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### **“Impact of Mean Arterial Blood Pressure Compliance on Neurologic Outcome in Patients with Traumatic Spinal Cord Injuries”**

**Introduction:** Nearly 300,000 Americans currently live with a spinal cord injury with 17,500 new spinal cord injuries occurring yearly. The early clinical management of traumatic spinal cord injury (TSCI) is crucial to the impact on patient outcomes. Adequate blood pressures are necessary in maintaining perfusion to injured neural tissue and preventing secondary ischemic insult. In 2013, the American Association of Neurologic Surgeons recommended that mean arterial blood pressure (MAP) be maintained between 85-90 mmHg for seven days after TSCI. This guideline was initially supported by several case series and it is a Class III recommendation. However, 100% adherence to these guidelines is rarely accomplished in practice. Previous studies have demonstrated difficulty with MAP goal compliance in this patient population.

**Objective:** The objective of this study was to determine physician compliance with MAP guidelines and neurologic function in TSCI patients.

**Methods:** A retrospective chart review of consecutive adult patients with TSCIs occurring from July 2012 to August 2021 who presented to an urban Level 1 trauma center was performed. Electronic medical records were used to identify trauma patients and to obtain demographics and patient outcomes. Daily MAPs were collected for seven days post-admission. Compliance was quantified as the ability to successfully maintain an average weekly MAP  $\geq 85$  whereas non-compliance is quantified as an average weekly MAP  $< 85$ . Patients were then stratified into these groups over one week following injury. The primary outcome measured was neurologic improvement quantified by American Spinal Injury Association (ASIA) scale from admission to post-MAP protocol (discharge and follow-up). Chi squared and Student's t-test were used to perform statistical analysis. A p value  $< 0.05$  was determined to be significant.

**Results:** A total of 96 patients were enrolled in the study with 22 patients in the non-compliance group. When stratified by MAP guideline compliance, no significant differences were observed between the two groups in regard to age ( $p=0.5$ ), BMI ( $p=0.6$ ), comorbidities ( $p>0.05$ ), and spinal surgery ( $p=0.2$ ). Patients in the non-compliance group were more likely to be female ( $p=0.001$ ) and had a significantly longer ICU length of stay ( $p=0.01$ ). There was no significant difference in ASIA score improvement at the time of discharge ( $p=0.7$ ) and at initial clinic follow-up ( $p=0.9$ ).

**Conclusions:** In this study, compliance with current guidelines did not show an association with neurologic outcome. The specific patient population in the non-compliance group had a longer ICU length of stay and were more likely to be female. Future studies will focus on the further elucidating risk factors for non-compliance with MAP goals and how this plays a role in post-MAP protocol neurologic improvement.