

Title: **Emergency Department Management of Systolic Blood Pressure in Patients with Type B Aortic Dissection**

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Introduction: Acute aortic dissections have a high morbidity and mortality rate with up to 35% of patients dying in the hospital. Type B aortic dissections are a relatively uncommon diagnoses encountered in the emergency department (ED). The mainstay of treatment for these patients includes strict systolic blood pressure (SBP) and heart rate (HR) control per the American Heart Association (AHA) guidelines. However, predictors of successful ED management in SBP control have not been well described.

Methods: We retrospectively analyze the records of adult patients between 2017-2020 that presented to any ED with Type B aortic dissections with SBP > 120mmHg and HR > 60bpm, who were subsequently directly transferred and admitted to the critical care resuscitation unit (CCRU) at University of Maryland Medical Center. Multivariable ordinal and univariate probit logit for predictors of successful management, defined as SBP < 120mmHg at leaving ED.

Results: Our data analysis included 143 patients. Mean (+/-SD) triage SBP was 157 (+/-41) while SBP at time of transfer was 145 (+/-33). Ninety-six patients (67%) received antihypertensives (AHT) while in the ED, only 40 patients (28%) received (AHT) infusions. Multivariable ordinal logistic regression showed higher triage SBP was associated with higher SBP at time of transfer (coefficient=-0.02, p<0.001). Multivariable ordinal regression showed that AHT infusion was associated with increased odds of achieving SBP < 120mmHg at time of transfer (coefficient=0.95, p=0.026 and coefficient=1.12, p=0.014, respectively). Probit logit regression showed for when patients first presented to ED with SBP > 160mmHg, the probability of achieving SBP < 120mmHg at time of transfer was 19%.

Conclusions: Systolic blood pressure of most patients with Type B dissection did not meet AHA guidelines upon leaving Emergency Departments. Although further studies are needed, ED clinicians are recommended to start antihypertensive infusions early for patients with Type B aortic dissections.