Subject: BMJ - Decision on Manuscript ID BMJ.2014.024450

Body: 21-Apr-2015

Dear Mr. Luangasanatip

Manuscript ID BMJ.2014.024450 entitled "Comparative efficacy of hospital hand hygiene promotion interventions: a systematic review and network meta-analysis."

Thank you for sending us this paper, which we were pleased to have the chance to consider and enjoyed reading. We recognise its potential importance and relevance to general medical readers, but I am afraid that we have not yet been able to reach a final decision on it. This is because several important aspects of the work still need clarifying.

We hope very much that you will be willing and able to revise your paper as explained below in the report from the manuscript committee meeting, so that we will be in a better position to understand your study and to decide whether The BMJ is the right journal for it.

Many thanks again. We look forward to seeing your revised article within a month and, we hope, to reaching a decision.

** THE REPORT FROM THE MANUSCRIPT COMMITTEE MEETING, REVIEWERS' REPORTS, AND THE BMJ'S GENERAL REQUIREMENTS FOR RESEARCH PAPERS ARE AVAILABLE AT THE END OF THIS LETTER.**

First, however, please read these four important points about sending your revised paper back to us:

1. Deadline: Your revised manuscript should be returned within one month.

2. Online and print publication: All original research in The BMJ is published with open access. The full text online version of your article, if accepted after revision, will be the indexed citable version (full details are athttp://resources.bmj.com/bmj/about-bmj/the-bmjs-publishing-model), while the print and iPad BMJ will carry an abridged version of your article, usually a few weeks afterwards. This abridged version of the article is essentially an evidence abstract called BMJ pico, which we would like you to write using a template and then email it to papersadmin@bmj.com (there are more details below on how to write this using a template). Publication of research on bmj.com is definitive and is not simply interim "epublication ahead of print", so if you do not wish to abridge your article using BMJ pico, you will be able to opt for online only publication. Please let us know if you would prefer this option.
If/when your article is accepted we will invite you to submit a video abstract, lasting no longer than 4 minutes , and based on the information in your paper's BMJ pico evidence abstract. The content and focus of the video must relate directly to the study that has been accepted for publication by The BMJ, and should not stray beyond the data.

3. Open access publication fee: The BMJ is committed to keeping research articles Open Access (with Creative Commons licences and deposit of the full text content in PubMedCentral as well as fully Open Access on bmj.com). To support this we are now asking all authors to pay an Open Access fee of £3000 on acceptance of their paper. If we accept your article we will ask you to pay the Open Access publication fee; we do have a waiver policy for authors who cannot pay. Consideration of your paper is not related to whether you can or cannot pay the fee (the editors will be unaware of this), and you need do nothing now.

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You will be unable to make your revisions on the originally submitted version of the manuscript. Instead, revise your manuscript using a word processing program and save it on your computer.

Once the revised manuscript is prepared, you can upload it and submit it through your Author Center. When submitting your revised manuscript, you will be able to respond to the comments made by the reviewer(s) and Committee in the space provided. You can use this space to document any changes you make to the original manuscript and to explain your responses. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s).

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Yours sincerely

Kristina Fišter

kfister@bmj.com

As well as submitting your revised manuscript, we also require a copy of the manuscript with changes highlighted. Please upload this as a supplemental file with file designation 'Revised Manuscript Marked copy'.

IMPORTANT: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

INFORMATION ON REVISING THE CONTENT AND FORMAT OF YOUR ARTICLE

Report from The BMJ's manuscript committee meeting

These comments are an attempt to summarise the discussions at the manuscript meeting. They are not an exact transcript. Members of the committee were: Elizabeth Loder (chair), Rafael Perera (statistician), editors - Jose Merino, Rebecca Burch, Alison Tonks, Kristina Fišter, Tiago Villanueva, Georg Goeggla, Rubin Minhas, guests - Lizy Townshend, Richard Stevens.

Decision: request revision.

Detailed comments from the meeting:

First and foremost, please revise your paper to respond to all of the comments by the reviewers. Their reports are available at the end of this letter, below.

Please also respond to these additional comments by the committee:

* We tend to prioritise for publication papers that include clinical outcomes. Even if your paper doesn't do this, could you provide more of a discussion of available evidence on links between hand washing, strategies examined here, and clinical outcomes.

* You excluded non-English studies, unpublished, and any that don't match specific quality criteria. Does this selective approach mean you are looking at a subset of available studies, not the full picture?

* We did not think publication bias constituted a major problem, but we did agree with the reviewers that heterogeneity seems high and more discussion of this is warranted, especially around the decision to pool the results.

IMPORTANT
When you revise and return your manuscript, please take note of all the following points about revising your article. Even if an item, such as a competing interests statement, was present and correct in the original draft of your paper, please check that it has not slipped out during revision.

a. In your response to the reviewers and committee please provide, point by point, your replies to the comments made by the reviewers and the editors, and please explain how you have dealt with them in the paper. It may not be possible to respond in detail to all these points in the paper itself, so please do so in the box provided

b. If your article is accepted it will then be edited, proofed, and - after your approval - published on bmj.com with open access. This open access Online First article will not be a pre-print. It will represent the full, citable, publication of that article. The citation will be year, volume, elocator (a unique identifier for that article): eg BMJ 2008;337:a145 — and this is what will appear immediately in Medline, PubMed, and other bibliographical indexes. We will give this citation in print and online, and you will need to use it when you cite your article.

c. Please write an abridged version of the article for the print and iPad BMJ using the appropriate BMJ pico template for your study's design. Please be reassured that it doesn't take long to complete this. When your BMJ pico is ready please email it to papersadmin@bmjgroup.com.The templates for you to download are at http://resources.bmj.com/bmj/authors/bmj-pico

d. Please include these items in the revised manuscript to comply with BMJ style:

Title: this should include the study design eg "systematic review and meta-analysis"

Abstract
structured abstract including key summary statistics, as explained below (also see http://resources.bmj.com/bmj/authors/types-of-article/research)
for every clinical trial - and for any other registered study - the study registration number and name of register – in the last line of the structured abstract.

Introduction
this should cover no more than three paragraphs, focusing on the research question and your reasons for asking it now

Methods:
for an intervention study the manuscript should include enough information about the intervention(s) and comparator(s) (even if this was usual care) for reviewers and readers to understand fully what happened in the study. To enable readers to replicate your work or implement the interventions in their own practice please also

provide (uploaded as one or more supplemental files, including video and audio files where appropriate) any relevant detailed descriptions and materials. Alternatively, please provide in the manuscript urls to openly accessible websites where these materials can be found

Results

please report statistical aspects of the study in line with the Statistical Analyses and Methods in the Published Literature (SAMPL) guidelines http://www.equator-network.org/reporting-guidelines/sampl/

summary statistics to clarify your message. Please include in the results section of your structured abstract (and, of course, in the article's results section) the following terms, as appropriate:

For a clinical trial:
• Absolute event rates among experimental and control groups
• RRR (relative risk reduction)
• NNT or NNH (number needed to treat or harm) and its 95% confidence interval (or, if the trial is of a public health intervention, number helped per 1000 or 100,000)

For a cohort study:
• Absolute event rates over time (eg 10 years) among exposed and non-exposed groups
• RRR (relative risk reduction)

For a case control study:
• OR (odds ratio) for strength of association between exposure and outcome

For a study of a diagnostic test:
• Sensitivity and specificity
• PPV and NPV (positive and negative predictive values)

one or more references for the statistical package(s) used to analyse the data, eg RevMan for a systematic review. There is no need to provide a formal reference for a very widely used package that will be very familiar to general readers eg STATA, but please say in the text which version you used

for articles that include explicit statements of the quality of evidence and strength of recommendations, we prefer reporting using the GRADE system

Discussion

please write the discussion section of your paper in a structured way, to minimise the risk of careful explanation giving way to polemic.Please follow this structure:

statement of principal findings of the study

strengths and weaknesses of the study

strengths and weaknesses in relation to other studies, discussing important differences in results and what your study adds. Whenever possible please discuss your study in the light of relevant systematic reviews and meta-analyses (eg Cochrane reviews)

meaning of the study: possible explanations and implications for clinicians and policymakers and other researchers; how your study could promote better decisions

unanswered questions and future research

Footnotes and statements

What this paper adds/what is already known box (as described at http://resources.bmj.com/bmj/authors/types-of-article/research)

ID of ethics committee approval and name of the ethics committee/IRB; or a statement that approval was not required (see http://resources.bmj.com/bmj/authors/editorial-policies/guidelines) and a statement that participants gave informed consent before taking part

a statement that any identifiable patients have provided their signed consent to publication. Please submit, as a supplemental file, the signed BMJ patient consent form giving consent to publication in The BMJ of any information about identifiable individual patients. Publication of any personal information about a patient in The BMJ, for example in a case report or clinical photograph, will normally require the signed consent of the patient.

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signed patient consent form(s), if the article gives enough personal information about any patient(s): this sometimes occurs even in research papers - for example in a table giving demographic and clinical information about a small subgroup in a trial or observational study, or in quotes/tables in a qualitative study - (see http://resources.bmj.com/bmj/authors/editorial-policies/copy_of_patient-confidentiality)

a data sharing statement declaring what further information and data you are willing to make available, over and above the results reported in the paper. Suggested wording: "Data sharing: technical appendix, statistical code, and dataset [state whether any patient level data have been anonymised] are available at this repository or website OR from the corresponding author at ". If there are no such further data available, please use this wording: "Data sharing: no additional data available". For papers reporting the main results of trials of drugs or devices we require that the authors state, at a minimum, that the relevant anonymised patient level data are

available on reasonable request from the authors
The BMJ has partnered with the Dryad Digital Repository datadryad.org to make open deposition easy and to allow direct linkage by doi from the dataset to The BMJ article and back - we encourage authors to use this option
funding statement (see http://resources.bmj.com/bmj/authors/article-submission/article-requirements)
statement of the independence of researchers from funders (see http://resources.bmj.com/bmj/authors/article-submission/article-requirements)
for studies funded or sponsored by industry (see http://resources.bmj.com/bmj/authors/article-submission/article-requirements)
a statement describing the role of the study sponsor(s), if any, in study design; in the collection, analysis, and interpretation of data; in the writing of the report; and in the decision to submit the article for publication
assurance, in the cover letter, that a clinical trial funded by a pharmaceutical or other commercial company follows the guidelines on good publication practice (see http://resources.bmj.com/bmj/authors/article-submission/article-requirements)
inclusion in the list of contributors the name(s) any professional medical writer(s), specifying in the formal funding statement for the article who paid the writer. Writers and authors must have access to relevant data while writing articles.

Patient centred research
for studies that are relevant to patients we expect authors to report in their articles the extent of their study's patient-centredness, as highlighted by these questions:
did you involve patients/service users/carers/lay people in the design of this study? Please state whether you did, and give details (Methods section)
was the development and/or selection of outcome measures informed by patients' priorities and experiences? Please give details (Methods section)
were patients/service users/carers/lay people involved in developing plans for participant recruitment and study conduct? If so, please specify how (Methods section)
have you planned to disseminate the results of the study to participants? If so how will this be done? (Describe in brief footnote)
are patients thanked in the contributorship statement or acknowledgements?
for articles reporting randomised controlled trials: did you assess the burden of the intervention on patients' quality of life and health? If so, what evaluation method did you use, and what did you find? (Methods and Results sections)

REFEREES COMMENTS

Reviewer: 1

Recommendation:

Comments:
Luangasanatip and colleagues performed a meta-analysis using rigorous methods to determine which hand hygiene interventions improve compliance. Strengths of this meta-analysis include stratifying studies by study design and using the best meta-analysis method for each design. The network meta-analysis is novel for this field and overcame the problem of no head-to-head comparisons for hand hygiene interventions. However, this meta-analysis relied too strongly on a systematic literature review performed by someone else (Gould et al.) without validating the results of that systematic literature review.

MAJOR
1. Abstract, please change the abstract to say that databases were searched from 2009-Feb 2014 then supplemented with studies found by other meta-analyses.

2. Methods, search strategy: Did you search any of the literature from 1980-2009 or did you just trust that the other reviews found all of the articles that you needed? I recommend validating the searches done before 2009 by running your search criteria during a portion of that time period (2 years or so) and determining if you would have excluded all of the studies that they excluded.

3. Similarly, it is hard to believe that 31 studies met EPOC criteria in a 5 year period (2010-2014) but only 4 studies met EPOC criteria in a 29 year period (1980-2009). Did you validate your use of EPOC versus Gould's use? Please validate the use of EPOC by Gould et al by taking studies that the Gould study excluded and applying the EPOC criteria to see if you would have excluded that study as well.

4. Methods, inclusion and exclusion: Include a sentence or two on what characteristics a study must have in order to meet minimal quality criteria specified by EPOC.

5. Methods, data synthesis and statistical analysis: describe how you tested for heterogeneity between studies (e.g. I2) and how you evaluated publication bias.

6. Results, RCTs: Why are there 3 studies included in Figure 3? The paragraph that describes it on page 11 mentions 4 studies and 2 studies. If the Fuller study is included twice here, ACE and ITU need to be spelled out and there needs to be a description on why it is statistically valid to include the same study twice. Additionally, an I2 of 81% means significant heterogeneity. Perhaps rather than pooling these studies, the manuscript can just contain a description of the findings of each study. This would also cut a figure which would be useful since having 8 figures is excessive. Also, why are the results of this analysis different in the abstract and the results section of the manuscript?

7. Although I am not familiar with network meta-analyses, some of the odds ratios shown in Table 2 seem extremely high with extremely wide credible intervals. Please mention this in the discussion and explain the reliability of these results.

MINOR
1. Methods, search strategy: database of abstracts of review of effects (DARE) is listed twice. Also, please spell out EPOC and ACP.

2. If space, consistently spell out CBA and CCT since these are not standard acronyms.

3. Appendix 8. The first 2 funnel plots do not have labeled axes (axis) and the labels on the third funnel plot look incorrect (log odds ratios are never negative).

Reviewed by: Marin Schweizer, PhD, University of Iowa

Additional Questions:
Please enter your name: Marin Schweizer

Job Title: Assistant Professor

Institution: University of Iowa

Reimbursement for attending a symposium?: No

A fee for speaking?: No

A fee for organising education?: No

Funds for research?: No

Funds for a member of staff?: No

Fees for consulting?: No

Have you in the past five years been employed by an organisation that may in any way gain or lose financially from the publication of this paper?: No

Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this paper?: No

If you have any competing interests (please see BMJ policy) please declare them here:

Reviewer: 2

Recommendation:

Comments:
Dear BMJ Editors,

The authors present the results of a systematic review and network meta-analysis. Their objective was to evaluate the comparative efficacy of hand hygiene improvement interventions targeted at healthcare workers and to quantitate the resources required for such interventions.

Studies were identified from 2 previous reviews and a literature search was conducted to identify additional studies published since these prior reviews. Studies were included if they had an intervention targeting healthcare worker hand hygiene in the hospital setting, measured hand hygiene via direct observation or a proxy (e.g. product consumption, electronic or video monitoring) and used one of the following study designs: RCT or cluster RCT, controlled clinical trial, interrupted time series analysis or controlled before-after study. Studies were excluded if they were not peer reviewed or were not published in English. Additionally, studies that did not meet EPOC quality inclusion criteria were excluded although these criteria were not explicitly stated.

All included studies were systematically reviewed and summarized but only 2 RCT were meta-analyzed and only a subset of the interrupted time series studies were examined in network meta-analysis.

The key findings of the study are:

1) In a meta-analysis of 2 RCT, interventions that included all 5 components of the World Health Organizations multimodal hand hygiene program (WHO-5) plus goal setting were superior to interventions using only WHO-5.

2) In a network meta-analysis, WHO-5 and WHO-5 plus (multimodal interventions that included WHO-5 elements plus additional elements such as goal setting, incentives and accountability) were superior to standard of care / no intervention.

3) All strategies demonstrated a trend towards improved hand hygiene compared with standard of care / no intervention and all WHO plus (WHO-5 with additional interventions including goal setting, incentives or accountability interventions) demonstrated a trend towards improved directly observed hand hygiene compliance compared with WHO-5 though confidence intervals were wide and overlapping.

4) Insufficient data on costs were presented in the literature to allow meaningful conclusions but some approximate ranges are presented

Assessment

Healthcare worker hand hygiene is a critical strategy to reduce the global burden of healthcare-associated infection (HAI). Given that healthcare workers adherence to current hand hygiene guidelines remains suboptimal, a comparative evaluation of interventions to improve hand hygiene compliance in healthcare is of vital importance.

This manuscript should be highly relevant to policymakers, hospital administrators and infection prevention and control programs that are actively pursuing quality improvement interventions to reduce HAI incidence and enhance patient safety. While the optimal approaches to improving healthcare worker hand hygiene compliance is of vital importance, it may be perceived as less relevant to front-line healthcare workers not directly involved in developing quality improvement efforts in this area.

I believe that this article is original and I am not aware of other systematic reviews on this topic that used network analysis. As the authors themselves highlight, there are other systematic reviews on this topic but some are now dated due to the large volume of recent publication in this area while more recent reviews made different methodological choices in terms of study selection and quality assessment and did not use network meta-analyses. For these reasons, I think this study makes an important and original contribution to the field.

The study is well written and is fairly clear although the amount of information conveyed is large and at times it is challenging to follow. I believe some improvements to clarity could be made. The study question and study design are appropriate, with the caveat that I have limited experience with network meta-analysis. The results appear valid and the conclusions follow logically from the results. I do have suggestions for revisions, which follow below.

Suggestions for Revisions

Abstract

The Design and Inclusion sections of the abstract do not adequately explain the methodology used by the study. Given that the current abstract is brief (<350 words) and assuming that a longer abstract would be acceptable, I believe more details could be provided to ensure that that abstract can be understood as a stand-alone document. For example, it does not described the data sources used, the type of study designs included or the designs and outcomes relevant to the network meta-analysis (e.g. the study included a variety of designs and outcomes, but only interrupted time series that measured directly observed hand hygiene were included in the network-meta-analysis). As such, the abstract lacks several elements suggested for inclusion in a 'structured abstract' as described by the 2009 PRISMA checklist (http://www.prisma-statement.org/2.1.2%20-%20PRISMA%202009%20Checklist.pdf).

Introduction

In the first paragraph, the references 1 and 2 supporting the statements on the burden of HAI are old. Newer primary data on this topic are available (e.g. Magill et al, NEJM 2014).

Methods

Page 5, paragraph 1: It is stated that the PRISMA statement was used to guide reporting of the study however several elements have been omitted (in addition to the structured abstract described above):

1) The objective is not stated explicitly in the introduction using the 'PICOS' format

2) A registration number for the protocol was not provided (nor a statement indicating that the protocol was not registered)

3) A list of variables abstracted from all studies was not provided.

These elements should be added to the manuscript if possible.

Page 6, paragraph 2: The term retrospective is used but not defined. An explicit definition should be given as this term is used variably.

Page 6, paragraph 3: It is stated that studies were excluded that failed to meet 'minimal quality criteria specified by the Cochrane Effectiveness Practice and Organisation of Care Group (EPOC). I was unable to find the reference linked to this statement (ref 12) although I believe I did find the information online at the Cochrane website. These criteria should be clearly outlined in the paper and a definition of what 'minumum' thresholds are should be presented - as well an appropriate reference to either a published article or to a website that includes an accurate URL should be added. In Appendix 5, the reasons for exclusion of these studies are given and are these exclusions appear to be mainly on the basis of study design (e.g. study was an uncontrolled before-after study) and I found this a bit confusing as this design did not meet the authors 3rd inclusion criteria on page 6 (study design criteria) and should have been excluded at an earlier stage in the process (i.e. at the stage of full text review at least)?

Results

Page 10, paragraph 5: A cost range is presented ($US 225 to $4669 per 1000 bed days). The study associated with the highest cost included only the cost of one time video camera installation. That study involved video footage outsourced to an external group that reviewed the video and estimated hand hygiene performance on room entry and exit. The human resource costs associated with reviewing the video were likely substantial so I do not think $4669 per 1000 bed days is a meaningful estimate of the costs for this intervention. I suspect there are similar issues with the cost estimates for many of these studies and wonder whether the presentation of any quantitative data here is useful at all? The authors themselves conclude that reporting of resource use is inadequate in the literature and I think this is the only meaningful finding with respect to resource utilization.

Page 11, paragraph 1: It is stated that 2 RCT demonstrated improved compliance following implementation of education, performance feedback and visual reminders (ref 34) or education alone (ref 32) but it is not explicitly stated what occurred in the control arm. The answer is in table 3 but it would be easier for the reader if it were stated here.

Page 11, paragraph 2 discusses the results of the included randomized controlled trials. This methodology is stronger and less prone to bias than the controlled before-after or time series designs. I noted with interest that the RCT included here tended to be associated with small absolute increases in compliance. Would it be possible in your review to discuss the magnitude of improvement rather than just qualitatively whether hand hygiene improved? Is there a correlation between study quality and a lower absolute improvement in hand hygiene? What is a clinically significant increase in hand hygiene compliance given that these studies have large sample sizes and can therefore detect small differences (e.g. the RCT by Fisher et al. observed 1,017,600 opportunities for hand hygiene using an automated detection system while the cluster RCT by Mertz et al using direct human observation still observed almost 8000 opportunities).

As stated above, I will point out that:

1. In the FIT trial (ref 31) the increase in hand hygiene associated with the intervention was only 7% to 9% and in the intention to treat analysis was seen only in the ICU setting and not in the ward setting.

2. In the cluster RCT by Mertz et al. (ref 34) hand hygiene increased only 6% and there was no difference in their infection outcome (hospital acquired MRSA colonization) suggesting either that hand hygiene is not effective in reducing MRSA colonization, or that a larger improvement in hand hygiene is required to see a benefit.

3. In the RCT by Fisher (ref 30) the abstract described a 6.8% increase in hand hygiene compliance but this result is not presented anywhere else in the paper. Much of the apparent benefit appeared to be due to a drop in compliance in the control arm.

Page 11, paragraph 4: The authors note that in 11 of 19 comparisons among the time series analyses, hand hygiene was falling prior to the intervention. Does this suggest a bias or regression to the mean phenomenon? Was hand hygiene rising in the other 7 or was it stable? Does this suggest that the 'control' arm or 'baseline' arm was not actively engaged in hand hygiene improvement and does that complicate your classification of the control arm hand hygiene promotion strategy in that the strategy may no longer have been 'active'?

Page 12, paragraph 2: It is stated that Mayer et al [ref 59] used an 'appropriate' analysis. This term is vague and is not used consistently in the paper to describe other studies.

Page 13, paragraph 2: it is stated that "…all intervention strategies were associated with an improvement in hand hygiene compliance compared with T1". However, for interventions T2, T3 and T6 in the figure appear to have confidence intervals that cross over with T1. Perhaps this statement should be softened to indicate that there was a trend to benefit for all interventions? In the network meta-analytic framework, what is the criteria to define an intervention 'associated with' improvement and can this be stated explicitly in the methods?

Page 13: A system of naming ITS interventions as T1 through T12 is introduced. Despite the table that explains these terms, it is hard to keep track of the correlation between the name and the intervention. It would be better to use abbreviations that captures the nature of the intervention itself (e.g. WHO-5+I could be used to indicate a study using the 5 WHO interventions plus incentives).

Discussion

Page 15: The limitations of the study are well described. Two additional limitations that perhaps should be discussed include:

1. Because the network analysis compares a new intervention with a baseline intervention is this a limitation because more energy and attention may be directed to the new intervention while the control intervention is 'old news'? is the benefit seen with almost any intervention described here (compared to baseline) simply a reflection that a new intervention will lead to a transient improvement in hand hygiene?

2. The limitations of direct observation as a means of recording hand hygiene are not discussed, particularly with regards to observation bias (Hawthorne Effect) and how it might complicate the interpretation of this data.

Page 15, paragraph 2: It states that there is no asymmetry in the funnel plot. To my eye the plot does look somewhat asymmetric. Is there a more objective measure that can be used to determine if asymmetry or potential publication bias was present? A priori, one might expect that this is a field where publication bias is quite likely to occur.

Conclusions

The conclusions are clear and follow logically from the results.

Figures and Tables

Figure 1 should provide the rationale for excluding studies to get from 136 to 36 studies (this is provided in appendix 5 but could be easily summarized here as there were a limited number of reasons for exclusion).

Matthew P. Muller, MD, PhD, FRCPC
Medical Director, Infection Prevention and Control, St. Michael's Hospital
Assistant Professor of Medicine, University of Toronto

Additional Questions:
Please enter your name: Matthew P. Muller

Job Title: Medical Director, Infection Prevention and Control

Institution: St. Michael's Hospital, University of Toronto, Toronto, Canada

Reimbursement for attending a symposium?: No

A fee for speaking?: No

A fee for organising education?: No

Funds for research?: No

Funds for a member of staff?: No

Fees for consulting?: No

Have you in the past five years been employed by an organisation that may in any way gain or lose financially from the publication of this paper?: No

Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this paper?: No

If you have any competing interests (please see BMJ policy) please declare them here:

Reviewer: 3

Recommendation:

Comments:
BMJ – Stats Review

This Systematic review evaluates the evidence for hospital hygiene promotion with particular emphasis on that identified for WHO-5 (System change, Education, Feedback, Reminders, and institutional safety climate). Reduced evidence was identified from RCTs but the inclusion of other study designs, in particular Interrupted Time Series, provides more information about the comparative effectiveness of several strategies. There is a major issue in that the current use of Network Meta-analysis given the sparse data is not adequate. This is highlighted by the estimate obtained for T8 (obtained from a double indirect comparison: T8 vs T3, T3 vs T11, T11 vs T1).

One potential solution is to drop altogether the NMA and focus only on the direct pairwise comparisons while an alternative is to restructure the current network and reclassify the interventions into 4 categories:T1, T2 to T6, T7, T7+. This way, a complete network could be created (leaving nodes not in the network out, such as T4, T5, and T8) and a comparison of WHO5 vs. None, WHO-5 vs WHO-5+ could be made. From the Introduction and the Discussion, this appears to be the main focus of the paper. The choice will clearly depend on the coherence of this grouping. If not appropriate, please drop the attempt to use NMA and just report pairwise comparisons. Clearly this change will mean a readjustment of the rest of the paper.

Please also provide a reference for the analysis of the ITS presented in Appendix 3.

Additional Questions:
Please enter your name: Rafael Perera

Job Title: Professor of Medical Statistics

Institution: University of Oxford

Reimbursement for attending a symposium?: No

A fee for speaking?: No

A fee for organising education?: No

Funds for research?: No

Funds for a member of staff?: No

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If you have any competing interests (please see BMJ policy) please declare them here: none

END

Date Sent: 21-Apr-2015