

**Washington University Emergency Medicine Journal Club**  
**Evaluation and Management of Asymptomatic Hypertension in the ED**

**Vignette**

You arrive in TCC for your 3p-11p shift and are taking sign out from Dr. Bavolek after one of her typical trauma shifts. After receiving report on the 4<sup>th</sup> level 1 trauma, the stroke patient receiving tPA and awaiting an NNICU bed, the “wound check” with turned out to be nec fasc, and “I’ve had abdominal pain for 6 months, I’m here for a third opinion,” you see that EM4 has a green zoom icon. “Oh, don’t worry about him,” she says, “that dental pain is going home.”

On the way to see your first patient that was paged out as “unknown male found down, agonal respirations, CPR in progress TCC6. TY Cindi” you are stopped by one of our new nurses. “Hey, are you done with sign out? Did Dr. Bavolek leave already? I was just discharging EM4 but his blood pressure (BP) is 215/111, do you want to do anything about that?”

In between shocks, CPR, and intubating the new patient, you manage to review EM4s chart. He’s a 51 year old African American gentleman who came in with left lower dental pain. He has no past medical history but has not sought medical care in years. After exam showed no abscess you see he received an inferior alveolar block, discharged on vicodin, penicillin, and given both a dental referral and IHN follow up.

While placing an ICY line with your new electronic manometer you think to yourself, “huh, that’s kind of high, what DO I do? No, better yet, what would Chris Carpenter do? WWCCD... WWCCD...” As you’re waiting for radiology to pull up your chest X-ray confirming tube placement, you open PubMed at the computer between TCC4 and TCC5 and this is what you find...

**PICO Question**

**Population:** Patients presenting to the emergency department (ED) with severely elevated BP and no signs or symptoms concerning for end-organ damage

**Intervention:** Laboratory testing, electrocardiogram (ECG), chest x-ray, or rapid reduction in blood pressure

**Comparison:** Outpatient referral for evaluation and initiation of antihypertensive therapy

**Outcome:** Stroke, MI, renal failure, dialysis, death.

**Search Strategy**

In PubMed, the search terms “asymptomatic hypertension” and “emergency department” were entered (<http://tinyurl.com/d44c5vq>) resulting in 83 articles, from which 3 relevant articles are selected. A search of the [ACEP clinical policies](#) for hypertension yields the final article.

**Article 1:** [Nishijima DK, Paladino L, Sinert R. Routine testing in patients with asymptomatic elevated blood pressure in the ED. Am J Emerg Med. 2010 Feb;28\(2\):235-42. Answer Key.](#)

**Article 2:** [Zeller KR, Von Kuhnert L, Matthews C. Rapid reduction of severe asymptomatic hypertension. A prospective, controlled trial. Arch Intern Med. 1989 Oct;149\(10\):2186-9. Answer Key.](#)

**Article 3:** [Decker WW, Godwin SA, Hess EP, Lenamond CC, Jagoda AS; American College of Emergency Physicians Clinical Policies Subcommittee \(Writing Committee\) on Asymptomatic Hypertension in the ED. Clinical policy: critical issues in the evaluation and management of adult patients with asymptomatic hypertension in the emergency department. Ann Emerg Med. 2006 Mar;47\(3\):237-49. Answer Key.](#)

**Article 4:** [Karras DJ, Kruus LK, Cienki JJ, Wald MM, Ufberg JW, Shayne P, Wald DA, Heilpern KL. Utility of routine testing for patients with asymptomatic severe blood pressure elevation in the emergency department. Ann Emerg Med. 2008 Mar;51\(3\):231-9. Answer Key.](#)

### Bottom Line

Elevated BP remains a common finding in patients presenting to the ED ([Karras 2005](#)). While the detrimental effects of long-standing untreated hypertension have been well-documented with respect to the risk of [stroke](#), [myocardial infarction](#), and [chronic kidney disease](#), the risks of untreated hypertension in the short-term have not been proven. For patients with signs or symptoms of end-organ damage, the course of action for Emergency Physicians is fairly straightforward, with work-up and treatment recommended. The dilemma lies with those patients presenting with asymptomatic elevated BP.

Currently, the ED management of patients with severe elevated blood is [highly variable](#), with differences in both treatment (intravenous and oral anti-hypertensives to effect an immediate reduction in BP, initiation or modification of outpatient antihypertensive regimen, discharge for follow-up with no antihypertensive medications) and evaluation (extensive ED testing. Options for treatment include intravenous and oral anti-hypertensives to effect an immediate reduction in BP, initiation or modification of outpatient antihypertensive regimen, or discharge for follow-up with no antihypertensive medications).

Two articles were identified which addressed the utility of ED testing in asymptomatic hypertensive patients ([Karras 2008](#), [Nishijima 2010](#)). Typically, testing involves evaluation of a urinalysis and basic metabolic profile to assess for renal injury, an electrocardiogram to assess for cardiac ischemia, and a complete blood count to evaluate for anemia. In these two studies, 6%-7.2% of patients had abnormal results that resulted in a change in management. Both of these were

multicenter studies assessed at urban EDs, and therefore may not be externally valid to community EDs, managed healthcare institutions, or countries with national healthcare systems. As the majority of management changes involved hospital admission, the lack of primary care follow-up in urban EDs, with largely uninsured and Medicare/Medicaid patients ([Asplin 2005](#), [Owens 2009](#)), may have artificially inflated the proportion of patients whose management was altered. Insurance status has been shown to influence admission rates in other disease processes, including TIA ([Chaudhry 2013](#)) and venous thromboembolism ([Misky 2011](#)). Additionally, these two studies on asymptomatic hypertension did not assess the long-term impact of ED testing on [patient-important outcomes](#) (stroke, MI, death, renal failure).

Only one article addressing the effect of rapid reduction of BP in patients with asymptomatic severely elevated hypertension in the ED ([Zeller 1989](#)). This study demonstrated similar reductions in BP one week after ED presentation among patients discharged on an outpatient antihypertensive regimen in all 3 treatment groups: 1) patients given 0.1 mg of clonidine in the ED every hour for up to 5 hours until sufficient BP reduction was achieved; 2) patients given placebo every hour for up to 5 hours; 3) patients discharged from the ED immediately. While this study assessed a surrogate outcome (mean change in BP), it seems unlikely that short-term elevations in BP (less than one week) would cause a significant increase in the risk of more important outcomes previously described.

The American College of Emergency Physicians has a clinical policy addressing the evaluation and management of patients with asymptomatic hypertension. Unfortunately, this policy is based on limited available evidence, and no level A recommendations were made. With regards to the accuracy and reliability of BP readings in the ED in asymptomatic patients, 2 recommendations were made

- 1) A level B was made that patients with persistently elevated BP (systolic BP > 140 mmHg, diastolic BP > 90 mmHg) should be referred for follow-up
- 2) A level C recommendation was made that patients with a single elevated BP may need further screening as outpatients.

With regards to the rapid lowering of BP in asymptomatic patients, 3 level B recommendations were made:

- 1) Initiation of treatment is not necessary in patients with follow-up.
- 2) Rapid lowering of BP is unnecessary and potentially harmful.
- 3) Management, when initiated, should attempt to gradually lower the BP, and should not be expected to normalize the BP during the ED stay.

This clinical policy was limited, not only by the lack of available evidence, but also in its failure to address [patient values and preferences](#); the policy was based purely on physician and nursing input. Additionally, policies and guidelines are often difficult to interpret due to lack of a standardized system for grading the evidence and the strength of the recommendations. The [GRADE working group](#) (Grading of Recommendations Assessment, Development, and Evaluation) has been working to address these shortcomings and standardize grading across multiple organizations.

This system recommends assigning a “strength of recommendation” based upon the uncertainty associated with risks and benefits of an intervention, rather than physician preference and gestalt.

The current literature supports a focused laboratory assessment of patients with asymptomatic hypertension in the ED, particular among patients with poor follow-up. It seems reasonable to initiate outpatient antihypertensive management in patients with persistently elevated BP in the ED, again particularly in those in whom early follow-up is not guaranteed. The rapid lowering of BP in the ED in patients without symptoms of end-organ damage does not seem to provide any benefit with respect to BP measurement at one week, and likely provides no decrease in the risk of patient-important outcomes. Additionally, this practice may actually lead to increased short-term risk, and should be avoided.