Title: The influence of obesity on non-invasive ventilation (NIV) responses in patients with acute hypercapnic respiratory failure

Dr. Jovana 30511 Maskovic jovanamaskovic@yahoo.com MD ¹, Aleksandra 30512 Dudvarski Ilic sanjadudvarski@yahoo.com ¹, Snezana 30513 Raljevic sneza.raljevic@gmail.com ¹, Branka 30514 Bulajic Subotic brankabolajic@gmail.com ¹ and Vesna 30515 Bukumirovic vbukum@gmail.com ³. ¹ Intensive Care Unit, Clinic for Pulmonary Diseases, Clinical Centre of Serbia, Belgrade, Serbia, 11000 ; ² Internal Medicine/pulmonology, University of Belgrade School of Medicine, Belgrade, Serbia, 11000 and ³ Anaesthesia, Center for Anaesthesia Clinical Center of Serbia, Belgrade, Serbia, 11000.

Body: BACKGROUND: Obesity rates are increasing in general population and also prevalent in intensive care units (ICUs). The respiratory changes associated with obesity extend from a simple change in respiratory function, with no effect on gas exchange, to the more serious condition like hypercapnic respiratory failure, characteristic of obesity hypoventilation syndrome. The optimal noninvasive mechanical ventilation (NIV) strategy is often not used during ICU treatment of this patients. The aim of this study was to assess the differences of NIV strategies and outcomes of obese and non-obese patient with acute hypercapnic respiratory failure. METHODS: In this retrospective cohort study 20 patient ventilated with face mask were studied. Patient were divided into two groups: obese (BMI>35 kg/m²) and non-obese (BMI <35 kg/m²). The influence of BMI, initial level of PaCO2 on pressure, mode, ventilator and time necessary to reduce PaCO2<7kPa were investigated. RESULTS: The mean age of the patients was 65.4±7.6 years. The main reason for ICU admission was hypercapnic respiratory failure. Eleven patients were obese and nine was with BMI <35 kg/m². Obese patients required higher end-expiratory pressure levels and more time to reduce their PaCO2 levels (p 0.09), average time was 13.1 days. CONCLUSION: These result suggest that improvement of hypocapnia in obese patients may require higher PEEP levels and longer application time of NIV during acute hypercapnic respiratory failure than in non-obese patients.