

# EVMS Emergency Medicine Journal Club

January 31, 2021

**Citation:** McAlister FA et al., [Elevated Blood Pressures Are Common in the Emergency Department but Are They Important? A Retrospective Cohort Study of 30,278 Adults](#). Ann Emerg Med. 2021 Apr;77(4):425-432.

**Background:** Treatment of patients with asymptomatic HTN in the ED is a controversial issue with disparate published data regarding patient long-term risks for morbidity and mortality if left untreated. 2013 ACEP guidelines recommends “referring patients with asymptomatic markedly elevated BP for follow-up rather than instituting therapy in the ED except in select situations such as hypertensive emergencies”.

## **Methodology (Study design):**

This was a retrospective cohort study using EMR for all adults treated and released from the University of Alberta Hospital ED in 2016 that were linked to administrative records for all health care encounters in the province for 2 years before and after the index ED visit. The **primary outcome** measure was a composite of stroke or transient ischemic attack, acute coronary syndrome, new heart failure, or death over 2 years. Patients were 18 years or older without a diagnosis of acute stroke, cerebral contusion, ICH, or anaphylaxis. Elevated blood pressures were stratified into categories 140 to 159/90 to 99, 160 to 179/100 to 109, and 180/110 mm Hg, and using the highest of systolic or diastolic BP to classify patients. We determined the primary ED diagnosis, Canadian Triage and Acuity Scale score on presentation, antihypertensive medication use in the ED and any prescriptions for antihypertensive medication **in the first 90 days** after discharge from the index ED visit.

## **Results:**

- In the final cohort of 30,278 patients, 48.6% (14,717) had elevated BP readings and 72.9% (10,732) of those had no prior diagnosis of HTN.
- 2.1% were prescribed BP meds by the ED MD and 7.9% of those in the >180/110 were prescribed BP meds.
- 13.9% of patients' w/o a hx of HTN who had elevated ED BP were started on meds within 90 days and 25% of those patients whose ED BP was >180/110 were started on meds in follow-up.
- After adjusting for age, sex, DM, A-fib, history of cardiac disease, patients with elevated ED BP's who **did not have a history of HTN** were not at increased risk for the composite outcome at 2 years (adjusted HR 0.84 CI 0.71-1.004).
- After adjusting for age, sex, and comorbidities, patients **with a history of HTN** were not at increased risk for the composite outcome **based upon their ED index visit BP** though their
- In patients with a history of hypertension, those with the lowest ED BPs exhibited the poorest outcomes over the study period.

## **Strengths:**

Strengths of his paper include a cohort of 30k+ patients. The follow-up data was robust. The paper provides for a lot of observational statistical data regarding the current practice of ED physicians towards treatment of high blood pressures and starting antihypertensive medications both in the ED as well as how often antihypertensive medications were started following discharge.

## **Weaknesses:**

Retrospective database analysis. Single triage blood pressure measurements were used. AKI or CKD were omitted from composite outcome which disregards an important morbidity. Outpatient interventions such as medication adherence and lifestyle modification (diet and exercise) were not accounted for.

## **My Clinical Bottom Line:**

Elevated BP readings in the ED are common and are often the first-time hypertension is detected. Elevated BP is associated with poorer cardiovascular outcomes, but the risk is attributable to patients' age, sex, and comorbidities, rather than an independent association between ED BP readings and short-term prognosis. Elevated BPs in the ED should generate a prompt referral for outpatient follow-up, and not necessarily oblige the ED physician to starting medication in the ED.