Author's response to reviews

Title: Novel Electronic Refreshers for Cardiopulmonary Resuscitation: A Randomized Controlled Trial

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Version: 2 Date: 2 October 2012

Author's response to reviews: see over
Dear BMC Emergency Medicine Editorial Team:

Attached is the revision of the manuscript, “Novel Electronic Refreshers for Cardiopulmonary Resuscitation: A Randomized Controlled Trial.”

We appreciate the careful comments made by the reviewers; the responses to the comments are detailed below.

Reviewer's report (#1)
Version: 1 Date: 5 April 2012
Reviewer: Suzie Kardong-Edgren

Major compulsory revisions

Comment: The abstract is much more clear than the manuscript on what you actually did, at this point. The study purpose is not clearly stated the first time in the paragraph, right before methods. The next time the study purpose is discussed it appears in the statistical analysis section under the heading hypotheses, and is now stated as hypotheses and …a secondary hypothesis is mentioned for the first time. Clearly stating the research questions or hypotheses early on will prepare the reader for what is to follow. As a reader, I should not be surprised later in the manuscript.

Response: The study hypotheses are now stated in the Background paragraph coming before Methods (p. 6, lines 62-66).

Comment: The study would benefit greatly from theory use. Why would you think these brief Reminders sent electronically might work? I can think of at least 2 theories you could use to support your brief refreshers enhancing cognitive, psychomotor and affective skills. You sort of address theory in a paragraph under heading measures, but it is out of place there; it should be earlier and developed. Name the behavioral theorists.
Response: The theoretical basis of the interventions was Bandura’s social-cognitive theory, which is now more explicitly referred to in the Background (p. 5, lines 23-30). The Background also provides more detail about the rationale for and past research with these specific types of electronic health communications (pp. 5-6, lines 43-49). All theory and literature review are moved to the Background.

Comment: The idea that passive reading and refreshing could improve psychomotor skills seems very incongruous to this reader/researcher in CPR. Do you really mean that subjects would remember the sequencing, number of times to do what, when they refreshed or had to do CPR? I would consider fleshing out that assumption or reframing it a bit.

Response. We have added our basic assumption about why the refreshers would be expected to be effective: “Our basic assumption was that various electronic modalities can actively direct the attention of prior trainees to messages designed to help them in recalling correct CPR techniques. Such electronic refreshers are hypothesized to aid in retaining CPR administration skills, confidence in performing CPR and intention to perform CPR when needed” (p. 5, lines 33-42). Prior trainees initially learned the sequencing and number of times to do what; the refreshers were aimed at helping them to recall this prior learning. Of course the limitation of this approach is that it does not include renewed CPR practice. That is the study question – can electronic CPR refresher information be effective without an element of actual practice (which is impractical to arrange)?

Comment: Third paragraph under Methods section- would be clearer if you said Using clear concise visual depictions, each of the 4-5 refreshers reviewed the 5 …

Response: The sentence has been revised as recommended (p. 7, line 69).

Comments: In section for study conditions- It is not clear how many emails or cell phone calls were sent. Define a series, for both of your Trial 1 and 2 time periods.

Response: We have added this information for each refresher (p. 7, line 75, line 88; p.8, line 94). We also note the sets of refreshers were the same for each refresher episode in Trials 1 and 2 (p. 10, lines 135-136).

Comment: I had to look up leptokurtic to know what it meant. You might want to include a few words explaining that your data was centered around the mean, in R/T the word leptokurtic, to make your results accessible to more readers. Most folks will probably not take the time to look up words.

Response. We don’t need to state “leptokurtic;” terms have been revised and non-essential detail deleted to make the statistical results more accessible (beginning p. 14, line 225).
Comment: The self efficacy tool had a 9 possible total, right? So your median was 3.6 and mean was 3.13- out of 9?

Response: No, we see now that the scoring was inadequately explained in the paper. Each self-efficacy item was rated as follows: “not at all confident” (=0), “slightly confident” (=1), “moderately confident” (=2), mostly confident (=3), and “totally confident” (=4). The respondent’s scores were averaged across the nine items to produce a continuous self-efficacy score ranging from “0” (lowest confidence) to “4” (highest confidence). So self-efficacy was relatively high at both administrations. This is now added to the text (p. 11, line 156-162). Note in response to reviewer #2, we changed the term “self-efficacy” to “confidence.”

Comment: The same for behavioral intent…it is a 21 item tool and 2.89/21, right?

Response. No, same issue, the scoring was inadequately explained in the paper. Each behavioral item was rated using the following responses: “definitely not” (=0), “probably not” (=1), “not sure” (=2), “probably yes” (=3), and “definitely yes” (=4). The original 21 items were reduced to 10 using psychometric criteria as explained in the text. The final scale contained 10 items whose responses were averaged across the items to produce a continuous behavioral intent score ranging from “0” (lowest behavioral intent) to “4” (highest behavioral intent). Thus, behavioral intent could be considered to be in the medium range (2.89, 2.42) at both administrations. Revisions were made on p. 11, line 163-169.

Comment: The discussion section is weak and could be developed much more. Findings should be discussed in R/T your theory…which you alluded to but did not develop earlier. So develop it and then discuss it here. Younger, more education and white- meant they did better. Develop this thought line more in discussion.

Response: The Discussion has been rewritten to relate the findings to social-cognitive theory and to improve the interpretation of the findings. See especially p. 17, lines 293-298 and p. 18, lines 318-322.

Comment: The discussion about why web was effective was lacking. Develop this more.

Response: This has been augmented – p.17, lines 299-306.

Comment: The directions for future research as written had nothing to do with your independent variables. Future research should be addressing this use of technology I think, you went off on a tangent here. I do not see the same degree of thought and care in your discussion, as I do in your reporting of findings. This novel approach deserves better treatment.

Response: The tangential recommendation has been eliminated. Future research directions have been rewritten – pp. 19-20, lines 345-356.
I guess in the original version it came through pretty strongly that we were disappointed in the results; the revision is more balanced in discussing both negative and positive results.

Discretionary Revisions

Comment. Consider adding the word electronic to your title, so it more clearly addresses what you did.

Response: The title now is: “Novel Electronic Refreshers…”

Comment. You might also have framed your three dependent variables in terms of cognitive, psychomotor and affective evaluation also.

Response. We decided to revise without these particular terms.

Reviewer's report (#2)
Version: 1 Date: 19 May 2012
Reviewer: Douglas Chamberlain
Reviewer's report:

This reviewer was therefore disappointed to find that the full paper did not provide an engaging read. Few with an interest in teaching resuscitation would persevere beyond the Background section through the 10 pages of Methods and the complex presentation of Results. The study should be written in a way that can reach this group, else it would have little value. Much work has been put into this trial, and I am truly saddened that I cannot recommend it in its present form. The approach resembles that of a dissertation presented for an academic degree; but even for this purpose, the unnecessary repetitions would seem tedious. Much of the Methods section does not relate strictly to methods as one should expect. Statistical analysis is important but again the approach here is beyond that which is appropriate for Healthcare Professionals, suitable perhaps for a Dissertation.

Response: We agree that the presentation of the paper needed to be improved; we have attempted to do so. For instance, purely statistical detail has been minimized.

Comment: I believe this basically interesting trial could be presented in less than half the number of pages taken in the article as it stands and could be much more, not less, informative as a result.

Response: The first reviewer recommended revisions that involved adding some text (more discussion was requested), but we also eliminated redundant or unneeded text. The narrative (Background to Discussion) is about 4 pages shorter and overall we hope it reads better now.
Comment: I have a few points that may be worth mentioning at this time. The term ‘self-efficacy’ is confusing. I thought at first it meant ‘competence’ but it seems to mean ‘confidence’. Confidence is indeed mentioned in the second paragraph of the Background section, but I interpreted this on first-read as an additional item.

Response: “Self-efficacy” is defined as belief in one’s ability to do something. We take this comment to mean the intended audience would prefer the term “confidence” – it does mean the same thing – so we have changed the term to “confidence” throughout.

Comment: The descriptions of Trial 1 and Trial 2 were unnecessarily complex, given that they were basically similar apart from the repetitions.

Response: That is true. We have simplified the description of the Methods in many respects. E.g., the description of the two trials (pp. 9-10, lines 123-138).

Comment: The list of references was relatively long from a range of sources and disciplines but I found this helpful. I checked some, not all. Most were accurate but there were minor spelling errors of names in refs 6 and 8. In reference 7, the volume number was cited incorrectly.

Response: I apologize, the references should have been proofed better; corrections have been made. All citations have now been double-checked against PUBMED.

Comment: If a detailed critique were to be offered, it is a great help for lines to be numbered. Different computer formats make it impractical to cite comments by page number.

Response: Line numbers have been added.

Note: The order of the authors has changed at the instruction of the Principal Investigator Prof. Miller.

Stephen Magura, Ph.D., C.S.W.
Director