

Article Appraisal

**Article:** McAlister FA, Youngson E, Rowe BH. 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. doi: 10.1016/j.annemergmed.2020.11.005. Epub 2021 Feb 10. PMID:

33579586.

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# Background and Study Objective(s):

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# Study Objectives

To determine the:

1. Frequency of elevated BP in the ED
2. Proportion with prior or subsequent HTN diagnosis in other settings
3. Association between ED BP levels and cardiovascular events (stroke, transient ischemic attack, acute coronary syndrome, heart failure, or death) 2 years post discharge

# Study Design:

Retrospective cohort study from the University of Alberta Hospital ED in 2016. All Alberta residents ≥ 18 without diagnosis of stroke, cerebral contusion, intracranial hemorrhage, and anaphylaxis were included; patients who left AMA, were admitted or transferred, or died, were excluded. Patients were stratified into categories based upon bp < 140 / 90, 140 -159 / 90 – 99; 160 – 179 / 100 – 109; > 180 / 110. All outpatient claims in the 2 years before and 2 years after the index visit were ascertained; the Charlson score was obtained. All outpatient prescriptions obtained from the provincial database.

The primary outcome included the composite of hospitalization for stroke, TIA, HF, ACS, or death. Crude outcomes were stratified by prior HTN diagnosis and bp levels, and various bp levels (above) were compared. Confounders including age, sex, and prior cardiovascular diagnoses were used for adjustment.

# Results:

Overall, 68 761 patients assessed; 30 278 treated and discharged from the ED; 14 717 had an elevated bp; (of those 10 732 had no prior diagnosis of HTN. Patients with elevated bp were older, more likely to be men, more likely to have a lower CTAS score, and more likely to have cardiovascular comorbidities. Those with the highest blood pressures were the oldest and had the most comorbidities. Emergency physicians prescribed antihypertensives infrequently. After adjustment, patients with elevated bp were no more likely to have a composite outcome in the next year or two years. (adjusted hazard ratio 0.84, 95% CI 0.71 to 1.004 over 2 years)

# Validity of Results

# This study addressed several focused clinical questions with clear objective outcomes. Measurements were only obtained at triage and it is possible that patients were misclassified. All linked database analyses are limited by fidelity of data linkages. There was no adjustment for medication prescription or adherence, or lifestyle modification when estimating the adjusted outcomes, even though medication adherence is a key factor in ameliorating adverse cardiovascular events. Outcomes were censored at 2 years and longer-term outcomes cannot be estimated. There were no conflicts of interest.

# Generalizability of Results:

# While the inclusion criteria are broad and clinically relevant, results are from a single Canadian urban ED. Availability and intensity of follow-up may not apply in all settings.

# The Bottom Line:

In this single center study, elevated blood pressure was noted in nearly half of ED patients, and more common in older patients, men, and those with cardiovascular risk factors, but is not associated with adverse cardiovascular events or death at one or 2 years. This appears to support the practice of conservative management of isolated high blood pressure at the index ED visit.