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Title: Efficacy of non invasive mechanical ventilation (NIV) for acute respiratory failure (ARF) in COPD patients with and without pneumonia

Dr. Giovanni 16780 Alessandrini dottgio1979@libero.it MD ¹, Dr. Caterina 16781 Antonaglia caterina.antonaglia@alice.it MD ¹, Dr. Alessia 16782 Steffanina alestefanina@yahoo.it MD ¹, Dr. Paolo 16783 Marinelli stemapa@libero.it MD ¹, Dr. Matteo 16784 Bonini matte.bonini@gmail.com MD ¹, Dr. Michela 16785 Mordenti michelamordenti@tiscali.it MD ¹, Dr. Mattia 16791 Internullo m.internullo@virgilio.it MD ¹, Dr. Tullia 16792 Villani tulliaavillani85@yahoo.it MD ¹, Dr. Stefano 16793 Schiavetto stefano.schiavetto@gmail.com MD ¹, Dr. Elena 16804 Angelici elena.angelici@uniroma1.it MD ¹ and Prof. Paolo 23288 Palange paolo.palange@uniroma1.it MD ¹. ¹ Department of Public Health and Infectious Diseases, Lung Function Unit, "Sapienza" University, Rome, Italy, 00100 .

Body: Background. NIV represents one of the major technical advances in the management of ARF. Several data in literature showed the efficacy of NIV in COPD hypercapnic patients and in immunodepressed pneumonia patients. By contrast, the role of NIV in the treatment of pneumonia in COPD patients is controversial. We compared the efficacy of NIV for treating ARF in a group of immunocompetent COPD patients with and without pneumonia (ARF-P and ARF-NP). Methods. Among patients referred to our ward, we studied 12 COPD patients with ARF-P (66.3±14.6SD years) and 9 with ARF-NP (74.5±4.6 years). Diagnosis of COPD and pneumonia were made according to International Guidelines. All patients were treated with a standard NIV pressure-support protocol. The following parameters were chosen as endpoints and recorded at baseline (B) and at 48 hours of NIV treatment: arterial PO₂, PCO₂, pH, and respiratory rate (RR). Data were analyzed using SPSS 17 statistical software. Results: No differences in respiratory variables between the two groups were observed at B (p=ns). At 48 hours of NIV treatment, ARF-P patients showed a significant improvement in PO₂ (69.3±10.9 vs 56.9±6.9; p=0.003), a significant reduction in PCO₂ (51.0±9.4 vs 62.7±11.4; p=0.0008) and RR (18.6±2.1 vs 27.6±3.7; p=0.001). No differences were observed in pH value (7.4±0.1 vs 7.4±0.1; p=ns). Similar results were observed in the ARF-NP group. Time to hospital discharge was not significantly different between groups. Conclusions: In COPD patients, NIV treatment for ARF is effective independently of the presence of pneumonia. Results should be confirmed on a larger population.