Reviewer's report

Title: Development and evaluation of a computerised clinical decision support system for switching drugs at the interface between primary and tertiary care.

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Reviewer: Kurt E Hersberger

Reviewer's report:

The authors report on a web-based decision support system to support drug switching at the interface between primary and tertiary care. They developed a multi-step algorithm as a logical framework, built a CDSS based on that algorithm, implemented it into the CPOE of a hospital, and evaluated benefit and potential harm.

Major Compulsory Revision

A. According to the methods section, evaluation of the CDSS was performed by one clinical pharmacist. According to the results an “expert” evaluated differences between manual and automatic switching. (same person?) Later in the discussion, “experts” evaluated drug switches and an interdisciplinary team is mentioned. This process needs clarification, and if only one clinical pharmacist (=expert) performed the evaluation, this should be discussed as a limitation of the results.

B. The authors correctly distinguish in their algorithm between pharmaceutical equivalents, pharmaceutical alternatives and therapeutic equivalents. The performance of the system improved from version 0.9 to 1.0 ending up with evaluation of 100% correct switches. However, this improvement caused an increase (6.5 to 8.4%) of “no CDSS-switch”. I assume that mostly therapeutic equivalents were concerned. Overall, therapeutic equivalents only represented 8.3 vs. 7% of all switches. And, switching to therapeutic equivalents poses much more challenge for an automatic system and perhaps needs a manual check by an expert. I would suggest some comments on the switching performance of therapeutic equivalents in the discussion and I would consider a watchful follow-up during implementation.

Minor Essential Revisions

A. The authors report main results in the abstracts section, which are difficult to retrieve in the full paper; e.g. the total of 21 different drug classes covered by the tool and the 202 “documented” medications. In addition, the term “therapeutic” substitution is confusing because pharmaceutical equivalents and alternatives were switched as well. This section should be rephrased in order to present the most important findings.

B. Legend for figure 4: comparing with suggestions of the clinical pharmacists (plural?)
C. Table 2: Data are presented as %, but total n is missing

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
'I declare that I have no competing interests'