Reviewer's report

Title: Continuous positive airway pressure in bronchiolitis; a safe and effective treatment in ordinary paediatric wards

Version: 2

Date: 12 March 2014

Reviewer: Sandrine ESSOURI

Reviewer's report:

Management of severe bronchiolitis with early CPAP is an emerging therapy that has proven its efficacy. Mostly, CPAP is performed in intensive care unit because it is a life support therapy.

The authors address in this study the feasibility of such therapy outside the pediatric ICU, in paediatric general ward.

Major compulsory revisions

- the main objective of this study is to demonstrate the feasibility of CPAP in paediatric general ward. Most of the manuscript detaille the efficacy of CPAP, which has been already demonstrated in numerous previous studies, but the authors failed to describe the features of performing CPAP in general ward.

- Do the physicians of this unit have the experience of non invasive ventilation? Even for chronic respiratory failure? Does the nurse team was trained before implementation of CPAP?

All these crucial elements are missing in the manuscript. It has been describe that training program are relevant to insure high level of care and to improve efficacy of a new therapy.

- In the method section we have no idea of the number of beds, the ratio nurse/patient, the global management and monitoring of such patients.

- The table 1: It does not look like a table and could be added in the manuscript. What is the definition of severe respiratory distress? When do you consider high or increasing capillary CO₂? .......You must describe precisely these parameters.

- The mean weight of your patients is lacking but probably around 3.5-4 kgs as previously in most studies on bronchiolitis with CPAP. The ventilator used in this work is a ventilator designed for home ventilation of patients weighting over 30 kilos. Is it reasonable to use it in these small patients and not in intensive care? Why do you use this system instead of system available and designed for CPAP in infants such has the bubble CPAP (used with your ICU but with a ventilator).

- You must describe what is the monitoring of such patients, it is a major point because the reader knew that CPAP in severe bronchiolitis is effective but they want to know if they can do it in safe condition in general ward or not. You have to prove that all safety conditions are present.

- You described 42 infants managed with CPAP in your unit during 4 years thus
just 10 patients per year. Do you think it's enough to ensure a high quality of level of care?

- In the table 2, the length of stay for patients in ICU is 8 days in ICU or total hospital length of stay? because it is upper than length of stay previously described.

- In the discussion section you say that it may have economic benefits and the treatment and procedures may be less frightening for the parents. It would have been interesting to have the feeling of parents.

- You clearly explain that "almost one third of the children were need in referral to an ICU, the possibility of such referral must be easily available". You could further discuss on the ratio benefit/risk of such management.

- Data on NIV in emergency are available for adult only but it will be relevant to discuss about the adult experience

Minor essentials revisions:

- Introduction: "patients at risk of severe bronchiolitis", age < to 3 months is lacking and it is the most common case.

- "CPAP works by keeping .....and reducing work of breathing" The reference for reduction of work of breathing in bronchiolitis are not Greenough and Donlan but the physiological works of Cambonie ICM 2008 and Essouri ICM 2011.

- Some descriptive studies on CPAP and bronchiolitis are missing Campion Arch of Ped 2006, Larrar Arch of ped 2006.

- You must precise that masks used are nasal masks with leaks.

- Results: "four children were excluded ... figure 2". It seems to be rather the figure 1 such as in the following paragraph.

There is no figure 3, the evolution of level of PCO2 is the figure 2.

- discussion: "This may have economic benefits" One recent large descriptive study on CPAP in bronchiolitis has described the impact of CPAP on the economic burden of severe bronchiolitis, Essouri et al ICM 2014. The main cause was the reduction of ICU and total hospitalisation length of stay. Does CPAP reduces your LOS?

- Table 2: weight is lacking

**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.