Reviewer's report

Title: A program for sustained improvement in preventing ventilator associated pneumonia in an intensive care setting

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Reviewer: Jordi Rello

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Comments to Authors

Study has important features – it evaluates the effect of sustained care bundle for VAP prevention implementation, provides data regarding single bundle component and observes that overall VAP prevalence successfully decreased after a prolonged period of intervention. Moreover, high compliance was maintained throughout the study, which is quite a remarkable achievement.

Major Comments

1. Zero VAP rate for 2-3 months is probably not a novelty in the ICU setting, since we might observe 0 cases in that period (for several non care-bundle related reasons) and then 3 cases of VAP in the following month, increasing overall prevalence. I found no data in the manuscript that supports the statement: “VAP zero rate was achieved for 12 months”.

Moreover, to affirm that zero VAP rate was achieve due to compliance with the care bundle probably lacks accuracy and misses out other factors that can be patient related (plus, according to figure 2, compliance curve does not necessarily follow the VAP incidence rate).

When authors express VAP numbers for both study years, they actually increase from 2009 to 2010… And number of VAT doubled; how can authors explain this?

2. Methods for recording compliance seem particularly worrying. Compliance rates vary between 90 to 99%, which to me seems quite impossible and according to what has been published so far, it is probably the first study with such high compliance rates for such a prolonged period of intervention. How exactly did authors measure daily compliance for each bundle measure? Was it self recorded by the attending nurse?-- if so, please consider that this carries a significant amount of bias. How was data confirmed? Was it recorded once a day? A day has at least 2/3 nursing shifts and oral hygiene must be performed at least 2 times a day. Can authors clarify numerators and denominators of compliance %?

3. The explanation of the study design, in methods, is quite confusing. It would help to have a clear differentiation between the previously published study (reference 4) and the present study. Despite the fact that the intervention derived from this study, it needs to be clear for readers that Phase 1, 2 and 3 were not part of the present study, but they are a consequence of a previous work. Figure
1 refers to a different study, and it this should be clearer.

Minor Comments

1. One of the care bundle measures was HOB elevation – what was the degree of HOB elevation?
2. How was readiness to extubate assessed? Was a scale used?
3. Why are demographic data only provided for VAP patients? It would be of interest to know the background of the whole cohort of 2009 and 2010, including admission reason and severity scores.
4. What were the microbiological sampling methods in case of VAP suspicion?
5. There are several misspellings and proof reading for English accuracy is highly recommended.

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

Quality of written English: Not suitable for publication unless extensively edited

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

Declaration of competing interests:

I declare that I have no competing interests.