Reviewer's report

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

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Reviewer: Andrew Conway-Morris

Reviewer's report:

Thank you for asking me to review this interesting area. Prevention of VAP has become a major priority in many health systems and thus there is considerable interest in the reports of implementation of VAP prevention measures and their impact on VAP. There is a growing corpus of papers on this topic, and this paper would be an incremental addition to this corpus were it to be published.

Major essential revisions

The authors need to report the method used to obtain microbiological samples – a change from using endo-tracheal aspirate to bronchoscopic sampling can produce a significant reduction in reported rates of confirmed VAP (Conway Morris et al, Thorax 2009 64:516-522). The risk of reporting microbiologically confirmed VAP is that this can be misleading, and I think the best measure is ‘all clinical VAP’ which, whilst almost certainly overestimating true VAP, is less susceptible to changes in diagnostic technique.

Are the infection surveillance team independent of the ICU team, and do the ICU team have any input into the recording of cases of VAP? Given the inherently subjective nature of VAP diagnosis, there can be pressure to avoid labelling a patient with VAP when it is used as a quality measure and becomes the focus of quality improvement.

Did the apparent reduction in VAP result in reductions in other related parameters – antibiotic use/costs, length of stay, duration of ventilation (rather than simple ventilator utilisation) or unit mortality rate?

In order to judge whether before and after comparisons have any validity it is important to report the demographic and clinical details of each cohort. As a minimum I would expect to see median age, sex ratio, APACHE score on admission, % with surgical or medical diagnosis on admission, % elective/emergency admissions, median length of stay and overall ICU and hospital mortality rates.

Minor essential revisions

Methods – how frequently was surveillance for VAP undertaken?

Results – although there was a reduction in ventilator utilisation this could have occurred as a result of admitting less ventilated patients, which would have had a
knock-on effect on rates of VAP. The proportion of patients ventilated, as well as ventilator utilisation rate, should be reported.

Table 1 – number of patients in each cohort should be presented

Incidence of VAP should be reported amongst the ‘at risk’ population (i.e. those ventilated for at least 48 hours) alongside the incident density. Length of stay, duration of ventilation, VAP rates, VAT rates and mortality should be reported for those at risk rather than the entire ICU population.

Figure 2 would be more informative if it included confidence interval lines, e.g those derived from a poisson distribution to give ‘warning’ and ‘control’ lines. Also out09 and out/09 and out/10 should be oct/09 and oct/10. Do the authors have any data for 2011?

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 declare I have no competing interests