping and more nuanced, as advised.
Point 7 I have changed the definition of DARE to the Database of Abstracts of Reviews of Effects, not ‘Effectiveness’ where ever the term is used, as advised.
Point 8 I have altered and distilled the Discussion so that it does not repeat the Results, as advised by Duncan Chambers. I have made the distinction between The Cochrane Library and the Cochrane Database of Systematic Reviews clearer: that the CDSR is (one of the six high-quality databases maintained by the Library). I have also made reference to the fact that The Cochrane Library is not free in all countries: And it should be noted that the Library is not free in all countries, page 9.
Response to Peer Reviewer: Jo Rycroft-Malone
Point 1 I have included a clearly articulated review question in the Introduction on page 2: ‘What are the barriers to the uptake of evidence from systematic reviews, meta-analyses, and the databases containing them?’
Point 2 I have made clearer, in the Introduction on page 2, the distinction between uptake of evidence from systematic reviews, clinical practice guidelines, and evidence in general: Systematic reviews were the focus of this review, rather than the more commonly investigated clinical practice guidelines or individual, primary studies. Systematic reviews are based on primary research while clinical practice guidelines are an amalgam of clinical experience, expert opinion, patient preferences, and evidence. Systematic reviews are a scientific exercise aimed at generating new knowledge and provide a summary of relevant primary research. In this way, they can help keep us current. Systematic reviews have a distinct development and scientific purpose that differs from both guidelines and primary research. Many factors contribute to the varying uptake of evidence in general (Lavis et al. 2009). These include financial obstacles, the sheer volume of research evidence, and the difficulties in applying global evidence in a local clinical context (Murthy et al. 2011). Other barriers include limited time and awareness of evidence sources, limited critical appraisal skills (Dobbins 2001) and the relevance of research findings (Innvaer et al. 2002). Given the considerable differences between systematic reviews, primary studies, and clinical practice guidelines, we set out specifically to identifying the barriers to uptake of pre-appraised, integrative reviews and meta-analyses. This also makes reference to the barriers to uptake of evidence in general.
Point 3 I have made it clearer, on two occasions, that decision makers include policy makers, programme managers, as well as practitioners: Here we focused on all decision makers, including physicians, policy makers, occupational therapists, and nursing staff, at end of page 2.
Point 4 A clearer review question is now included at the end of the Introduction section on page 2 as advised by the peer reviewer and referred to earlier.
Point 5 I have removed the expression ‘complete uptake’ and defined on page 3 what I mean by uptake: Barriers to evidence uptake can negatively impact on access, awareness, familiarity, intellectual adoption, and actual use of systematic reviews. Barriers can also limit the positive influence of current systematic review results on patient care.
Point 6 I have removed the phrase ‘usable data’ as it does not add to the study.
Point 7 I have re-emphasized, on page 5, and restated the inclusion criteria specifically to explain how potential papers go from 1,726 to 27: Studies, to be included, had to address perceived obstacles to uptake of evidence specifically from systematic reviews, meta-analyses and the databases that contained them.
Point 8 I have now reorganized the paragraphs and included the heading ‘Quality of studies’ in order to clarify and emphasize how the quality assessment was conducted and what approach was used (page 7). Quality depends on the reported sampling frame, reported response rate, (random) sampling method, number of participants reported, the number of barriers addressed, and if evidence

use was reported or actual. I have added a heading to the Methods Table to emphasise that the table is a quality assessment table: Methods and Quality
Point 9 A more detailed description of how the classification of barriers using the typology mentioned is given, and highlights how the process was used to reach the findings (page 7): After classifying possible barriers into common themes, it was found that the 57 questions about obstacles to uptake of evidence from systematic reviews encompassed 28 barriers. These were grouped according to the knowledge/attitude/behaviour framework. Barriers affecting knowledge could include lack of awareness, lack of familiarity and a lack of understanding of meta-analyses. Lack of confidence, decreased motivation, a perceived lack of usefulness of systematic reviews and limited trust in them, were grouped under Attitudes. Systematic review attributes, patient issues, and environmental factors have the potential to impair usage of systematic reviews. Attributes of systematic reviews such as academic terminology, and environmental factors such as limited resources or a negative organisational climate towards meta-analyses, were grouped under Behaviour.
Point 10 and 11 The findings are discussed in the context of the wider literature on implementation, barriers, and facilitators to evidence use. I have emphasized how our findings differ from others in the field. I have summarized the implications, from our systematic review, which might aid interventions to enhance uptake of evidence from systematic reviews (page 11): Researchers have attempted to examine the barriers to change with the long-term aim of understanding how the gaps can be narrowed and closed (Cochrane et al. 2007). By identifying the barriers it may be possible to target an intervention to the specific obstacle identified.
Much of the work has been on the barriers to uptake of evidence from clinical practice guidelines. The most comprehensive scheme for considering the barriers to evidence uptake was by Cabana and colleagues (Cabana et al. 1999). The barriers that they identified to guideline adherence were lack of awareness and familiarity, lack of belief in a good outcome following adoption of the guideline, and the inertia of previous practice, such as lack of motivation.

Lack of motivation to use systematic reviews did not emerge as a major obstacle in our study, though in common with research evidence in general, lack of access to, and limited awareness of, reviews continue to be significant perceived barriers. However, lack of actual, practical use of systematic reviews in particular presents a major challenge to evidence uptake. To become familiar with an innovation it must be used at least once. For systematic reviews, this is not happening enough. Strategies to improve uptake of reviews should emphasize the usefulness of reviews for research and clinical practice. They should also provide a practical opportunity to use and become familiar with systematic reviews and the databases containing them in an organizational climate that values research.

Response to peer reviewer: Arminee Kazanjian
Point 1 The analytic framework is made more explicit as suggested by the peer reviewer. I added the following to the Introduction (page 4) showing that the analytic framework comes from the mechanism of action model by Stephen Woolf: The mechanism of action by which improved patient care is attained is believed to proceed through a number of stages (Woolf et al. 1993). Research evidence alters eventual clinical outcome through the intermediate steps of first changing clinician knowledge, then improving attitudes, and lastly changing practitioner behaviour.
I have referenced the problem with intervention effectiveness in that they do not addressing a full range of barriers.6 I have also added a referenced explanation on page 10: Interventions designed to change practice should be based on an accurate assessment of the factors that support targeted health outcomes.8 The accuracy of this assessment is directly related to the future impact of the intervention.45 If we accept this finding, then it is vital to identify the factors that influence the uptake of evidence from systematic reviews in order to help develop targeted interventions to enhance uptake of evidence from this important source of high quality, pre-appraised evidence9.

Point 2 I have made explicit the difference between systematic reviews and clinical practice guidelines

in the text (page 2).
I agree that a new, alternative framework for understanding barriers to systematic reviews would be advantageous. However, I used the Cabana/ Woolf framework so that our results could be compared with Cabana's. I also wished to use a framework that was well-established and accepted in the field.
I have made more explicit the variety of decision makers that will use systematic reviews (Page 2).
Point 3 I have now added the following table to make clearer the different professional backgrounds and focus of the participants.
Table 7. Disciplines participating

Doctors: 6,549
Nurses: 1,494
Practice managers: 785
Occupational therapists: 649
Midwives: 202
Pharmacists: 178
General practice staff: 91
Surgical allied professions: 69
Policy makers: 62
Information specialists: 56
Others: 83

Total: 10,218

In order that the analysis take into account what the systematic review evidence pertained to in the individual studies, I have also added on page 7: Two studies were concerned with the use of systematic review evidence for public health policy and programme management decisions.24, 25 The remaining studies had a clinical practice focus concerned with investigating attitudes to evidence-based medicine.
Point 4 I accept and appreciate the reviewer's point about the potential advantages of using another analytic framework. In the text, I have made explicit the analytic framework (by Cabana) that we used in the analysis. I specifically employed a well-known and well-accepted analytic framework so that our results could be compared to that of other studies in the field using the same framework. The systematic review reported here is part of a DPhil in evidence-based healthcare with Oxford University. I felt it prudent not to use a novel, untried framework in investigating such an important question. The question is addressed against the background of considerable previous research in the area that used a similar framework.

VERSION 2 – REVIEW

REVIEWER	Duncan Chambers Research Fellow CRD University of York York YO10 5DD, UK I have no competing interests
REVIEW RETURNED	29-Jun-2012

GENERAL COMMENTS	The revised version addresses most of my concerns. I have a few minor comments/suggestions: 1. p1, lines 49-51. Delete two sentences: 'Studies can't....being used'. 2. I still find some terminology confusing. What is a pre-appraised

	integrative review? If you mean a systematic review, why not stick to that wording? 3. p2, line 46. identify, not identifying 4. Tables 5 and 6 could be combined into one. Is this similar to the strategy used for the main search? 5. The first part of the revised discussion reads like a collection of isolated points. I would find it easier to follow if you could draw out the main findings first, shortening the implications and conclusions as necessary to avoid too much repetition. 6. Table 4 includes only a selected sample of excluded studies. It would be preferable to include the full list of 62 as a supplementary file rather than just a sample in the main text. 7. I take the point about Rosenbaum's work. I think it would be helpful to make this point and cite the paper in the discussion.

REVIEWER	Jo Rycroft-Malone Professor of Implementation Research Bangor University I have no competing interests.
REVIEW RETURNED	22-Jul-2012

- The reviewer completed the checklist but made no further comments**.**

VERSION 2 – AUTHOR RESPONSE

Barriers to uptake of systematic reviews and meta-analyses
Point 1: I have removed the two sentences: ‘Studies can’t ensure the utilisation of their results. While evidence does not speak for itself, researchers can increase the likelihood of their research results being used.’
Point 2. I have changed ‘pre-appraised integrative review’ to ‘systematic review’ throughout the article.
Point 3. In the second last paragraph of the Introduction, I am indebted to the reviewer for spotting that ‘identifying’ should read ‘identify’ and I have changed it to ‘identify’ accordingly.
Point 4. Tables 5 and 6 are combined into one Table 5 and the Table numbers in the text and Table numbers themselves are altered accordingly. Yes, it is similar to the strategy used in the main search.
Point 5. I have shortened the initial part of the Discussion to make it more readable and connected the individual isolated aspects. I have kept the main points, adding nothing, but distilling the content. I have, as advised, removed material from Implications and Conclusion to avoid repetition. I have removed the following text: Awareness of important resources, such as systematic reviews and the databases containing them, appears to be restricted. Limited self-reported understanding of systematic reviews indicates a potential limitation in the ability of many clinicians to critically appraise the literature. 22 More work needs to be carried out to promote a better understanding of systematic review terminology and related concepts. This investigation attempted to bring together the views of 10,218 decision makers from 91 countries, 64% of whom were physicians. From the 27 primary studies included in this systematic review, It is apparent that the barriers exist across different countries and impact on a variety of professional disciplines.

By removing the above, this shortens the Implications and Conclusion and avoids repetition. The reference numbers remain the same.

Point 6. List of excluded studies: I understand the peer reviewer’s point about including the entire range of excluded studies in a list.
However, I did keep to the guidance offered by the Cochrane Handbook of Systematic Reviews (Prof

Clarke is one of this study's authors and is director of the Oxford Cochrane Centre). Page 154 of the Handbook (7.2.5) has a section, 'Selecting excluded studies' which I followed.
The Handbook states that the excluded studies are those that 'a reader might plausibly expect to see among the included studies'. 'The list of excluded studies should be as brief as possible.' 'It should not list all reports that were identified by a comprehensive search' or 'list all the reports that obviously do not fulfil the entry criteria for the review'. The list of excluded studies covers studies 'that may appear on the surface to meet the eligibility criteria but on closer inspection do not'. They are studies that might be 'thought of as relevant by some readers'. The purpose of the list is to show that 'consideration has been given to these studies'. This is why the list 'Excluded studies' presented in the body of the text is shorter than the entire 62 excluded studies.
I have, however, also provided a supplementary file of all the 62 excluded studies, as suggested by the peer reviewer.
I do take the peer reviewer's point that the shorter list in the body of the text is a selected sample of excluded studies, as the peer reviewer rightly points out.
Point 7. I have cited Rosenbaum study in the end of the Discussion and make the point about 'user testing' as advised by the peer reviewer: 'Future research needs to address a fuller range of impediments to evidence uptake, with the practical difficulties encountered in using systematic reviews observed and documented by researchers through 'user testing' of this source of evidence by participants.(46)' In this way I incorporate the Rosenbaum study, which I have also included as reference number 46.