Reviewer's report

**Title:** Boussignac CPAP for the management of acute cardiogenic pulmonary edema: prospective study with a retrospective control group

**Version:** 1  **Date:** 13 September 2007

**Reviewer:** Geraldo Lorenzi-Filho

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I have read with interest the paper, but unfortunately I have found several problems with the study design that make difficult to draw firm conclusions. I have also tried to add some suggestions, that I hope will be helpful.

Major comments:

1. The Boussignac CPAP is a simple method of applying CPAP. It has been previously shown that it is effective in treating acute pulmonary edema. The rationale that this CPAP has not been tested in the coronary care unit is to me weak. There is not a strong argument to believe that the treatment of acute pulmonary edema should be different in different settings (unless some kind of rationale is provided to the reader).

   **Suggestion** - One argument could be that in a setting where the staff is not prepared to treat acute pulmonary edema, the use of CPAP could be dangerous, and would delay a proper treatment in the ICU.

2. The definition of acute pulmonary edema is always very difficult to be established. The threshold to distinguish respiratory discomfort and acute pulmonary edema is based in a rather subjective definition that includes respiratory rate > 25 breaths/ min (and breathing frequency is very difficult to be registered in a regular basis) and SpO2< 95% while receiving oxygen (again, the authors did not provide a clear definition on how much oxygen was given to the patient – the oxygen was delivered by catheter or mask – how many liters – what was the FiO2).

   Therefore it is very difficult to compare prospective data with historical control. It is impossible to assure that the severity of the acute pulmonary edema was the same in the 2 periods. One can easily hypothesize that in the retrospective chart review, the authors included more severe cases (that deserved a written report).

   In contrast, during the prospective part of the study, because the staff was aware of the new protocol, there would be a clear tendency to include mild cases of acute pulmonary edema (that would not be reported in the previous period).

3. Another issue that is problematic is that during the prospective study period, a considerable number of patients (19 out of 108) did not receive the proposed treatment with BCPAP. If the study was trying to determine the effects of BCPAP in the CCU they would be forced to only consider the 66 patients that received BCPAP in the CCU. In this new analysis out of 90 patients, 66 received BCPAP
and 24 were transferred to the ICU. I am sure the statistics would be quite different and much less significant for all parameters analyzed.

4. In accordance to the previous topic, Table 1 and 2 are misleading because they give the impression that all 108 patients received BCPAP. Again, I do not think this is an appropriate comparison.

5. I may have missed this point, but the authors never mentioned how many patients treated with BCPAP that had to be transferred to the ICU, and what happened to these patients.

   Suggestion- I think this is the most important piece of information in this study. The authors could fore instance re-frame the study and report on the safety of using a simple CPAP in the CCU.

6. The authors did not report on medications. This is a very important piece of information that must be included.

Minor comments

1. Introduction must make more clear what a Boussignac CPAP is.

2. I was confused with Figure 1. It is my impression that patients on both arms started the study in the CCU. The authors state in the legend that there was a shift from ICU admission to CCU admission. If I understood correctly, all patients (BCPAP group, n = 108) and control group (n= 66) were in the CCU in the beginning of the study. If my assumption is correct, the numbers of patients transferred from the CCU to the ICU decreased from 47% to 22%. I would reframe the legend of Figure 2 – as it is stated now “there was a considerable shift of ICU admissions …”, gives the impression that the patients were treated in another setting (neither CCU or ICU) and were then transferred either to the CCU or the ICU.