

A 62-Year-Old Man With Very Elevated Blood Pressure

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A 62-year-old man presented to the emergency department (ED) after being referred by his internist when excessively elevated blood pressure (BP) readings were recorded. He had presented to his physician after having several episodes of headache in the past week. He has diagnosed hypertension and was aware that headache can mean excessively high blood pressures.

He has had hypertension for about 20 years and had been managed recently with an angiotensin converting enzyme (ACE) inhibitor and thiazide diuretic, although he admits his adherence is not the best. He has had frequent gaps in taking his medications, which he attributes to his busy and tense work schedule. He has had multiple BP readings at his internist's office and the ED. The consistent reading is 200/115 mm Hg. The patient's internist had appropriately allowed him to lie quietly for 30 minutes between several BP measurements, although this did not affect his BP.

A combination of history, physical findings, and studies at both the inter-

nist's office and the ED revealed no acute or lateralizing neurological symptoms or signs, and no chest pain or shortness of breath. The results of a professional funduscopy showed only arteriovenous nicking and chest film without pulmonary edema or mediastinal widening. Findings from the laboratory studies showed a normal complete blood cell count and biochemistry (creatinine, 1.0 mg/DL) and a normal level of troponins. The electrocardiogram showed left ventricular hypertrophy but no injury.

Which of the following is the correct statement regarding the management of the presented patient at this time?

- A. He should be admitted for hospital care in the intensive care unit (ICU) setting and receive intravenous (IV) antihypertensive therapy immediately.
- B. His current acute episode is associated with adverse short-term (months) outcomes.
- C. He can be managed with oral

agents with adjustment to long-acting medicine but can do so as an outpatient with follow-up in 1 to 7 days.

- D. His current episode is not associated with increased risk for adverse long-term (years) stroke or cardiovascular events.

Correct Answer: C.

He can be managed with oral agents with adjustment to long-acting medicine but can do so as an outpatient with follow-up in 1 to 7 days.

It is most essential and always appropriate to review any and all aspects of hypertension, which remains one of the most common yet eminently treatable illnesses in the United States (and world). Yet, hypertension also remains a dominant cause of morbidity and mortality. The next 2 "What's the Take-Home?" columns will deal with situations involving uncontrolled hypertension by absolute numbers and clinical signs and symptoms. The first will address the demographics that resulted in the patient's arriving to such a serious and morbid place, and the second will address, more specifically, where in the spectrum patients fit and the appropriate acute managements to these categories.

When does hypertension become significantly more acutely dangerous and morbid? Most people agree that when systolic BP reaches 180 mm Hg and diastolic BP reaches 110 to 120 mm Hg, there is threat for acute organ damage and something significant needs to be done quickly.¹ There are other niche instances where lower numbers in nonchronic

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situations (eg, preeclampsia/eclampsia syndromes) are equally dangerous. And we will not be addressing the well-known long-term morbidity and mortality risks of chronic, much lower numbers.² This discussion will be limited to acutely recognized, very high BP cases.

The demographics are well elucidated. Despite the amazingly broad, diverse, and effective array of antihypertensive medications available currently, hospital admissions for hypertensive emergency ("malignant hypertension" in older terminology) have continued to increase in recent decades. Some numbers are 4.6% visits to EDs; demographics are older than 60 years of age with overrepresentation of minority/underinsured people in low-income areas.³ Happily, despite more cases and admissions, in-hospital mortality has declined but remains significant at 0.2% to 11%.¹

The clinical burden of uncontrolled hypertension is demonstrated by not just hospital morbidity and mortality but also by short- and longer-term outcomes after an admission. Interestingly, the short-term morbidity and mortality seem less effected than the long term. Thus, an admission for an episode of hypertensive urgency/emergency (even without demonstrable new organ damage) has shown to result in large, statistically very significant risk for stroke within 3 years' follow-up, even with satisfactory BP control after the acute event, as well as increased risk for subsequent nonfatal or fatal cardiac events within the same time frame.⁴

On the other hand, an admission for acute decompensated hypertension does not seem to add risk subacutely, such that there is no increased risk for stroke or cardiovascular events in the 3 to 6 months after an office, ED, or even in-hospital intervention. The precise number being surprisingly low at 0.9%,⁴ much lower than, for example, the recurrent acute myocardial infarction incidence after admission for an acute coronary syndrome. These facts are presented in the exact reverse by Answers B and D, which are thus both incorrect choices here.

TAKE-HOME MESSAGE

BP readings exceeding 180/110-115 mm Hg are dangerous and require rapid lowering to prevent acute end-organ damage and death. When end-organ damage (eg, stroke, cardiac event, renal failure) is already present, the syndrome is termed "hypertensive emergency." If no such damage is yet demonstrable, it is termed "hypertensive urgency." The former requires an ICU setting, while the latter can be effectively managed using longer-acting agents in the office or ED setting with early discharge and a close follow-up. Excessive BP syndromes are most often seen in patients alleged to be taking antihypertensive regimens for previously diagnosed long-term hypertension. Noncompliance is by far the dominant underlying risk factor and is associated with age older than 60 years, underinsured, and low-income groups. Although the intermediate prognosis following such an episode is rather surprisingly minimally affected by such an episode, the longer-term (3 years) risk of suffering a stroke or morbid cardiovascular event (eg, acute myocardial infarction or congestive heart failure) after an excessive hypertensive episode is quite high.

Another important demographic is the determination of why a patient's hypertension goes so wildly off the rails. The overwhelmingly most common issue and predictor is nonadherence to previously prescribed antihypertensive medications in patients already known to have hypertension—a sad thing in this time of effective and relatively inexpensive agents compared with the adverse-effect laden heavy artillery agents (eg, stupor-inducing reserpine and barbiturates, hypotension, and impotence inducing guanethidine) of a generation ago. Additional risk factors to be gleaned in the intake history include exposure to drugs—both therapeutic drugs, such as overuse of nonsteroidal anti-inflammatory drugs and allergy premedication, as well as illicit drugs, such as cocaine.¹ A variety of less-common precipitants, such as the previously mentioned preeclampsia/eclampsia syndromes, pheochromocytoma, and other board favorite zebras, usually have a unique, clue-laden demographic and clinical findings with them and will not be further addressed here.

However, the patient arrives to medical attention be it clinical findings (see below) or numbers alone. It is now time to categorize where in the spectrum that patient is, since appropriate initial therapeutics and setting are required. Very grossly, the initial issue is, "Do we need to, not just admit, but admit to an ICU setting for intensely monitored and titrated IV therapy? Or can management be performed in an office or ED setting using excellent and powerful oral medicines with discharge and close follow-up at home?" The literature gives outstanding guidance for such categorization and therapeutics. Basically, we use these definitions to place patients, once they have a BP of 180/110-120 mm Hg or higher:

1. Absence of acute target organ damage, such as stroke, retina, chest pain/congestive heart failure, or renal failure. This syndrome is termed "hypertensive urgency."
2. BP readings as mentioned above but with associated acute target organ damage is termed "hypertensive emergency."

Patients categorized with “hypertensive urgency” can be safely and effectively managed acutely in the office or ED setting, using either long-acting oral medication for a brief period or rapidly acting oral medication followed by adjustments to the longer-acting medication plus follow-up in the first week. Patients categorized with “hypertensive emergency” must have more intensely monitored and titrated therapy in an ICU setting, which usually requires a 2- to 3-day period to safely and effectively control the dangerous situation before resuming chronic, outpatient care.¹ Our patient from the case above fits Answer C and not Answer A, which is incorrect.

PATIENT FOLLOW-UP

Our patient's clinical findings were most consistent with hypertensive urgency. In the ED, oral labetalol, 200 mg, was initiated, and within 30 minutes, the patient's BP had lowered to 175/100 mm Hg. His BP at hour 4 was 160/90 mm Hg. His outpatient regimen was refilled, and he was to be seen in 3 days and in 1 week. At both visits, he was asymptomatic and had BP readings in the 140/85 mm Hg range.

REFERENCES

1. Peixoto AJ. Acute severe hypertension. *N Engl J Med*. 2019;381(19):1843-1852. doi:10.1056/NEJMcp1901117
2. Flint AC, Conell C, Ren X, et al. Effect of systolic and diastolic blood pressure on cardiovascular outcomes. *N Engl J Med*. 2019;381(3):243-251. doi:10.1056/NEJMoa1803180
3. Janke AT, McNaughton CD, Brody AM, Welch RD, Levy PD. Trends in the incidence of hypertensive emergencies in US emergency departments from 2006 to 2013. *J Am Heart Assoc*. 2016;5(12):e004511. doi:10.1161/JAHA.116.004511
4. Rothwell PM, Howard SC, Dolan E, et al. Prognostic significance of visit-to-visit variability, maximum systolic blood pressure, and episodic hypertension. *Lancet*. 2010;375(9718):895-905. doi:10.1016/S0140-6736(10)60308-X