Reviewer’s report

Title: Impact of a training program on the care of peripheral and central lines: assessment with 2 point prevalence studies

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Reviewer: Walter Zingg

Reviewer’s report:

Summary
The authors present the results of a multifaceted intervention strategy to improve catheter care in ICU- and non-ICU settings. Performance was measured by two prevalence surveys. The manuscript is well written but lacks some important information. Particularly, the intervention really is ill-defined.

Major comment
Given that the study is about a behavioural change intervention you must provide much more information: who (person, study group, project group...) prepared the intervention? What were the rationales to chose this strategy but not another? Was the study group multidisciplinary – or multiprofessional? Or was it prepared and executed by infection control only? How was the online tool promoted? Were there sanctions if nurses did not perform? Did you also address doctors? How many talks with nurses did you do? Did you use an established format to do so? What were the barriers and facilitators during the intervention? Was the project backed by hospital management? Try to give as much detailed information to the reader to allow having an idea about how to do implement such a project in a hospital.

Minor comments
Line 63: this is not really evidence of infection but also phlebitis and induration?
Line 67: “Multi-oriented” sounds weird. Please, use multimodal or comprehensive or multifaceted.
Line 101: you may consider the following studies that looked into the use of central venous catheters in ICU- and non-ICU: Zingg, J Hosp Infect 2009 Sep;73:41; Zingg, J Hosp Infect 2011;77:304.
Line 108: Please, be more specific in what months the surveys were performed.
Line 112: Please, provide the range of dates of the intervention.
Line 119: What were the clinical signs for infection you used to assess infection?
Line 126: How was necessity obtained? Written indication or by asking the care team? Was a catheter deemed unnecessary if there was no indication written in the patient charts? Try to be more specific in this issue.

I struggle with the two first sentences here. What is a “qualitative variable” in the context of a statistical analysis (other than explanatory variables in qualitative research) and as you explain, the way of reporting “quantitative” variables depends whether it is a continuous (and normal or not normal distributed) or a categorical variable.

What does the p-value mean here? Please, provide the proportions here (I assume the statistic refers to the number of patients with a catheter visited as per total patients hospitalised at that survey dates).

Please, go for thrombophlebitis/exit-site infections instead of “local clinical infection” – I do not assume that the proportion of infected peripheral lines in your hospital is really 2%.

This merits some discussion: was this because of hospital purchasing issues or because there was concern about the use of mechanical valves? Was this part of the intervention (recommendation to use a split septum rather than a mechanical access device)?

Please, be clear that prevalence surveys are useful to measure performance indicators but not rare outcomes such as catheter-associated bloodstream infections.

please see suggested additional references.

This has been shown also by others (e.g. Zingg, J Hosp Infect 2009).

You are absolutely right – but you make the same mistake: you scarcely explain what you did.

The study by Zingg et al. (J Hosp Infect 2011) found a proportion of only 4.8% of unnecessary central-venous catheter-days (2.7% in the ICU and 6.6% in non-ICU settings). I wonder how this reference did not make it into your reference list.

I think there are many more limitations to be mentioned and although I agree that the numbers and proportions provided here are not applicable to gynaecology/obstetrics and paediatrics, the idea of the intervention and the use of prevalence survey can be applied in those settings.

If you talk about “bundle”, please, explain the bundle. However, by reading the manuscript I am almost certain that it is not about a bundle but a comprehensive education and training programme.

Table 1: “General data” as a title seems to be a bit short in my opinion. I would refer to survey 1 & survey 2 instead of study 1& study 2 – if I understood correctly, there were two different point prevalence surveys as part of one study. Could the significant difference in age be due to seasonal differences – why did you use a ttest (SD) here (age is unlikely to be normally distributed)?

Table 2: Please, check the columns of the line types: the proportions do not add
up everywhere. You may consider “insertion site” instead of “Entry site of...”. The information about use of catheters is peculiar. It seems as if you decided to provide only data of selected indications. Please, add other indications and at least a category “other indication” and “unnecessary use”.

Table 3: Given the selection of the parameters in this table I assume that those were part of the intervention (this includes the use of split septum rather than another [which type?] access device)? If so, you need to explain this in the method section.

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I have no competing interests in the context of reviewing this manuscript.