Reviewer's report

Title: Implementation of infection control in health facilities in Arua district, Uganda: a cross-sectional study

Version: 1 Date: 16 December 2014

Reviewer: Mareli Claassens

Reviewer's report:

Major revisions:

1. General comments:
   a. It is not clear from the manuscript which data were from the questionnaires, the key informant interviews or the checklists. Please specify this throughout and consider splitting the results into the questionnaire data first followed by the key informant data.

2. Abstract: in the methods section it is explained how the analysis was done. Please include this explanation in the main text.

3. Introduction:
   a. Line 53: “the proportion of these infections” out of all infections or all admissions to hospitals? What is the denominator?
   b. Mention where the referenced studies were done, in which country or area and amongst which type of healthcare workers.

4. Methods:
   a. Sample size determination: was clustering accounted for and if not, why was it not deemed necessary?
   b. Sampling procedures: how was it determined how many facilities of each type to select? Do the subdistricts differ and if, how? Were an equal number of facilities and/or HCW included from each subdistrict? Are the number of HCW from each type of facility available which informed the 5:1:2:1:1 PPS sampling? How were the facilities selected for the key informant interviews? Did the key informants complete questionnaires as well, or were they selected in addition to the 186 other participants?
   c. Eligibility criteria: How many did not give consent? What was the procedure for selecting the next participant if someone did not consent? It would be valuable to see the total number of HCW per type of facility, how many HCW were approached to participate and how many consented in a flow diagram.
   d. Study variables: How were the secondary outcomes reported? In line 170, is this a standard way of assessing knowledge? Why were eight measures instead of the five as described by the MOH used? Please reference both the knowledge assessment and the eight measures of IC. Add definitions for the IC measures and how it was assessed.
e. Data management: Motivate why a p-value of <0.1 instead of the usual <0.05 was used.

f. Ethical considerations: Were HCW informed that either participation or refusal would not impact on their work environment?

5. Results:
   a. Observation of IC measures: Does it mean 74.7% of HCW did all five steps of hand washing or some of the steps or any of the steps? Why are some of the measures reported per HCW and others per facility? Why are there missing data from facilities (only 24 instead of 32)?
   b. Knowledge of IC measures: line 242 states “always followed them” – was this reported by HCW or observed? If reported, was it validated?
   c. Availability of supplies: this was not mentioned in the methods section and should be included if showed in the results. Lines 256-257 describe a very important finding. Line 260: state which innovative structures are in the MOH guidelines.

6. Discussion:
   a. Line 310: Were the facilities/HCW informed beforehand about the study and the observation? In other words, did they know they had to change their behaviour?
   b. Line 313: This association was not shown in the results. Please include it if discussed.
   c. Line 339: This is not clear from the methods and should be mentioned earlier.
   d. Line 349: Not showed in the results.
   e. Line 362: It is said in lines 256-257 that medical waste was indiscriminately disposed at all facilities. How was the research staff protected from sharps injuries when looking through waste bins?

7. Tables:
   a. Table 2: Explain how a facility was classified as “not recapping” – does it mean not recapping all needles, some needles, any needles? Did facilities have separate bins for sharps and non-sharps but did not use it (see previous comment about mixed waste). How was “adequately clean” defined? How were these observations standardised across facilities?
   b. Table 4: Please include the crude OR p-values. How was it decided that all variables should be included in the multivariable analysis?

Minor revisions:
1. Line 73: “poor hand hygiene” instead of “hand hygiene” was a risk factor.
2. Line 85 and 355: “several studies” but only two are cited?
3. Line 88: Please rephrase the sentence starting with: “Whereas knowledge of…” since it is difficult to understand in the context.
4. Line 146: define what each of HC IV, III and II mean.
5. Line 186: add reference for “five key moments”.

Discretionary revisions:

1. Leave out “… or hospital-acquired infections” in line 58.
2. Line 164: use either “dependent variable” or outcome consistently throughout the manuscript.
3. Throughout the manuscript, use “data were …” instead of “data was …” (see line 193 for instance)
4. Check grammar (see line 60 for instance: “can be life-threatening” and line 77: “worker was more likely” and line 179: “to obtain information about knowledge and practices)

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I declare that I have no competing interests.