**Reviewer’s report**

**Title:** Impact of training and structured medication review on medication appropriateness and patient-related outcomes in nursing homes: results from the interventional study InTherAKT

**Version:** 0 **Date:** 11 Nov 2018

**Reviewer:** Anne Spinewine

**Reviewer's report:**

The paper describes the effect of an intervention combining education of HCPs in NHs with medication review and information sharing through HIT on appropriateness of prescribing. The paper is well written, this study adds to the current body of literature on this topic. The main weakness lies in the uncontrolled study design. This is acknowledged in the limitations and conclusion as well.

**Main comments**

- The primary outcome measure is appropriateness measured with the MAI. MAI scores at patient and drug level are presented. However, it would be valuable to present additional data on MAI findings, to better understand what lies behind the significant improvements in overall scores. So at minimum, a table with overall ratings for each of the 10 items would be useful. If possible, overall data per ATC level 1 would also be of added value.

- Data on the validity/reliability of MAI measurements should be provided. It is mentioned that several clinical pharmacists were involved. What was their level of training/experience? Which data did they use for their evaluation? Were they blinded with regard to the time information (i.e. did they know what was t0, t1 or t2 data (in that case, knowing that the study was uncontrolled, they might have been biased towards more favorable evaluation for t1/t2 as compared to t0)? Was reliability between raters evaluated?

- Please clarify further the medication review process that was part of the intervention (1158-168): did the GP do a medication review? If so, what level? I suppose they did some form of medication review, because I assume that the medication review level 1 done by the pharmacist is not sufficient enough, as it focused on a limited number of aspects of appropriateness. Please also clarify what support did the HCP have to conduct the medication review (in addition to the training provided at the beginning of the trial).
Other comments

- Background
  - First paragraph: authors mention issues of communication between GPs and specialist physicians. It is therefore unclear that interprofessional communication, as used in the rest of the paper, is also referring to communication between GPs, nurses and pharmacists
  - L74: the Come-on study is also using HIT to facilitate information sharing and communication between HCPs in nursing homes (see protocol paper by Anrys et al)

- Methods
  - As the medication use process in NHs can substantially vary between countries, some background information on this would be useful (e.g. number of GPs, restrictions or guiding for prescribing, role of nurses, pharmacist,…)
  - L117: what does "intensified treatment" refer to?
  - L123: why was isolation an exclusion criterion?
  - L140: 'therapy check process': what is the difference between this term and the term structured medication review that is used in the title and at other places in the manuscript? Please clarify

- Results
  - Table 4. P-DDIs: how were these evaluated? I suppose it is not from the MAI, as the MAI aims to identify actual (and not potential) DDIs. Also, it would be more meaningful to present this data as % of NHRs with at least 1 pDDI

- Discussion
  - L327-329: one possibility to check for this would be to discuss the results of the MAI criterion relative to indication (item 1) and duration (item 9). There might have been missed opportunities to deprescribing for different reasons (HCPs not identifying overtreatment, low perceived self-efficacy to deprescribe,…)
  - L336-337: please clarify. The MAI is a valid tool to evaluate appropriateness, so why would it not be appropriate to evaluation appropriateness for a specific class of medications?
L349: 'onsite training had positive effects on…': no results data have been presented to support this. Please clarify.

L366: I would specify that this is a 'major' limitation (or at minimum, the 'main' limitation)

Another limitation is that - even though the number and types of outcomes evaluated was relatively important - that some other relevant outcomes were not measured. You could refer to the recently validated core outcome sets.

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.

No

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

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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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