

## Duration of mechanical ventilation with non-benzodiazepine vs. benzodiazepine-based sedation

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### Introduction

Current guidelines recommend analgesedation before sedation in mechanically ventilated adult intensive care unit (ICU) patients. If sedation goals are not met, non-benzodiazepines (NBZ) are recommended over benzodiazepines (BZ) for additional therapy. To our knowledge, there are no studies that compare patients who received combination sedative therapies, including analgesedation with either BZ or NBZ. This study aims to determine if there is a difference in duration of mechanical ventilation (MV) in patients who received NBZ (analgesic +/- propofol or dexmedetomidine) vs. BZ based sedation (BZ +/- analgesics +/- propofol or dexmedetomidine).

### Methods

IRB approved retrospective observational study of patients admitted to the medical ICU of a tertiary care hospital between July 2012 and August 2015. Patients had to be treated with either NBZ or BZ based sedation and require MV for greater than 24 hrs. The primary endpoint is duration of MV and secondary endpoints are prevalence of delirium, and ICU and hospital length of stay (LOS).

### Results

A total of 402 patients were included; 160 in BZ and 242 in NBZ group. There were no differences in baseline characteristics between BZ and NBZ including; age (median [IQR] 58 yr [48-68] vs. 62 [52-74] or APACHE II score 25 [21-32] vs. 26 [21-30]). Most common primary diagnoses were respiratory failure, shock and pneumonia. MV duration was BZ; (70.5 hrs [45.2-132] vs. NBZ; 55 [36.6-88.4]  $p < 0.01$ ). Prevalence of delirium was 65.8% in BZ vs. 50.2% in NBZ,  $p < 0.01$ . ICU and hospital LOS was longer in BZ group (4.8 d [3-8] vs. 3.7 [2.6-6]  $p < 0.01$ ) and 10.3 d [5.6-16.2] vs. 7.5 [5-12.7]  $p < 0.01$ ). Subgroup analysis compared BZ group to the NBZ group excluding patients who only received analgesics, showed prolonged MV (70.5 hrs [45.2-132] vs. 49.4 [31.4-87.2]  $p < 0.01$ ), ICU LOS (4.8 d [3-8] vs. 3.7 [2.5-6.2]  $p = 0.04$ ) and hospital LOS (10.3 d [5.6-16.2] vs. 6.8 [5-11.5]  $p < 0.01$ ).

### Conclusion

Analgesedation and NBZ based sedation regimens rather than BZ based sedation in critically ill, MV adults may reduce duration of MV, incidence of delirium, ICU and hospital LOS.