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: 21 February 2014

Reviewer: Elizabeth Conroy

Reviewer’s report:

Major Revisions

• METHODS - Study Selection - First paragraph - ‘we excluded studies that did not describe the methods for detecting medication events, or that used in incidence reporting…’. This exclusion criteria needs further justification – seems to me that there is the potential to exclude studies that are potentially relevant under this current criteria.

o Could authors not be contacted to ask for details about the methods of detection –some attempt should at least be made rather than automatic exclusion.

o Excluding studies simply because they use incidence reporting (small % of events) may bias your results. The whole purpose of meta-analysing data is to pool together and make inference about a collection of studies that attempt to answer the same question – one of the main benefits of meta-analysis is to pool together results from similar studies, when the individual studies contain small events which may otherwise be difficult to draw any concrete conclusions from individually.

Minor Essential Revisions

• ABSTRACT – Conclusions - Too brief - does not report limitations or implications of findings.

• METHODS – Data Sources and Searches – Second paragraph - ‘hand searched nine websites…and bibliographies of other publications know to us’. For transparency and replication of current work, these websites and publications should be referenced.

• PAGE 9 –‘equaled’ should be ‘equalled’

• METHODS – Data extraction and quality assessment – Third paragraph - Not clear how CDSS sophistication is defined. The levels of basic, moderate and advanced seem quite arbitrary. Was this determined by original authors or following some sort of definition? This should be described.

• METHODS – Data Synthesis and Analysis – First paragraph - ‘if a study provided more than one unit of exposure, we select the unit most commonly reported across studies’. This needs some careful consideration. Different units of exposure will often lead to a different interpretation. For each different
exposure used across the studies, what question is answered? You need to present the data on all possible exposures or at least those that are meaningful, not just the ones that was reported most frequently.

• METHODS – Data Synthesis and Analysis – Second paragraph - We usually specify the test of heterogeneity not homogeneity.

• METHODS – Data Synthesis and Analysis – Second paragraph - ‘We report the I2 statistic unless the two results conflict’. Methodologically this sounds weak – I would re-phrase. The decision is often subjective. For the Q-stat we often use p>0.1 not 0.05.

• RESULTS - Intervention, contextual and methodological factors needs to be indicated as subsection. This section does not quantify results or reference figure. Results relating to the factors investigated are not supported numerically.

• FIGURE 1 - include removals at all stages of flow. For example, number of duplicates and also reasons for the three studies not included in meta-analysis though included in qualitative analysis so that this figure is stand alone.

• No assessment of risk of bias or methodological quality was performed on any of the included studies. This is an important component of a review so that authors/readers can report on how the methodological limitations may affect their overall conclusions. While standard tools may not be fit for purpose for this particular review, it is common for review authors to develop a way to assess the quality of studies using items that they think are considered to be important.

• METHODS – Study Selection – First paragraph - Not convinced that paediatric studies should have been excluded. While they may contribute a smaller number of hospitalised patients they are arguably still an informative and important subgroup. Were any of the excluded or included studies a mixed population? Perhaps include a paediatric analysis as a recommendation for further research and build upon argument for exclusion.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.