Reviewer's report

Title: Can the effects of the Mobilization of Vulnerable Elders in Ontario (MOVE ON) implementation be replicated in new settings: An interrupted time series design

Version: 0 Date: 12 Oct 2018

Reviewer: Jennifer Brach

Reviewer's report:

General Comments

I thank the authors for the privilege of reviewing this paper. The aim of this study was to tailor, implement, and evaluate the effect of a previously established hospital-based intervention, MOVE ON. This intervention was designed to increase the mobilization of older patients, thereby reducing length of stay and preventing unfavorable discharge destinations (eg, nursing home). Overall, this manuscript is well-written, but there are some issues that need to be addressed to improve the overall quality of this work.

First, the method in which the main outcome, mobilization of patients, was measured has significant limitations. In this study, researchers conducted visual audits on 2 days/week to assess mobilization status; if patients were out of bed (either seated, standing, or walking) during 1 of 3 audits for a given day, they were considered to be 'mobilized'. This method is limited in that it 1) does not capture the volume or intensity of mobilization; 2) does not align with what the authors describe as the goal of the intervention ["mobilization should occur at least three times per day" (line 150)]; 3) may not be a sustainable form of monitoring mobilization as a process measure in the hospital setting, which is important for implementation efforts to be successful.

Second, the results of this study should be stated more conservatively, particularly regarding the 'length of stay' outcome, but also in certain places of the 'patient mobilization' subsection. Wherever results are listed, an acknowledgement of the statistical significance (or lack thereof) should be stated.

Third, other outcome measures, in addition to length of hospital stay and discharge destination, are noticeably absent. There is research to support (which was cited by the authors in the Introduction section) that early and more frequent mobilization may improve the incidence of hospital-acquired pneumonia and deep venous thrombosis. The authors’ work would benefit from acknowledging this as a limitation and an area of future study.

Please refer to specific comments below.
Specific Comments

Introduction—

The central argument here is clear and compelling; the knowledge gap is well-defined, which justifies the purpose for this study.

There are some minor syntactical/grammatical errors:

Line 82, there is an extra comma after 'pneumonia'

Line 87, please add 'the' between 'in' and 'hospital'

Line 99, please select 'achieved' or 'done', the other should be removed

Methods—

Mobilization of patients was assessed by visual audit (3x/day, 2x days/week). Patients were considered 'mobilized' for a given day if they were out-of-bed (seated, standing, or walking), and then mobility status was averaged for the week from the two audited days (lines 192-195). Although the authors provide evidence to support the reliability of this measurement method, I question the validity. First, this method does not consider the amount or intensity of mobilization that the patients received. For example, if patient A walks 100 feet in the hallway and patient B just moved from bed to chair, this is clearly different and would most likely yield different health benefits. However, under the current operational definition, they would be classified the same. Moreover, this method does not appear to match the goal of the intervention. The authors state that they believe that mobilization should occur 3x/day (line 150). The current method does not account for the frequency in which patients are mobilized, despite the fact that audits occurred 3x/day. This should be acknowledged as a limitation, and some justification should be provided.

In addition, percent of patients mobilized is considered a process measure (ie, a measure that is a specific step in the process that should ultimately lead to a positive outcome, such as decreased length of stay) (Lilford 2007 - Use of process measures to monitor the quality of clinical practice). For hospitals to implement, sustain, and evaluate the quality of this intervention, they should be able to easily evaluate their process measures. The visual audit method used in this study requires extensive resources, which may be burdensome to health system administration, staff, and clinicians, and thus limit the sustainability of the intervention. The authors would benefit from acknowledging this limitation, and the authors should consider future studies that incorporate mobilization reporting in patients' electronic health records to enhance the sustainability of MOVE ON.

In lines 162-164, the authors discuss selecting a tool to help assess patient's mobility. It is unclear how this tool was used in the context of this study.
In line 173, the authors state that palliative patients were excluded from the study. Although it is fairly obvious (more mobility may not mean lower length of stay for patients), please provide the rationale for this exclusion criterion.

Results (including Tables and Figures)—

In lines 274-275, the authors the that, "a significant increase in mobilization was observed during the first eight weeks..." Please provide the p-values for this statement in the text of the manuscript.

In 'Secondary outcome: Length of Stay' subsection (lines 284-285), please preface that all changes here were not statistically significant in nature. Then, I think it is OK to go to on to point at the 'trends' seen in the analyses.

In lines 295-297, the authors state that the decreasing trend post-intervention [for length of stay] correlates with patient mobilization. To my knowledge, however, the authors did not employ a form statistical test to assess the correlation between the two. Unless a formal statistical assessment can be performed, please revise this statement to say 'upon visual inspection of the data, it appears that a decreasing trend in LOS corresponded with an increasing trend in mobilization'.

Discussion—

In line 312-313, the authors state that there 'was a significant decrease in length of stay during the intervention'. The word 'significant' lends the reader to believe that the decrease was statistically significant. Please revise this sentence.

For lines 309-325, please truncate this section to only include interpretation, rather than restating your findings. For example, statements such as, "some sites were able to maintain intervention effects into the sustainability phase, while others experienced declines in mobilization eight weeks post-intervention," is repetitive with the information given in the results/figures.

For line 332, the authors reference their previous study's findings. A p-value is provided for mobilization rates, but the p-value for decreased LOS if left out. As previously mentioned in the comments on the Results section, please provide p-values for LOS analyses, as it can be misleading to the reader.

For lines 345-347, the authors mention a systematic review that only found 14 studies to meet the inclusion criteria specified. Please provide how many studies were evaluated (eg, "14 of ____ studies..."), so the reader does not have to search for the reference.

In the Strengths and Limitations section, please include the limitations concerning the method of mobilization assessment, as discussed in the General Comments and Specific Comments for the Methods section. In addition, it is worth noting that this intervention did not cause a statistically
significant decrease in length of stay. Is it possible that: 1) the sample size was still too small to
detect an effect; 2) the intervention dose needs to be increased to affect length of stay; or 3) other
outcomes may be more susceptible to enhanced mobilization, such as the rate of deep venous
thrombosis or hospital-acquired pneumonia?

Additional—

In the 'Declarations' section, the authors state that, "all data generated or analyzed during this
study are included in this public article." To me, this statement implies that the raw dataset is
available for analysis, but it doesn't seem that the dataset is contained within the supplemental
material. I would encourage the authors to amend this statement to reflect this point.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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If an additional statistical review is recommended, please specify what aspects require further
assessment in your comments to the editors.

I recommend additional statistical review

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