

# Hypertension Pitfalls to prescribing for patients with high blood pressure

**Edward Onusko, MD**

Assistant professor of family medicine  
University of Cincinnati College of Medicine  
Cincinnati, OH

Chronic psychiatric disorders go hand-in-hand with risk factors for elevated blood pressure. Here are diagnostic and treatment strategies to help you detect comorbid hypertension and keep blood pressure in control.

**R**oughly 50 million adult Americans have hypertension.<sup>1</sup> Chances are some of them are—or soon will be—under your care.

Hypertension is common among patients with psychiatric disorders, particularly in those with chronic mental conditions.<sup>2</sup> Medication-associated weight gain and other reactions to psychotropics, drug-drug interactions, lack of exercise, adverse dietary habits, and pre-existing medical conditions all predispose psychiatric patients to hypertension.

Yet hypertension often goes undetected in psychiatric patients. Hypertension many times is asymptomatic—about 50% of all people with the disorder don't even know they have it.<sup>3</sup> Some symptoms of uncontrolled hypertension—fatigue, headache, palpitations, and dizziness—are also associated with many psychiatric disorders. As a result, psychiatrists may attempt to manage the symptoms but miss the hypertension.

Psychiatrists need to be alert for hypertension, either as a possible contributing factor to a mental disorder or as a potential side effect of a psychiatric disorder or treatment. The following diagnostic and treatment strategies will help you detect and manage this common condition.

## Causes of hypertension in mental illness

The Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure defines elevated blood pressure as  $\geq 140$  mm Hg systolic and/or 90 mm Hg diastolic. The diagnosis of hypertension should be based on the average of two or more blood pressure readings at each of two or more visits after initial screening.

All patients with elevated blood pressure have an underlying physiologic abnormality that is causing their hypertension. The disorder falls within the following two categories:

- essential hypertension, emanating from an unknown cause
- secondary hypertension, resulting from an underlying, discoverable, often treatable cause.

Researchers have speculated that certain psychiatric disorders might cause, or be risk factors for, hypertension. Anxiety or panic disorders have been associated with acute (and perhaps chronic) blood pressure elevations.<sup>2</sup> Some research suggests that patients with alexithymia are at risk for developing hypertension.<sup>4</sup>

Other studies suggest that hypertensive patients with

certain psychological disorders (e.g., depression) or social factors (e.g., substance abuse) are less likely than nonaffected patients to self-report the presence of hypertension and less likely to receive medical attention for it.<sup>5</sup>

Psychiatric drugs also may affect blood pressure by one of two mechanisms:

- Pharmacodynamic—direct effects at the site of action (e.g., receptors) via physiologic mechanisms (*Table 1*). For example, amphetamines act directly on the sympathetic nervous system to elevate blood pressure.

selective serotonin reuptake inhibitors. Use of carbamazepine with calcium-channel blockers can elevate carbamazepine levels and diminish the effectiveness of the calcium-channel blocker.

**Symptoms, complications of high blood pressure**

Symptoms that may be associated with high blood pressure include headaches, dizziness, lightheadedness, fatigue, palpitations, and chest discomfort. Patients may also experience symptoms secondary to end-organ damage (e.g., shortness of breath from congestive heart failure).

Most people, however, experience no symptoms when their blood pressure is elevated. This is one reason most people with hypertension do not adequately control their blood pressure.

Aside from the long-term end-organ damage caused by persistently elevated blood pressure, hypertension also has been found to cause psychiatric disorders, though not directly. For example, post-MI depression is well-recognized. Hypertension may also cause multi-infarct dementia with resultant depression, paranoia, or other psychotic features.

The psychological burden of having chronic and usually incurable (though controllable)

hypertension may worsen depression or anxiety disorders. Patients with a chronic psychiatric illness generally have a higher incidence of chronic medical problems.

Likewise, patients with chronic medical disorders have a higher incidence of psychiatric complaints.<sup>6</sup>

**Patient evaluation**

When evaluating the patient with elevated blood pressure, it is important to:

- detect and confirm hypertension
- detect target-organ disease (e.g., renal damage or congestive heart failure)

**Table 1**

**POSSIBLE PHARMACODYNAMIC EFFECTS OF PSYCHIATRIC MEDICATIONS ON BLOOD PRESSURE**

Psychiatric medication	Effect on blood pressure
Amphetamines	▲
Benzodiazepines	Withdrawal may cause ▲
Tricyclic antidepressants	▲ or ▼ (postural hypotension or supine hypertension)
Methylphenidate	▲
Monoamine oxidase inhibitors	▲ may precipitate an acute hypertensive crisis, especially with foods with high tyramine content (e.g., red wines, aged cheeses)
Lithium	▼ via direct effect on renal concentrating ability
Venlafaxine	▲ dose-related, <1% incidence
Antipsychotics (both typical and atypical)	▼

- Pharmacokinetic—indirect effects on blood pressure via drug/drug interactions that alter the absorption, distribution, metabolism, or clearance of antihypertensive medications. Thiazide diuretics, angiotensin-converting enzyme (ACE) inhibitors, and salt intake restrictions can raise lithium levels. The calcium-channel blockers verapamil and diltiazem can unpredictably increase or decrease lithium levels, but the combination generally is safe. Verapamil also raises tricyclic antidepressant levels.

Monoamine oxidase inhibitors (MAOIs) used in tandem with the antihypertensive reserpine can cause hypomania. Beta-blocker levels are increased when used in concert with

continued on page 57

continued from page 54

Table 2

## ANTIHYPERTENSIVE MEDICATIONS AND SIDE EFFECTS

Antihypertensive class	Agent(s)	Possible associated psychiatric symptoms
<b>Beta-adrenergic blocking agents</b>	Propranolol, atenolol, metoprolol, others	Fatigue, depression, psychosis, delirium, anxiety, sexual dysfunction, nightmares, hallucinations*
<b>Angiotensin-converting enzyme (ACE) inhibitors</b>	Captopril, enalapril, lisinopril, ramipril, others	Mania, anxiety, hallucinations
<b>Angiotensin II receptor blockers (ARBs or AIIAs)</b>	Losartan, valsartan, others	Probably same as ACE inhibitors
<b>Diuretics</b>	Hydrochlorothiazide, furosemide	Sexual dysfunction, depression
<b>Calcium-channel blockers</b>	Nifedipine, verapamil, diltiazem	Dizziness, headache, flushing, tachycardia, depression
<b>Alpha-adrenergic blockers</b>	Prazosin, terazosin, doxazosin	Syncope, dizziness and vertigo, palpitations, drowsiness, weakness, confusion
<b>Central alpha-adrenergic agonists</b>	Clonidine, methyldopa	Drowsiness, sedation, fatigue, depression, impotence, delirium, psychosis, nightmares, amnesia
<b>Direct vasodilators</b>	Hydralazine, minoxidil	Tachycardia, headache, dizziness
<b>Peripheral adrenergic neuron antagonists</b>	Reserpine, guanadrel	Drowsiness, depression, nightmares, tardive dyskinesia

\*May occur with ophthalmic preparations

- identify other cardiovascular risk factors (e.g., diabetes mellitus, hyperlipidemia, obesity)
- identify secondary causes of hypertension, such as endocrine abnormalities (e.g., hyperaldosteronism, thyroid disorders), kidney disease, obstructive sleep apnea, and response to medications.

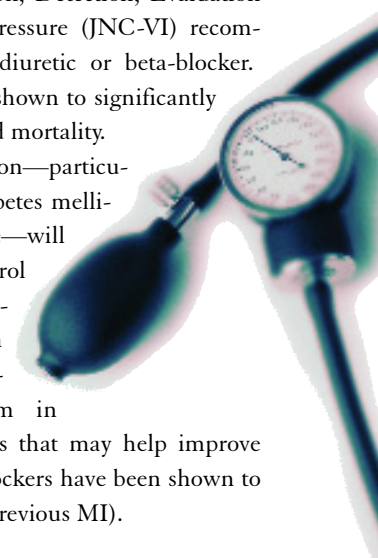
A thorough history and physical examination should be performed to assess these four areas. Routine laboratory testing for the hypertensive patient should include a urinalysis, a complete blood count, an assessment of blood chemistries (potassium, sodium, creatinine, fasting glucose, fasting lipid profile), and a 12-lead electrocardiogram.

### Treating hypertension

Many medications are used to treat hypertension. Most classes of antihypertensive agents have been shown to be about equally effective in lowering blood pressure.

All other factors being equal, the sixth report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC-VI) recommends initial treatment with a diuretic or beta-blocker. These classes of drugs have been shown to significantly reduce overall hypertension-related mortality.

Most patients with hypertension—particularly the elderly, patients with diabetes mellitus, and those with renal disease—will need two or more agents to control their blood pressure. Avoid prescribing agents that may worsen an existing condition (e.g., beta-blockers may worsen bronchospasm in patients with asthma). Use agents that may help improve comorbid conditions (e.g., beta-blockers have been shown to reduce mortality in patients with previous MI).



Box

## THE FUTURE OF HYPERTENSION TREATMENT

The Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC), which has issued six previous reports on hypertension control, is expected to issue updated recommendations within the next year. Angiotensin-converting enzyme inhibitors, calcium-channel blockers, and angiotensin II receptor antagonists may then be recommended as initial treatment options, along with the previously preferred classes of diuretics and beta-blockers.

**A wealth of data** has been obtained from multiple randomized, controlled studies since JNC released its most recent report in 1997. Turner et al used genetic analysis to identify individuals with essential hypertension who had a common genetic mutation that resulted in a renal absorption defect. Study participants with this mutation responded much better to diuretic therapy (which specifically targeted the underlying defect) than did those without the defect.<sup>8</sup>

**In the future,** determination of genetic polymorphism before prescribing medications may reduce side effects and increase efficacy in treating a variety of disorders, including hypertension.

Potential side effects, some of which mimic or are commonly found in psychiatric disorders, must be considered when choosing an antihypertensive agent. *Table 2* lists nine classes of antihypertensives and some associated side effects. Also consider the agent's cost, convenience of administration, direct-to-consumer advertising, and the patient's age or race. For example, beta-blockers tend to be less effective in black or elderly patients than in other demographic groups.

Nonpharmacologic hypertension management emphasizes weight reduction, moderation of alcohol intake, regular aerobic exercise, dietary restriction of sodium, and smoking cessation. Most studies of these behavioral interventions have demonstrated a short-term benefit in decreasing blood pressure, but long-term adherence to them is disappointing. Relaxation therapies and biofeedback have been advocated for hypertension, but proof of their efficacy is lacking.<sup>7</sup>

As more is learned about genetic and other causes of hypertension, more-effective treatments for hypertension could become available (*Box*).

### Treating high-risk groups

Special considerations apply to two patient groups with a high prevalence of hypertension—those age 65 and older and those with diabetes.

**Older patients.** Treatment benefits are more pronounced in patients age 65 or older because of their greater absolute risk for cardiovascular events. Also, systolic blood pressures increase with aging as the arterial tree becomes progressively less distensible.

Older patients often will require more than one drug to control their blood pressure. The initial dosages should be low and gradually titrated upward as needed. To minimize side effects, use smaller doses of multiple agents that are well tolerated instead of high-dose monotherapy.

A diuretic is often recommended as initial treatment for older patients, though a long-acting dihydropyridine calcium-channel blocker is a reasonable alternative. An ACE inhibitor is recommended for older patients with diabetes, systolic congestive heart failure, or previous MI. An alpha blocker should not be used as initial therapy for hypertension in the elderly because of relative lack of efficacy in preventing cardiovascular events.

**Patients with diabetes.** Aggressive blood pressure control is especially important in the patient with diabetes, which is the leading cause of end-stage renal disease. Most patients with diabetes also have hypertension—which accelerates their renal disease as well as cardiovascular disease. Blood pressure control goals significantly below 140/90 mm Hg are

For patients with diabetes, blood pressure control goals significantly below 140/90 mm Hg are recommended

recommended (120 to 135 mm Hg systolic, 80 to 85 mm Hg diastolic) if diabetes is present.

ACE inhibitors or angiotensin receptor blockers are preferred for initial treatment of hypertension in diabetes, especially if proteinuria is present. Some authorities feel the level of blood pressure control in diabetes is more important than the agent(s) chosen to achieve that control. Most patients with hypertension and diabetes are not controlled on a single antihypertensive drug, and a diuretic is often added.

### Psychological aspects of hypertension management

The diagnosis of hypertension and a resulting perception of loss of health or longevity may trigger a grief reaction in some patients.

Several psychological aspects to hypertension treatment make it difficult to achieve long-term control. Patients may become discouraged as dosages are increased and more medications are added. Asymptomatic patients may have no incentive to control their blood pressure. Many report, “I don’t feel any better” when their blood pressure comes down.

Because the goal of hypertension therapy is *control* rather than *cure*, the patient must commit to long-term treatment. Lifestyle changes such as dietary sodium restriction, smoking cessation, and weight loss may be difficult to achieve, especially for patients already dealing with a psychiatric disorder.

Also, the cost of treatment—the price of medications and initial and follow-up laboratory studies, plus the expense of follow-up office visits (possibly requiring time off work)—may be high.

Psychiatrists can help by offering moral support and encouraging patients to manage their medical problems, risk factors, and overall health. Psychiatrists can also educate patients on the importance of blood pressure control in preventing cardiovascular morbidity and mortality.

Brief cognitive-behavioral therapy can identify the individual’s state of change (precontemplation, contemplation, preparation, action, or maintenance). Process techniques (such as consciousness-raising, commitment, or self-reevaluation) appropriate to the stage of change may then be employed.

For example, a patient in the precontemplation stage may resist returning to his or her primary care doctor to begin treatment for high blood pressure, employing such reasoning as, “I can’t afford those expensive office visits, and the medications would cost too much anyway.”

The psychiatrist might then apply consciousness-raising to motivate the patient: “How serious do you think it is to have high blood pressure that isn’t controlled? Are you aware that many people with high blood pressure are treated by means other than medications, or that many blood pressure medications are inexpensive?”

Providing relaxation techniques or a 12-week course of bupropion also can enhance the efficacy of smoking cessation efforts.

#### References

1. Kaplan NK. Hypertension in the population at large. In: NK Kaplan, ed. *Clinical hypertension* (7th ed). Baltimore: Williams & Wilkins, 1998.
2. Yates WR, et al. Cardiovascular risk factors and psychiatric illness. *Medical Update for Psychiatrists* 1998;3(6):196-201.
3. Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure. The sixth report of the Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure (JNC VI). *Arch Intern Med* 1997;157:2413-46.
4. Todarello O, Taylor GJ, Parker JD, Fanelli M. Alexithymia in essential hypertensive and psychiatric outpatients: a comparative study. *J Psychosom Res* 1995;39(8):987-94.
5. Horwitz S, Prados-Torres A, et al. The influence of psychological and social factors on accuracy of self reported blood pressure. *J Clin Epidemiol* 1997;50(4):411-18.
6. Adamis D, Ball C. Physical morbidity in elderly psychiatric inpatients: prevalence and possible relations between the major mental disorders and physical illness. *Int J Geriatr Psychiatry* 2000;15:248-53.
7. Dubbert PM. Behavioral (life-style) modification in the prevention and treatment of hypertension. *Clin Psychol Rev* 1995;15(3):187-216.
8. Turner ST, et al. C825T polymorphism of the G protein beta(3)-subunit and antihypertensive response to a thiazide diuretic. *Hypertension* 2001;37(2 Part 2):739-43.



#### Related resources

- ▶ Drugs for hypertension. *The Medical Letter* 2001;43(1099):17-22.
- ▶ Some drugs that cause psychiatric symptoms. *The Medical Letter* 1998;40(1020):21-4.
- ▶ Hypertension—Journal of the American Heart Association.  
<http://hyper.ahajournals.org/>
- ▶ National Heart, Lung, and Blood institute's Cardiovascular information site.  
<http://www.nhlbi.nih.gov/health/public/heart/index.htm#hbp>

#### DRUG BRAND NAMES

Bupropion • Wellbutrin  
Guanadrel • Hylorol  
Lisinopril • Prinivil, Zestril  
Losartan • Hyzaar  
Ramipril • Altace

Reserpine • Diutensen-R  
Valsartan • Diovan  
Venlafaxine • Effexor  
(Numerous other drugs mentioned in this article are available generically)

#### DISCLOSURE

The author reports no financial relationship with any company whose products are mentioned in this article or with manufacturers of competing products.

Hypertension is common among psychiatric patients, but psychiatrists often fail to diagnose this medical condition. Watch carefully for hypertension, either as the possible cause of a mental disorder or as a potential side effect of a psychiatric disorder or treatment.

BottomLine