Reviewer's report

Title: The Effectiveness of Computerized Order Entry at Reducing Preventable Adverse Drug Events and Medication Errors in Hospital Settings: A Systematic Review and Meta-Analysis

Version: 2 Date: 22 January 2014

Reviewer: Jennifer R Bellis

Reviewer's report:

The Title & Abstract accurately convey the reported findings of the study.
The question is well-defined and justified - it makes sense to evaluate the impact of CPOE on errors which lead to harm, rather than just errors per se.
The paper is very well written and easy to read.
The systematic review methods are clearly described.

Discretionary Revisions

1. In the introduction you state that errors in timing are generally less risky than giving a drug to the wrong patient - a justification of this statement is needed either by providing an example or a reference to support it.

2. Methods - Since you developed and used your own search strategies, could you comment on whether you think it is possible that a search of databases for primary studies published prior to January 1, 2007 may have identified additional studies not found by previous reviews? A statement to justify your approach could be added to the discussion.

3. You elected to conduct a subgroup meta-regression analysis with year of publication as a predictor - using the year the study was conducted would make more sense because time to publication for each study will have varied. Please consider updating this.

Minor Essential Revisions

Footnotes are provided in the legend for Figure 1 (PRISMA flow diagram) but the symbols do not appear in the flow diagram - please update.

Results - the medication error rate in the text for Van Doormal et al. (Ref 67) does not match that in Table 1 - please correct.

Major Compulsory Revisions

In the discussion you state that the baseline rate of hospitalizations associated with medication errors was significantly associated with effectiveness of CPOE. Can you comment on why the range of baseline medication error rates is so wide?
It is my understanding, from your description of methods for data extraction (page 8), that these rates are for errors which caused harm or had the potential to.

Did the studies and subsequently the review team use a consistent approach to determine whether errors had the potential to cause harm?

It might be useful to the reader if you indicate exactly which errors were included in the data extraction as well as which were not e.g. dose errors with potential for harm included, omission of patient ward excluded.

According to Table 1, in the some of the studies almost 100% of admissions were subject to a medication error. This seems like an extremely high rate if only errors causing harm/with the potential to cause harm were included. Can you comment on why it is so?

Towards the end of your discussion you state that a potential explanation for increases in medication errors with CPOE in two of the included studies is that the CPOE systems may have increased medication errors at lower risk for causing ADEs. This explanation does not seem to align well with your approach to data collection which sought to exclude errors at low risk of causing harm.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests