High flow nasal cannula oxygen versus conventional oxygen therapy and non-invasive ventilation in Emergency Department patients: a systematic review and meta-analysis.

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Argomento: Insufficienza respiratoria acuta e ventilazione meccanica

Background Acute respiratory failure (ARF) is a common cause of presentation to the Emergency Department (ED). High flow nasal cannula (HFNC) has been introduced as an alternative way to administer oxygen. The efficacy of HFNC has been assessed in several randomized controlled trials (RCTs) and meta-analyses: however, results were contradictory, and none of published meta-analysis was focused on ED patients. We performed a systematic review and meta-analysis of RCTs comparing HFNC to conventional oxygen therapy (COT) and non-invasive ventilation (NIV) exclusively in ED setting.

Methods Inclusion criteria were: RCTs on adult patients with ARF admitted to the ED, investigating HFNC versus COT or other modes of ventilation. Trials comparing HFNC support outside the ED, or published as an abstract, or non-randomized were excluded.

Results Five RCTs met the inclusion criteria: four compared HFNC to COT and one HFNC to NIV. Overall, 775 patients with heterogeneous ARF were analyzed. We performed a meta-analysis of the four studies comparing HFNC and COT. There were no differences in intubation requirement, treatment failure, hospitalization and mortality. Intolerance was significantly higher with HFNC (RR 6.81, 95% CI 1.18-39.19; p = 0.03). In the only available RCT comparing HFNC to NIV, no difference was found for intubation rate, treatment failure, tolerance and dyspnea.

Conclusions We did not find any benefit of HFNC compared to COT and NIV in terms of intubation requirement, treatment failure, hospitalization and mortality in ED patients presenting for ARF; on the contrary, COT resulted to be better tolerated.

Figure 1. Intubation requirement

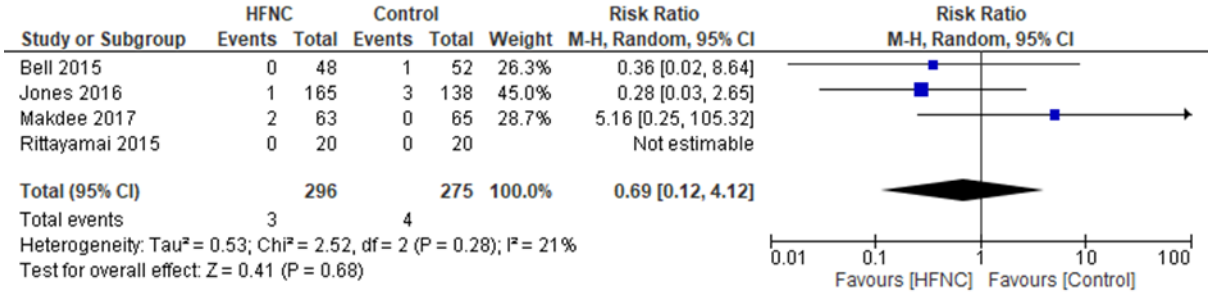

Figure 2: Treatment failure

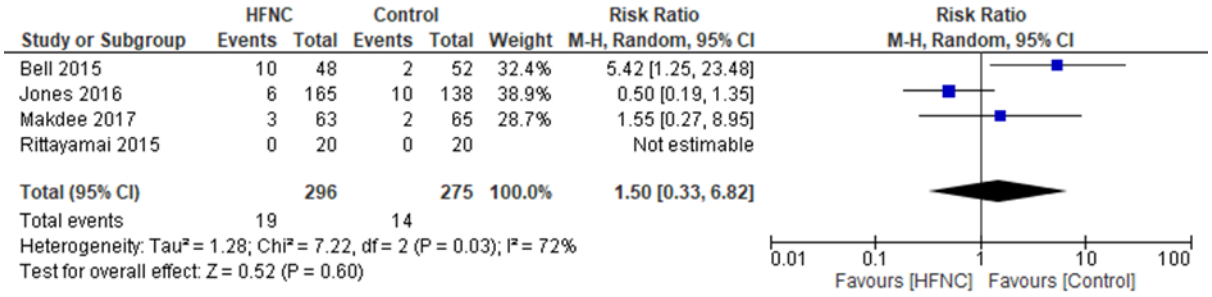

Figure 3: Rate of hospitalization

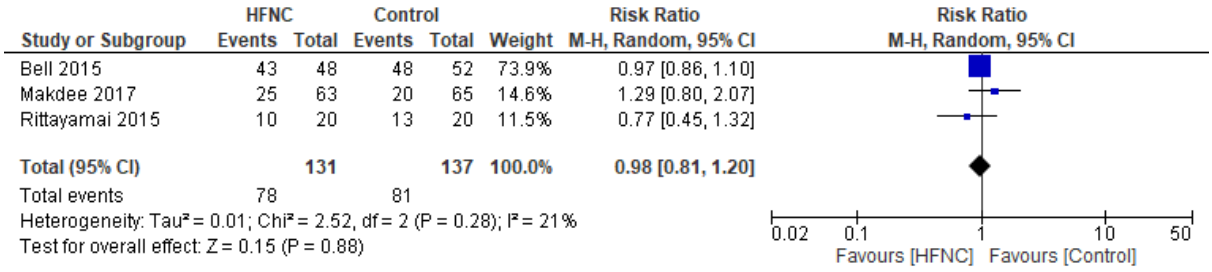

Figure 3: All-cause mortality at the longest available follow-up

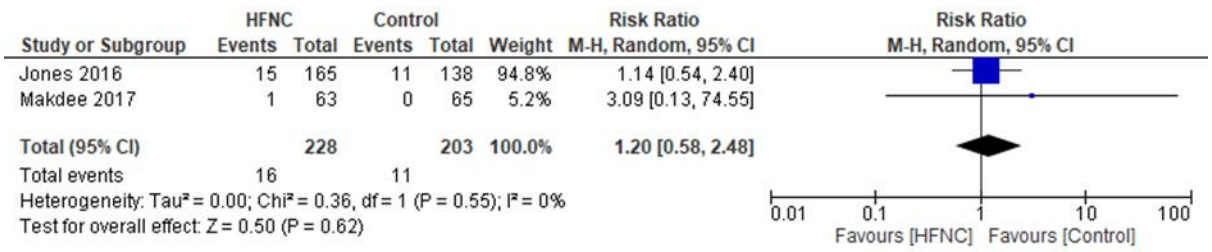

Figure 5: Treatment intolerance