Author’s response to reviews

Title: Promoting sustainability in quality improvement: An evaluation of a web-based continuing education program in blood pressure measurement

Authors:

Lauren Block (lblock2@northwell.edu)
Sarah Flynn (sflynn9@gmail.com)
Lisa Cooper (lisa.cooper@jhmi.edu)
Caroline Lentz (clentz@jhmi.edu)
Tammie Hull (thull1@jhmi.edu)
Katherine Dietz (kdietz4@jhmi.edu)
Romsai Boonyasai (romsai@jhmi.edu)

Version: 1 Date: 05 Sep 2016

Author’s response to reviews:

September 5, 2016

Dear Dr. Halcomb and Reviewers,

Thank you for your helpful review of our manuscript, “Promoting sustainability in quality improvement: An evaluation of a web-based continuing education program in blood pressure measurement.” We appreciate your comments and feel the revision has improved our paper. Please find below editor and reviewer comments in bold as well as our response to each comment, and text identifying changes that have been made in response to the comments. An updated paper with track changes is attached to this application for your review.

Editor's comments:

1. The abbreviations and order of table numbers should be generally reviewed again.

Our response: Thank you. We have reviewed the abbreviations and revised the included list of abbreviations. We have also reviewed and revised table numbers in the text and appendices.
2. In the discussion; It should be expressed more clearly the final sentence of the second paragraph starting with "Direct observation data revealed that while performance of certain techniques…." (p.12, lines 49-54)

Our response: Thank you. We agree this sentence was unclear as previously written. We amended this sentence to be clearer with regards to outcomes observed during the study. In the Discussion we also detail potential reasons that performance of certain behaviors may have decreased subsequent to the intervention.

Discussion, “Direct observation data revealed that following completion of the program clinical staff was significantly more likely to explain the protocol to patients, provide a rest period prior to blood pressure measurement, and measure and record the average blood pressure, but less likely to measure blood pressure with the arm at heart level and to use the right arm to measure blood pressure.” (p. 12)

Also in Discussion, “Subsequent to the training, staff was less likely to use the right arm for blood pressure measurement and to support the arm at heart level. This latter point may be due to the incorrect response recorded during the pre-assessment. Failure to emphasize this information in the training program may also be responsible. Studies of both online and in-person training programs have described a decrement in immediate post-program knowledge gains back to pre-training values several months following the program, indicating a role for supervised practice to promote knowledge retention [24,25].” (p. 14)

Reviewer #2:

1. Background - The 3rd and 4th paragraphs on sustainability, institutionalisation and routinisation are too detailed and interrupt the flow of this section, suggest reducing it to a single paragraph.

Our response: Thank you for this recommendation. We agree this was wordy and condensed paragraphs 3 & 4 into a single paragraph. We also condensed paragraph 5 to improve flow.
Background, “Sustainability, defined as “making an innovation routine until it reaches obsolescence,” may be conceptualized as depending on two conditions: institutionalisation and routinisation [15,16]. Institutionalisation refers to the process by which organizations provide the resources and conditions needed to support a new practice. Routinisation refers to the process by which a new practice becomes a routine activity for workers within that organization. In other words, a program’s sustainability depends both on the extent to which an organization integrates a new practice into its physical infrastructure, policies, and management activities; and on workers developing a culture in which the new practice is treated as, “the way we do things here.” Although both conditions must be present to ensure a new practice’s sustainability, organizational leaders typically have more direct control over processes related to institutionalisation [16]. (pp. 4-5)

Web-based training has gained popularity as a modality for delivering up-to-date, standardized, accessible content that can be integrated with existing training systems, facilitating both institutionalisation across multiple sites and routinisation [17].” (p. 5)

2. Methods - It is not clear how sustainability of the intervention was measured, given it is one of the two main aims of this manuscript

Our response: Thank you for this question. This manuscript details the testing of this continuing education program in terms of changes in short-term knowledge, attitudes, and behaviors of clinical staff. As discussed in our Background section, sustainability consists of institutionalisation and routinisation, the former being the more easily modifiable by organizational leaders. This paper mainly comments on the institutionalisation, rather the routinisation of the program. We added a comment on this to the introduction.

Since the evaluation reported in this paper was done, the program has been used annually for the past three years (2014-16). We added this information to the discussion. We can provide information on pre- and post-program knowledge and attitudes for the years 2014-16 should the Editors request this. We include in the limitations section the fact that this study had a short follow-up time and maintenance of knowledge gains was not assessed.
Background, “In this paper we report on the effectiveness as well as the institutionalisation of this intervention.” (p. 5)

Discussion, “Since adoption, this program has been used annually for four years to train and retrain staff at the six sites, demonstrating the routinisation of the initiative.” (p. 13)

Discussion, “Limitations to this study include short follow-up time to assess knowledge, attitudinal, and behavioral outcomes, and a single health system in one specialty. We do not know the generalisability of our findings to other specialties or practices, nor whether knowledge gains were maintained among staff.” (p. 14)

3. Discussion: - Does this study add any new knowledge to this area? If not, what is the significance of the outcome of this study?

Our response: Thank you for making this point. This is an important piece to include in our manuscript. We added a point about the novelty of this paper to the Discussion.

Discussion, “To our knowledge, this is the first published study to address use of an online educational program towards sustainable quality improvement across a health system.” (p. 15)

4. Tables: 'Time at practice site' would be a better header than 'years at practice site' in Table 1 (since some participants have been there for less than a year)

Our response: Thank you for this point; we changed this header.

5. Table 3 is presented before table 2

Our response: We thank the reviewer for catching this; we changed the numbering of the tables.
6. General: Some spelling errors and the style of English (American to British) need to be modified

Our response: Thank you; we corrected these errors where we found them throughout the text. We appreciate the advice of the Editors if there are remaining stylistic (American to British English) edits needed.

Reviewer #3

1. In the results section of the abstract and body the term "medical staff" should be revised to something that is more appropriate for nurses and medical assistants neither of whom are medical staff

Our response: Thank you for bringing this up. We changed the term throughout to “clinical staff” which we believe is a more widely used term. We are happy to change this terminology if requested.

2. It is not clear from the abstract whether there were any differences between nurses and medical assistants

Our response: Thank you. We added this information to the abstract.

Abstract, “Licensed practical nurses and staff who had been in their current job at least a year were more likely to answer questions correctly than registered nurses and those in their current job less than a year, respectively.” (p. 2)

3. Given the involvement of nurses in the project the literature on nurses measurement of BP should be cited in the background

Our response: Thank you. We include literature on nurse measurement throughout the Background, and made this more explicit in the initial paragraph of the Background.

Background, “Office-based blood pressure measurement is variable, even among clinical staff accustomed to measuring blood pressure [1-3]. Failure to adhere to American Heart Association
blood pressure measurement guidelines has been shown for practicing primary care physicians and nurses [2,4]. Poor measurement technique can lead to both under- and over-treatment of hypertension, and may contribute to suboptimal control [4]. Lack of supervised training, knowledge of correct technique, and degradation of knowledge and skills have been cited as contributing factors [5-8]. Staff training programs may minimize measurement error, especially when integrated with the use of automated blood pressure devices [9,10] as part of comprehensive quality improvement “bundles.” [11,12] (p. 4)

4. The results section should be checked to ensure that all reports of significant associations have a corresponding p value reported.

Our response: Thank you. We added p-values wherever significant associations were reported in the Results section.

Results, “LPNs and staff who had been in their current job at least a year were more likely to answer questions correctly than RNs (p<0.01) and those in their current job less than a year, respectively (p=0.04).” (p. 10)

5. The classification of staff is not mentioned in the observations results section and this should be amended.

Our response: Thank you. Some of the sites we observed had few nurses and medical assistants. To ensure confidentiality for these nurses and medical assistants, observers were not asked to record the classification of staff (RN vs. LPN vs. medical assistant). We include as an appendix our observation form, which did not ask observers to collect this information. We added this limitation to the methods.

Methods, “Information about the staff conducting the blood pressure measurement was not recorded.” (p. 8)
We look forward to hearing from you and are happy to make any further changes as recommended by your team.

Best regards,

Lauren Block MD MPH
Hofstra Northwell School of Medicine
2001 Marcus Ave, S160, Lake Success NY 11042
P (516-519-5600) F (516-519-5601) E (lblock2@northwell.edu)