Reviewer’s report

Title: Smartphone apps for calculating insulin dose: a systematic assessment

Version: 1 Date: 9 January 2015

Reviewer: Graham G Thomas

Reviewer’s report:

This manuscript describes a systematic review of patient-facing smartphone applications (aka. apps) for calculating insulin dose. The review focuses primarily on usability and safety issues. It is clear from the review that there are major problems with many if not most of the apps that could result in dangerous mismanagement of medication. The manuscript is well written and could potentially make an important contribution to the literature with relatively few changes. Major and minor concerns are described below.

Major Concerns:

1. So many different app issues were identified and evaluated that it became difficult to keep them all organized and to form an overall impression of the results. It would therefore be helpful to impose some additional organization. In particular, it might be helpful to merge Table 2 and Table 4 and to use that table to organize and drive the discussion of results. Furthermore, while the manuscript gives the clear overall impression that the apps are largely highly flawed, it might be helpful for the authors to rank the issues in order of importance. At a minimum, consider flagging the issues that are considered to be most important in deciding whether an app is appropriate and safe. This would allow the reader to quickly evaluate rates of the most serious issues and form an overall impression for themselves of the prevalence of serious problems.

2. As stated above, the manuscript gives the overall impression that the apps are largely highly flawed and potentially dangerous. However, there is no discussion of whether the apps should be considered an improvement over existing methods of dose calculation which may be equally or even more flawed and dangerous, particularly reliance on mental calculation. There are likely no data with which to answer this question empirically, but the authors should be able to speculate given their robust analysis of the apps.

3. Despite any impact of this manuscript, it seems evident that large numbers of individuals will continue to use these apps. Therefore, it would be helpful for the authors to provide suggestions for how clinicians can advise their patients on safe use of apps. This should go beyond simply recommending that clinicians advise their patients against using the apps.

4. The authors identified a very large number of apps that were “irrelevant.” It would be helpful to have more information on what was considered “irrelevant.” The authors should also consider whether it is an important problem for patients...
that their search resulted in so many “irrelevant” apps (i.e., does that mean that a patient searching for a dose calculator may experience difficulty in navigating the larger number of apps and selecting one that is least problematic?).

Minor Concerns:

1. It is unclear whether each app was downloaded or 105,000 times or whether this is in aggregate. It is also unclear whether number of downloads was a criterion for inclusion in the review.

2. It would be useful to know more about how disagreements between raters were resolved.

3. Table 2 seems redundant with the text. Consider substituting a table with recommendations as per Major Concern # 3 above.

**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 I have no competing interests.