



The Approach to the Hypertensive Patient in the Urgent Care Setting

Urgent message: Previously undiagnosed hypertension is common among ambulatory patients, and urgent care providers are often the first to recognize and diagnose this condition. Initiating treatment, testing, and providing patient education and follow-up are well within the scope of urgent care practice and help ensure positive outcomes. Being attentive to the presentation and care of hypertensive emergencies is also paramount.

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Hypertension (HTN) affects approximately 29% of American adults, according to the latest report released from the Centers for Disease Control.¹ While typically this disease process is diagnosed and managed by the patient's primary care provider, there may be times that a patient presents to the urgent care center with either high blood pressure (BP) as a secondary finding or with symptoms that are sequelae of high BP. The task for an urgent care provider includes defining and managing HTN, determining the need for testing, and recommending appropriate follow-up.

In this article, we first examine the process for identifying patients with "simple" elevated BP—those who might likely be categorized as prehypertensive or hypertensive—and then patients who may be in hypertensive crisis or hypertensive emergency.

Patients with Elevated Blood Pressure

The following patients represent two common presentations to the urgent care center:

- A 40-year-old female complains of right ankle pain after twisting it. She appears to be in a substantial amount of pain and has to be helped from her vehicle into the clinic. She denies any known medical problems, takes no medications, and does not smoke. She took two 200 mg of ibuprofen without relief. On exam, her right ankle is swollen over the lateral malleolus with ecchymosis. Her blood pressure upon



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two readings in the office is 148/90 and 152/96.

- A 52-year-old male presents for a pre-employment physical examination. He does not have a primary care provider. He smokes one pack of cigarettes per day. He has no current complaints, and specifically denies chest pain, shortness of breath, and headaches. His blood pressure readings in the office are 158/92 and 160/92. Both cases represent significant challenges.

Definitions

HTN can either be classified as primary (essential) or secondary.

- *Primary HTN* accounts for an estimated 95% of all HTN cases. It does not have a well-defined cause, but rather has been linked to predisposing factors including, but not limited to, family history, diet, lack of exercise, and obesity.
- *Secondary HTN* refers to elevated BP caused by another medical condition. Commonly associated causes of secondary HTN are conditions that affect a patient's kidneys or cardiovascular or endocrine systems.³

The newest Joint National Committee (JNC 8) Hypertension Guideline place more emphasis on age, race, and comorbidities to determine the appropriate systolic blood pressure (SBP) and diastolic blood pressure (DBP) than do previous recommendations. These guidelines are utilized specifically for guiding hypertensive treatment. Most organizations utilize the following parameters for staging HTN:

- Normal blood pressure: $\leq 120/80$
- Stage 1 HTN: SBP/DBP of $\geq 140/90$ mmHg
- Stage 2 HTN: SBP/DBP of $\geq 160/100$ mmHg²

There is a linear relationship between SBP as low as 115 mmHg and cardiovascular risks. Based on these data, it is recommended that BP readings of 120-139/80-89 mmHg be treated as *prehypertensive* because half of these patients will go on to develop HTN in the next 4 years.³

A person is *hypertensive* at a systolic blood pressure of $\geq 140/90$.² At this level, there is increased risk of kidney disease, intracranial hemorrhage, myocardial infarction, heart failure, and a host of other life-threatening problems. Furthermore, there is a linear relationship between increasing blood pressure and mortality from cardiovascular disease and between increasing BP and mortality from

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ischemic stroke.

Hypertensive crises are designated as BP readings of $\geq 180/120$ mmHg,⁴ with a *hypertensive emergency* defined as elevated blood pressure with signs of end organ damage. These will be discussed in greater detail later.

Consequences and Related Disease Processes

Hypertension is the most common cardiovascular risk factor in the United States, accounting for an estimated 41% of cardiovascular disease (CVD)-related deaths.^{9,10} It is also considered a significant risk factor for myocardial infarction (MI), chronic heart failure (HF), and stroke. Seven out of 10 people having their first heart attack also have HTN, as do eight of 10 people who suffer from a stroke.^{10,11}

In 2013, more than 360,000 deaths in the American adult population included HTN as a primary or contributing cause of death.¹¹ By lowering blood pressure 10 mmHg, lifetime risk for CVD- and stroke-related death decreases by 25% – 45%.² Aside from CVD, MI, chronic HF, and stroke, there is also the risk of developing chronic kidney disease (CKD) and dementia later in life.⁹

HTN presents a unique challenge in that it affects many patients who are likely to visit an urgent care center. Half of those with HTN are uncontrolled or may not even be aware of the diagnosis.¹² The urgent care provider may be the first clinician to identify HTN.

Presentation

The evaluation of patients presenting with high blood pressure in the urgent care center is a multifocal process that begins with a thorough history and physical examination. The vast majority of patients will most likely be asymptomatic, without symptoms of target organ damage.

BP measurements are often taken incorrectly with a cuff too large or too small, leading to abnormally low or high blood pressure readings, respectively. Patients may be lying down, standing, or the measurement might be performed over top of clothing. Repeating the measurement should focus on proper technique. This means:

- A seated patient with the arm at the level of the heart
- An appropriately sized cuff
 - Length = 80% of arm circumference
 - Width = 40% of arm circumference
- A patient who has been relaxing for at least 10 minutes

Table 1. Medications Which May Increase Blood Pressure				
NSAIDs	Stimulants	Oral Birth Control	Decongestants	Antidepressants
Naproxen Ibuprofen Meloxicam Celecoxib Indomethacin	Methylphenidate Dextroamphetamine Lisdexamfetamine	Ortho Evra Ortho-Tri Cyclen Yaz Yasmin	Pseudoephedrine Phenylephrine	Sertraline Citalopram Fluoxetine Paroxetine Escitalopram Fluvoxamine Paroxetine

- Avoidance of automatic blood pressure machines if repeat reading¹³

Once elevated blood pressure is established, the chronicity of the disease, as well as any possible comorbidities and disease sequelae, should be determined. The patient should be asked about headaches, chest pain, shortness of breath, swelling in the legs, abdominal pain, nausea, vomiting, or any focal neurosensory changes, as these all reflect target organ damage.

If symptoms related to target organ damage are absent, the BP may be elevated due to pain. Pain leads to activation of the sympathetic nervous system; as detailed with our first case scenario above, a patient who presents for a sprained ankle may have an elevated BP in the urgent care center, despite not having hypertension.¹

Though an isolated increased blood pressure is not diagnostic of hypertension, a significant number of these patients will have acute illnesses that lead to dehydration or tachycardia; even loss of sleep can increase BP. So, the patient diagnosed with influenza may also have high blood pressure unrelated to underlying vascular disease.

Past Medical History

Many patients will have either a documented history of hypertension, or will have had sporadic high blood pressure readings in the primary care office. Exploration of concomitant risk factors including diabetes mellitus (DM) and CKD will help with long-term risk stratification according to the JNC 8 guidelines.² Commonly used medications such as nonsteroidal anti-inflammatory medications (NSAIDs) and stimulants are known to elevate blood pressure (Table 1).

Physical Examination

Concerning cardiac findings may include murmurs, extra heart sounds, arterial bruits, or abnormal heart rate and rhythm.

The pulmonary examination may reveal crackles rep-

resenting right-sided failure and pulmonary edema. An abdominal exam should explore for tenderness, ascites, and aortic bruits, which could be indicative of an abdominal arterial aneurysm or renal artery stenosis.

Examine the extremities for edema and asymmetry.

A neurological exam may reveal subtle abnormalities from early hypertensive encephalopathy. Funduscopic exam may reveal flame hemorrhages, cotton wool spots, and papilledema.

Routinely ordering lab work, electrocardiograms, or chest x-rays for the hypertensive patient without target organ damage is not recommended.¹

Management

Although the primary application of the Framingham Heart Study is to estimate long-term risk of cardiovascular disease, in the urgent care setting it can be a helpful tool for making decisions about discharging patients with medication and an easy way to deem individuals as high-risk or low-risk. This decision should be made carefully and with specific considerations in mind:

- Ultimately, hypertension is a problem best managed by primary care with access to regular follow-up.
- Patients who do not have access to primary care should be evaluated in a reasonable period, 1 to 2 weeks, to recheck blood pressure, confirm adherence, and monitor for side effects. In patients on diuretics, heart rate and potassium levels may be checked at this time, as well.
- Angiotensin-converting enzyme inhibitors (ACEI) and angiotensin II receptor blockers (ARB) are known teratogens; although popular choices for first-line HTN management, they should be avoided in this group.¹⁶
- One of the few labs that should be considered is a basic metabolic panel evaluating the patient's renal function and potassium level. Although there is no

guideline for this, the decision to obtain labs should be based on comorbid conditions like diabetes, current medications, and age. The provider may be more inclined to obtain lab studies on the 52-year-old male smoker than the 40-year-old female who has no medical problems and takes no medications.

In most cases, treatment should begin with a calcium channel blocker, an ACEI, an ARB, or a thiazide diuretic. In the African-American population, calcium channel blockers or diuretics are preferred.

If the patient is already taking a medication, consider increasing the dosage or adding a second medication.

Follow-Up: What Happened with Our Two Patients?

- **40-year-old female with severe right ankle pain.** She has no medical problems, takes no medications, and does not smoke. She took 400 mg of ibuprofen last night. Her right ankle is swollen over the lateral malleolus, tender, and ecchymotic. Her blood pressure readings in the office after multiple attempts are 148/90 and 152/96.
 - More than likely, this patient's elevated blood pressure is a direct result of her ankle injury. Prescription of medication should be deferred, but the patient should be informed of her blood pressure reading and the importance of outpatient follow-up with her primary care provider. Once her pain is better controlled, she should also check her blood pressure at home or a pharmacy and keep a log of her readings
- **52-year-old male needing a pre-employment physical exam.** He does not have a primary care provider. He has 27 pack-years of smoking. He does not exercise and he generally eats a poor diet. He specifically denies any chest pain, shortness of breath, and headaches. His blood pressures in the office after multiple attempts are 158/92 and 160/92.
 - There is a strong likelihood that this patient has longstanding hypertension. Using the patient's current vital signs, history of smoking, and age, the patient is also likely at very high risk of cardiovascular disease based on the Framingham study. With no primary care provider, it would be reasonable to obtain initial labs including a basic metabolic panel, and to treat this patient with a blood pressure-lowering medication such as hydrochlorothiazide or lisinopril. He should follow up with primary care and check his blood pressure.

Hypertension is seen primarily as a disease best dealt with in the primary care setting. The unfortunate reality,

however, is that a great many patients either have hypertension or have elevated blood pressure without adequate diagnosis or management. These facts necessitate that providers not only be familiar with HTN, but be comfortable addressing it with the patient and possibly treating it with appropriate medications. Next, we will address the appropriate evaluation and management of asymptomatic hypertensive crisis from the urgent care perspective.

Patients Who May Be in Hypertensive Crisis or Hypertensive Emergency

Where previously we discussed the routine diagnosis and management of HTN from the urgent care perspective, we now turn our attention to patients suspected of hypertensive crisis or emergency, problems that add complexity to the already difficult task of managing elevated blood pressure.

As a reminder, HTN affects an estimated 75 million people in the United States.¹ It is, therefore, something that almost every urgent care provider will encounter. Making the appropriate decisions regarding blood pressure elevation, especially in the face of a potentially life-threatening diagnosis, is a critical task.

The following cases represent patients who present to urgent care in potential hypertensive crisis:

- A 62-year-old, obese (body mass index [BMI] of 35) man presents complaining of elevated BP after self-administering a reading using an automated device in a grocery store an hour ago. When the machine showed a reading of 180/110, he became worried and decided to get "checked out." He appears well in the clinic, and denies chest pain, shortness of breath, blurry vision, syncope, or any other symptoms for that matter. His physical exam is within normal limits to include normal cardiac and pulmonary exams. He mentions a 30 pack-year history of smoking. His current blood pressure is 190/125, higher than the grocery store reading.
- A 72-year-old female patient presents complaining of elevated blood pressure. She has a history of HTN and takes lisinopril 20 mg daily. She checks her blood pressure occasionally if she doesn't feel well, and says she checked it today because she has been very tired. After her BP machine showed a reading of 200/110, she decided to come in to the clinic to be evaluated. She denies chest pains, blurry vision, or syncope, but does note increasing shortness of breath (SOB) over the past few days, progressing from only when she walks her dog to SOB at rest. Her BP in the clinic is 196/120, and although her

Table 2. Signs of Potential Organ Damage	
Symptom	Potential Source
Chest pain	Myocardial infarction, aortic dissection
Shortness of breath	Pulmonary edema, pulmonary embolism, myocardial infarction
Vision loss or disturbances	Stroke, increased intracranial pressure
Lower back pain	Heart failure
Nausea/vomiting	Increased intracranial pressure
Weakness	Stroke, aortic dissection
Numbness/tingling	Stroke, aortic dissection
Seizures/change in mental status	Increased intracranial pressure
Headache	Subarachnoid hemorrhage
Pregnancy*	Preeclampsia/eclampsia

*Pregnancy is not a symptom, but it is worth noting here because of how it affects the differential diagnosis

pulmonary examination is normal, she has distant heart sounds, and is tachycardic with a rate of 130 beats per minute.

Background

Hypertensive crisis can be a nebulous term. It is used to describe elevated blood pressure, usually $\geq 180/120$ without associated target organ damage, acute kidney injury, myocardial infarction, etc. Conversely, *hypertensive emergency* involves elevated BP with one or more of the aforementioned problems. (Older terminology such as *malignant hypertension* and *hypertensive urgency* are falling out of favor.)

With this in mind, and recalling that 180/120 mmHg is considered crisis level, one can understand why the BP of the patient in the first scenario is so concerning. Consider his risk factors, as well. As a smoker, he likely has underlying atherosclerosis and coronary artery disease. If this is put into the Framingham Heart Study CVD prediction calculator, his 10-year cardiovascular risk is 46.4%.¹⁷ Most urgent care providers can relate to the feeling of uneasiness that accompanies these types of patients. No one wants to be the last link in a broken chain, but what is the appropriate response to such significant risk of mortality? The answer is to begin with the basics: an appropriate history and physical examination, understanding that from the urgent care perspective, the goal is to identify individuals at risk of hypertensive crisis, not to treat the crisis itself.

History and Physical Exam

With patients at risk for hypertensive crisis or hypertensive

emergency, the examination should always begin with obtaining vital signs. Given that this has already been done, the next step is to repeat the blood pressure, obtaining readings in both arms using appropriate technique as discussed previously. Confirm that the BP is still elevated and that it corroborates the value described by the patient. Confirm, also, that there is not a discrepancy >10 mmHg between BPs in the upper extremities, as this can be indicative of an aortic dissection. Confirm that the patient has no chest pain, shortness of breath, vision changes, lower back pain, nausea, vomiting, weakness of the face or extremities, alterations in mental status, headache, or numbness and tingling anywhere. These are all signs of potential organ damage and should increase the provider's suspicion of true hypertensive emergency. They are listed in the **Table 2**, along with their potential source.¹⁸ (This list is not all inclusive.)

An important caveat to taking the patient history is the presence of headache, which is often mentioned by patients with elevated BP. Although there has been no causal relationship demonstrated between elevated BP and mild headache,¹⁷ subarachnoid hemorrhage, which can present as a headache, should be ruled out with further questioning. Specifically, if the hypertensive patient complains of a headache, the clinician should confirm that it was not sudden in onset, maximal at onset, and is not worse than previous headaches. If any of these questions are answered in the affirmative, a subarachnoid hemorrhage cannot be ruled out and should be moved to the top of the list of differential diagnoses.

The physical exam should be directed by the history. That being said, if the history is void of concerning symp-

Table 3. Noteworthy Signs ¹⁸	
Symptom	Potential Source
New diastolic murmur	Aortic dissection
Neurologic deficits, change in mental status	Stroke, increased intracranial pressure, subarachnoid hemorrhage
Papilledema, flame hemorrhages on fundoscopic exam	Hypertensive encephalopathy
Abdominal bruit	Acute renal failure
Unequal blood pressures in upper extremities	Aortic dissection
Cotton wool spots, retinal hemorrhages	Hypertensive retinopathy
Diaphoresis, tachycardia	Myocardial infarction, pulmonary embolism
Pulmonary edema	Acute heart failure

toms, the physical exam should still include, at minimum, the evaluation of the heart, lungs, cranial nerves, abdomen, and eyes to include a fundoscopic exam. The remainder of the vital signs should have been obtained previously and need to be scrutinized, as well. Tachycardia, fever, or low oxygen saturation, for example, can all indicate infection or even pulmonary embolism, two potential causes of hypertensive emergency.

Signs and potential sources are noted in **Table 3**.

If both the history and physical exam are unremarkable, the practitioner should consider letting the patient rest in a quiet, dark room for about 30 minutes.¹⁹ The clinician should resist the urge to order labs or other ancillary testing on asymptomatic patients with normal physical exams. The most recent guidance from the American College of Emergency Physicians reveals that there is very little useful information gained by performing ancillary studies in patients with no signs or symptoms of target organ damage.²⁰ This means that there is no need to order routine labs, a chest radiograph, or even an ECG. This is counterintuitive, given the level of potential risk associated with these patients.

A few caveats to this recommendation may include patients with known history of aortic or cerebral aneurysm, previous MI, or known decreased renal function. These individuals are at greater risk for asymptomatic hypertension transitioning into symptomatic hypertension; thusly, a reasonable approach may be to include basic labs plus the appropriate imaging study or ECG based on the level of concern. In most cases, this would include a urinalysis, a complete metabolic panel (CMP), and an ECG.

Diagnosis and Treatment

Any patient who has a concerning historical or physical finding should be referred to the ED for the appropriate

diagnostic work-up. For example, review the case of the 72-year-old female with shortness of breath. Regardless of the remainder of her exam, her primary complaint, when combined with a BP >180/120, represents an increased probability of true hypertensive emergency—elevated BP with end organ damage. In her case, she may be experiencing an MI or a pulmonary embolism. Neither of these potential diagnoses can be ruled out from the urgent care center.

While the severity of a particular case may necessitate resuscitative efforts such as IV fluid or oxygen in clinic, the ultimate goal in the ED remains the same: a thorough evaluation that may include advanced imaging, laboratory studies, and an ECG. The aim of diagnosis and treatment in the urgent care center, therefore, is to tease out those individuals who need a higher level of care from those individuals who may be released home with or without medication. Patients who have no positive historical or physical findings associated with target organ damage have likely had an elevated BP for quite some time. ED evaluation in these patients is not necessary.

It is imperative to note here that the practice of giving medications to rapidly lower the blood pressure in clinic is neither safe nor indicated. There is no improvement in morbidity or mortality when asymptomatic individuals are treated with antihypertensive medications.²¹ Furthermore, medications like clonidine, a longtime staple of urgent care medicine, work against the body's autoregulatory mechanisms, used to balance the increased pressure with adequate perfusion of the vital organs. As such, acute lowering of the BP could lead to an ischemic stroke or a MI.^{22,23}

To summarize:

- Most patients who are asymptomatic and do not have signs of target organ damage do not need to have their blood pressure rapidly lowered. In fact,

doing so can cause an ischemic event (MI or stroke) by counteracting the normal autoregulatory mechanisms of the body.

- Most patients who are asymptomatic and do not have signs of target organ damage also do not need ancillary testing such as CBC, CMP, ECG, or chest radiography.
- A thorough history and physical exam that encompasses symptoms of target organ damage is a sufficient evaluation.
- Patients at high risk for an event—those who have had an MI previously or have an aortic aneurysm, cerebral aneurysm, or active renal disease—should be evaluated more thoroughly with the appropriate ancillary studies.
- If the decision is made to start a blood pressure medication, JNC 8 should be consulted to determine which medication is most appropriate. The patient's renal function and potassium need to be evaluated prior to starting any medication.

Follow-Up: What Happened with Our Two Patients Evaluated for Hypertensive Crisis?

- **62-year-old male with blood pressure of 190/125 and no signs of target organ damage.** This patient was discharged because he was determined *not* to be in hypertensive crisis. His condition did not warrant emergent attention or further work-up, and he was advised to follow up with a primary care provider.
- **72-year-old female with blood pressure of 196/120, shortness of breath, and tachycardia.** This woman was transported emergently to the ED for further evaluation and care.

With hypertension being one of the most common diagnoses in medicine, urgent care providers must be able to identify situations that require immediate, higher-acuity care as well as patients who can be discharged safely. The patients described here illustrate that making the distinction need not be difficult if the patients are viewed through the appropriate lens and approached logically and with confidence. ■

“The aim of diagnosis and treatment in the urgent care center is to tease out individuals who need a higher level of care from those who may be released with or without medication.”

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