

Category : **Respiratory: airway management/CPAP**

**A209 - Duration of noninvasive continuous positive airway pressure as a risk factor for mortality in patients with covid-19 acute respiratory failure.**

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### **Introduction:**

Recent experiences suggest that noninvasive continuous positive airway pressure (CPAP) ventilation may be an effective alternative to mechanical ventilation in COVID-19 respiratory failure. However, in patients who failed CPAP, delayed intubation may increase the risk of mortality. We made a comparison between the patients admitted during the first and the second wave of the pandemic who failed CPAP and required mechanical ventilation.

### **Methods:**

We retrospectively included all consecutive patients admitted to one of the four participating hospitals from March 1<sup>st</sup> to April 15<sup>th</sup>, 2020, and from November 1<sup>st</sup> to December 15<sup>th</sup>, 2020, with the following inclusion criteria: 1) age  $\geq 18$  years, 2) diagnosis of moderate to severe COVID-19 pneumonia treated with CPAP outside ICU, 3) intubation after CPAP failure. Patients who received post-extubation CPAP were excluded. We collected data about CPAP duration prior intubation, hospital length of stay and in-hospital mortality.

### **Results:**

A total of 193 COVID-19 patients received intubation after CPAP failure during the first (n=127) and the second (n=66) wave. During the second wave, CPAP treatment was longer (4 (2-8) vs. 3 (2-5) days;  $p < 0.05$ ) as well as hospital length of stay (20 (15-29) vs. 12 (6-30) days;  $p < 0.05$ ) with an increased in-hospital mortality (62% vs. 35%;  $p < 0.001$ ). The univariable analysis showed that CPAP duration was a risk factor for mortality in patients failing CPAP during the second wave and in the overall population [HR 1.080 (95% C.I. 1.007-1.159) and HR 1.071 (95% C.I. 1.032-1.112), respectively]. The multivariable model adjusted for centre, wave, age, gender, comorbidity, white blood cell count, and creatinine confirmed this results HR 1.117 (95% C.I. 1.029-1.214) during the second wave, and HR 1.077 (95% C.I. 1.025-1.131) in the overall patients.

### **Conclusion:**

Our results confirmed that in COVID-19 patients failing CPAP performed outside ICU the risk of death increased with the days spent on noninvasive ventilation.