Author's response to reviews

Title: Evidence-Based Medicine among Internal Medicine Residents in a Community Hospital Program Using Smart Phones.

Authors:

Sergio A Leon (sleon@mail.nih.gov)
Paul Fontelo (fontelo@.nlm.nih.gov)
Linda Green (green_linda@hotmail.com)
Michael Ackerman (ackerman@nlm.nih.gov)
Fang Liu (fliu@mail.nih.gov)

Version: 3 Date: 26 January 2007

Author's response to reviews: see over
We want to thank the reviewers for their thoughtful review of our document and the productive annotations. We express thanks to Dr. Maviglia, Dr Ammenwerth, and Dr Aggarwal for the acceptance of the manuscript.

We have revised the manuscript and addressed the issues raised by Dr. Pluye and Dr Ammenwerth and included their comments. The revisions are outlined below.
Reviewer #1: Saverio Maviglia

* Major Compulsory Revisions. (That the author must respond to before a decision on publication can be reached)
None

* Minor Essential Revisions. (Such as missing labels on figures or the wrong use of a term, which the author can be trusted to correct)
None

* Discretionary Revisions. (Which the author can choose to ignore)
None

Reviewer #2. Elske Ammenwerth

* Major Compulsory Revisions. (That the author must respond to before a decision on publication can be reached)
None

* Minor Essential Revisions. (Such as missing labels on figures or the wrong use of a term, which the author can be trusted to correct)

Reviewer 2_1)
You have some focus on the differences between interns and residents. You should add this to your objectives and explain why you had a closer look at this.

Authors Response 2_1)
We added to our objectives that we wanted to see “if there were any differences among the group related to the level of training” (Last paragraph of the background section). In the Results section (Second paragraph, page 5) as well as in the Discussion section (First paragraph, page 7) we have already discussed some of the differences we found.

Reviewer 2_2)
Pre-study survey: "60 physicians responded" - please make clear what the return rate was.

Authors Response 2_2)
This paragraph has been modified: “The initial survey was given to 63 physicians and completed by 60; five faculty attendings and all 55 residents rotating in the internal medicine program during July and August 2005,” (Results section, first paragraph, page 4)

Reviewer 2_3)
Post-study survey: 31 responded, but how many used the PDA, so what was the return rate?

Authors Response 2_3)
This point was also clarified: “From the group of 55 residents that answered the pre-study survey, 31 used the smart phones during the seven-month study period – 13 in the
PostPGY1 group and 18 in the Interns group. All of them filled the post-study evaluation” (Results section, smart phones usage evaluation, first paragraph, page 6)

**Reviewer 2.4**
You focus a lot on pre-study internet usage. However, you should make clear that the respondents of your pre-survey are different from those of the post-survey.

**Authors Response 2.4**
In the results section we modified the paragraph mentioned in the previous comment (2.3): “From the group of 55 residents that answered the pre-study survey, 31 used the smart phones during the seven-month study period” (Results section, smart phones usage evaluation, page 6)

**Reviewer 2.5**
In addition, for general internet usage, a lot of comparable surveys are available, and you cite some of them (e.g. [5]). In the discussion, you should add a paragraph to show how your pre-study data is comparable/different to other surveys, to show whether your participants are typical clinical Internet users.

**Authors Response 2.5**
We addressed this issue in the first paragraph of the discussion section (page 7): “Our finding of 100% Internet use by physicians and 95% on a daily basis concurs with other surveys showing the trend towards a wide use of the Internet by clinicians in their daily practice [6, 7].”

**Reviewer 2.6**
Do you think the abbreviation PostPGY1 is a good choice that is clear to the reader? Why not name it comparable of the other group (Interns group) in a clearer way?

**Authors Response 2.6**
We clarified the definition of the two groups in the results section: “They were divided in two groups based on the specialty level of training and practice, 24 were new first year residents (Interns group) and 36 were senior residents or staff attendings (PostPGY1 group).” (Results section, first paragraph, page 4)

**Reviewer 2.7**
In table 2, for the interns group, the sum of percentages is not 100%

**Authors Response 2.7**
Thank you for pointing out this mistake, table 2 was corrected.

**Reviewer 2.8**
In table 1 and 4, the absolute numbers are missing (just the percentages are indicated)

**Authors Response 2.8**
These two tables report results of questions asking participants about proportions or percentage of distribution of activities on the Internet, therefore we don’t have absolute numbers for them.

**Reviewer 2.9**
In table 4, please add the explanations that you had in the questionnaire (e.g. what personal information means)

**Authors Response 2.9**
In table 4 we added additional information given. E.g.: Personal information (e-mail, etc.)

**Reviewer 2_10**
For all tables: please add the information in case multiple selections were possible.

**Authors Response 2_10**
In all tables we reported the complete options that were given in the questionnaire.

**Reviewer 2_11**
Table 12: the title of this table does not match the question in the questionnaire “information was used” is very much different from “information has an impact”! Please harmonize the wording.

**Authors Response 2_11**
The title of the table was modified to match the original question: “Table 12. Smart phones usage evaluation. How often did the information have an impact in the diagnosis or management process?”

**Reviewer 2_12**
In the results, you write that none used PDA for internet access, however, in Table 10, there is one using physicians indicating using PDA for internet and e-mail.

**Authors Response 2_12**
In the initial survey we asked about general uses of PDAs: schedules, address book, calculator, pharmacopeias, medical references, text processing, clinical tools, email, internet, patients tracking, others. (Question 20, Appendix 1)
In the smart phones evaluation we asked specifically about Internet access from smart phones during daily clinical activities. (Question 1 and 2, Appendix 2)

* Discretionary Revisions. (Which the author can choose to ignore)
None

Reviewer #3. Pierre Pluye.

* Major Compulsory Revisions. (That the author must respond to before a decision on publication can be reached)

**Reviewer 3_1**
The paragraph “Smart phones-new hybrids (…) academic activities” might be used as an introduction, and moved before the Background section.

**Authors Response 3_1**
For the manuscript we followed the template of BMC medicine journals. In this format the only section available before Methods is “Background”. The mentioned paragraph contains the objectives of the project, therefore we feel that this is the optimal placement for this paragraph.
Reviewer 3.2
Thanks to reviewers who asked questionnaires, I see now that the authors do not only report a cohort study. Their manuscript reports both (1) a cohort study on the use of ‘Pubmed for Handhelds’—log reports—, and (2) a cross-sectional study (survey) on the use of smartphones and Internet, and on the perceived impact of information derived from Internet using smartphones. What are the linkages between the cohort study and the cross-sectional study since the questionnaires are not driven by log reports of the use of ‘Pubmed for Handhelds’? This may be clarified. E.g. authors may present their method and results in two parts: Part 1. Cohort study; Part 2: Cross-sectional study.

Authors Response 3.2
We have clarified the two main components of the project in the methods section, second paragraph, page 3 “The study had two main components, an initial cross-sectional survey to assess the patterns of Internet and handhelds usage by residents and attendings working in the internal medicine department, followed by a prospective interventional cohort study to address the feasibility of using smart phones to access online medical resources during daily clinical activities.”

In the results section (pages 4, 5 and 6) there are different subtitles for the pre-study Internet and Handhelds survey and for the evaluation of the smart phones study.

In the discussion section (pages 7 and 8) we added subtitles for the Pre-study survey and for the smart phones evaluation.

Reviewer 3.3
The authors define “effectiveness” in the discussion section, while such definition should be in the method section. However, questionnaire and results do not match their definition. Thus, I suggest Authors clarify this issue, and e.g. simply state that they examined a global self-reported cognitive impact of information derived from Internet (attitudes). This may be clarified in the method, in the results and in the discussion.

Indeed, authors may still interpret their results in terms of effectiveness, but I see this more as a limitation rather than a contribution of their study. An effective search for information is usually supported in the literature using in-depth qualitative research (e.g. combining log-reports, observations and interviews concerning specific searches for information) or more “objective” outcomes (e.g. coupling log-reports and chart reviews for each participant). Illustration of the gap between the definition & data collection & results regarding the notion of “effectiveness”: Authors said that “In the study, we considered a search as "effective" when the information retrieved using smart phones resolved the specific clinical question and could be used in the team's discussion at the bedside regarding the diagnosis or management of a patient. In academic activities, the "effectiveness" of the information was considered positive if it generated discussion or contributed new ideas during conferences or brought up new medical advances.”

However, the survey question was “The information obtained had impact in the diagnostic or management process: (Always to Never)”. Answers to this question do not really match the Authors’ definition of “effectiveness.” Thus, the Results section can hardly support any strong statement on effectiveness of participants’ searches. “Sixteen physicians (52%) considered that the information obtained at real-time “frequently” had an impact in the diagnostic or management process of patients whereas for thirteen participants it happened “sometimes” (42%) and “rarely” or “never” only for two physicians from the Interns group [Table 12].”
Authors Response 3_3)
As suggested by the reviewer, we moved the definition of the search effectiveness to the Methods section (Last paragraph, page 4). We also added to the same paragraph the statement recommended by the reviewer about the “global self-reported cognitive impact of information”. In addition, the paragraph in the discussion section about the evaluation of the smart phones usage was modified by adding the suggested comment (Third paragraph, page 8).

Reviewer 3_4)
I did not find in the Method section and questionnaires, the questions that led to the following statement in the result section: “The information retrieved from the Internet was used not only to discussions about specific cases but also to review topics with attendings, update individual knowledge and prepare academic activities such as morning reports, journal clubs and noon conferences.” This may be clarified.

Authors Response 3_4)
This information was obtained from the free text comments section at the end of the evaluation questionnaire. (Question 16, Appendix 2). We moved this statement and placed it with other comments about the project in the results section (last paragraph, page 6).

Reviewer 3_5)
A sentence has to be modified in the discussion section since I believe that Authors did not systematically examine the impact of each search for information, but globally assessed the participants’ self-reported impact of information derived from an unknown set of online searches. E.g. I do not see the data or results that support the following statement “approximately two-thirds of the searches were perceived useful for the physicians”. If my comment is wrong, Authors may explain this in the result section. If my comment is correct, then the sentences “The post-study evaluation revealed that approximately two-thirds of the searches were perceived useful for the physicians and about half of them reported an impact in the diagnostic or management process. Although this is a complex area to evaluate in this type of project or based on respondents’ judgments, these values are higher than previous reports of observational studies suggesting that nearly one-third of searches using information retrieval technology may have a positive impact on physicians [16].” may be replaced by e.g. “Our results indicate that about half of participants reported a global impact of their online searches in the diagnostic or management process. Although this is a complex area to evaluate, a systematic review of observational studies suggested the proportion of physicians who report such positive impact varies between 25% and 93% depending on the study, while nearly one-third of searches using information retrieval technology may have a positive impact on physicians [16].”

Authors Response 3_5)
According with the reviewer’s suggestion, we modified this paragraph in the discussion section about “evaluation of smart phones usage” (Third paragraph, page 8), but the range of variation of physicians reporting a positive impact we found in the mentioned reference was between 20% and 82% instead of 25% to 93% (Reference 16, table 3).
Reviewer 3_6)
Discussion: As mentioned in comment # 3, the methodological limitation is not only the lack of randomization, but may also be seen as a lack of qualitative data analysis that may help better understand the use and impact of information derived from Internet using smart phones.

Authors Response 3_6)
The lack of qualitative data analysis has been added to the limitations of the study in the last paragraph of the discussion section (page 9) as suggested by the reviewer.

* Discretionary Revisions. (Which the author can choose to ignore)
None

Reviewer #4: Rajesh Aggarwal

* Major Compulsory Revisions. (That the author must respond to before a decision on publication can be reached)
None

* Minor Essential Revisions. (Such as missing labels on figures or the wrong use of a term, which the author can be trusted to correct)
None

* Discretionary Revisions. (Which the author can choose to ignore)
None