

Just the Facts: Hypertension in the emergency department

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CLINICAL SCENARIO

A 65-year-old female smoker complains of dizziness and mild headache. While at the local pharmacy buying acetaminophen, she decides to check her blood pressure to see if it could be “causing her symptoms.” Her initial measurement is 220/96 mm Hg. In consultation with the on-duty pharmacist she is instructed to immediately attend the emergency department (ED) for management of her hypertension.

KEY CLINICAL QUESTIONS

1. What are the key hypertension-related terms that all emergency physicians should know?

When evaluating patients presenting to the ED with hypertension, it is important to recognize the presence of a hypertensive emergency.¹ Hypertensive emergencies are disorders of elevated blood pressure (usually >180/120 mmHg) associated *with signs or symptoms* of acute hypertension-mediated target-organ damage (e.g., myocardial ischemia, acute pulmonary edema, encephalopathy, stroke, aortic dissection, acute renal failure). In general, they require an immediate reduction in blood pressure using intravenous drugs, with optimal therapy determined by the specific emergency.¹ The term *asymptomatic hypertension* is frequently used to refer to patients having the presence of hypertension, but without clinical evidence of acute target-organ injury.² The American College of Emergency Physicians (ACEP) has suggested replacing this term with *asymptomatic markedly elevated hypertension* for patients with a systolic blood pressure ≥ 160 mm Hg or a diastolic ≥ 100 mm Hg.² Other commonly used terms, including *hypertensive crisis* and *hypertensive urgency*, do not provide emergency clinicians with additional guidance for the management of patients with elevated blood pressure and should be avoided.

2. Will patients who have an elevated blood pressure measurement in the ED have persistent elevated blood pressure after discharge?

Factors such as pain, anxiety, and recent tobacco, alcohol, or caffeine use may acutely and temporarily elevate blood pressure from baseline.¹ Drugs including NSAIDs, over-the-counter cough preparations, and stimulants can have similar effects. Simply repeating the blood pressure 30–60 minutes after the initial measurement has been shown to significantly reduce recorded pressure in up to 30% of ED patients.² Of course, an elevated reading may also indicate that the patient has unrecognized or uncontrolled hypertension. *More than half* of patients presenting to the ED with elevated blood pressure and no prior diagnosis of hypertension will have persistent hypertension after discharge, and the severity of elevation likely has a direct correlation with the probability of undiagnosed hypertension.³ Patients

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presenting to the ED with elevated blood pressure and a known history of hypertension may be at similar risk of having subsequent elevated blood pressure after discharge.⁴ In patients without prior diagnosis of hypertension, the relationship between elevated ED blood pressure and pain or anxiety scores has been questioned and elevated blood pressure may in fact represent chronic uncontrolled hypertension.³

3. Should patients with asymptomatic markedly elevated hypertension presenting to the ED be screened for evidence of hypertension-mediated target-organ damage?

A thorough history and clinical examination (including fundoscopy) should be conducted to evaluate for signs and symptoms of acute hypertension-mediated target-organ damage.¹ Physicians should also consider potential secondary causes of hypertension. A small proportion of the laboratory and diagnostic tests obtained in this population (approximately 5%) will be abnormal, with hematuria/proteinuria being most common.⁴ It is not clear if patients with these mostly nonacute abnormal results should be managed differently in the ED than those with hypertension and normal testing. Guidelines published by ACEP in 2013 provide a weak recommendation against routine screening for acute target-organ injury but indicate that in select populations screening for elevated creatinine may affect disposition.² Low-income patients and those of African descent, in particular, appear to be at higher risk of hypertension-related complications.²

4. Are signs and symptoms including minor headache, dizziness, and epistaxis caused by hypertension?

Unfortunately, there is no high-quality evidence available to answer this question. Symptoms commonly attributed to hypertension, including headache and dizziness, are common among ED patients with elevated blood pressure, but the presence of these symptoms does not appear to correlate with the severity of elevation.⁵ Minor symptoms in the context of an elevated blood pressure may prompt physicians to investigate for evidence of a hypertensive emergency. Ultimately, clinicians must use clinical judgement, including diagnostic testing, if required, to differentiate minor symptoms from a hypertensive emergency. There is no evidence to suggest that isolated minor symptoms, including headache and dizziness, have prognostic value or that they should trigger more aggressive ED management of blood pressure. One systematic review and meta-analysis did find a weak association between patients with underlying hypertension and epistaxis; however, the study was limited by significant heterogeneity, and the authors concluded that further study is required to prove causation.⁶

5. For patients presenting to the ED with asymptomatic markedly elevated hypertension, does immediate lowering of the blood pressure decrease adverse patient outcomes?

Once a hypertensive emergency has been ruled out, there is no high-quality evidence to support the immediate lowering of blood pressure in the ED, regardless of the severity of elevation. A large retrospective cohort study with propensity matching of over 50,000 patients presenting to an office setting with a blood pressure >180/110 mmHg found that ED referral did not improve blood pressure control at 6 months (65% v. 67% in patients sent home) or reduce major adverse cardiovascular events at 6 months, but did increase hospitalizations.⁴ However, there is limited evidence to suggest potential harm from rapid and unpredictable drops in blood pressure following immediate treatment, especially when intravenous and rapid acting oral agents are used.² Antihypertensive nonadherence is a significant factor in as many as a quarter of ED presentations for hypertension⁴ and it is generally accepted that these patients should be restarted on their medications.² After addressing patient symptoms, physicians should focus on arranging proper follow-up with a primary care provider and, in selected patients (e.g., poor follow-up), consider the initiation of long-term blood pressure control.

CASE RESOLUTION

On arrival to the ED triage, the patient's blood pressure remained elevated at 200/90 mmHg. A complete history and physical exam ruled out the presence of a hypertensive emergency. History taking revealed that the patient had been

nonadherent with her antihypertensive medications. A repeat blood pressure measurement 60 minutes after arrival decreased to 176/86. The patient received acetaminophen for her minor headache with good relief. The treating physician did not attempt to acutely lower the blood pressure in the ED, and no investigations were performed. Repeat prescriptions for her antihypertensives were issued at discharge, and a letter was written to her primary care physician recommending follow-up for blood pressure monitoring within the next 2 weeks.

KEY POINTS

- Emergency physicians must differentiate between patients presenting with hypertension and those with a hypertensive emergency.
- Waiting 30–60 minutes alone can significantly lower blood pressure readings in many patients.
- Once a hypertensive emergency has been ruled out, there is a lack of evidence to support acute lowering of blood pressure in the ED, and management should concentrate on the presenting symptoms, rather than blood pressure.
- Emergency physicians should identify and appropriately refer patients who may have unrecognized or poorly controlled chronic hypertension.

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