

# What is the best treatment for hypertension in African Americans?

Shobha Rao, MD,  
Manjula Cherukuri, MD,  
and Helen G. Mayo, MLS  
University of Texas  
Southwestern, Dallas

## EVIDENCE-BASED ANSWER

In African Americans with hypertension, therapy is best initiated with the low-sodium Dietary Approaches to Stop Hypertension (DASH) diet and a thiazide-type diuretic (strength of recommendation [SOR]: **A**, based on randomized controlled trials). If the blood pressure goal is not achieved with thiazide monotherapy, a calcium channel blocker, angiotensin-converting enzyme (ACE) inhibitor, angiotensin II receptor blocker (ARB), or a beta-blocker can be added. An initial combination treatment is recommended

for patients with systolic blood pressure >15 mm Hg or diastolic blood pressure >10 mm Hg above target (SOR: **C**, expert opinion).

African Americans have reduced blood pressure responses to monotherapy with beta-blocker, ACE inhibitor, or ARBs when compared to diuretics or calcium channel blockers (SOR: **A**, randomized controlled trials). However, cardiac and renal indications for prescribing these medications should be equally applied to African American patients (SOR: **C**, expert opinion).

## CLINICAL COMMENTARY

### African Americans respond better to combination ACE inhibitor plus diuretic

Treat African American patients with hypertension according to the Joint National Committee on Prevention, Detection, and Treatment of High Blood Pressure (JNC 7) guidelines. These guidelines state that patients with stage 1 hypertension, regardless of race, should be treated with lifestyle modification (to include a low-salt diet and weight loss) for 3 months. If, after a trial of lifestyle modification, these patients still have hypertension, then start diuretic therapy

while continuing lifestyle modifications.

If patients present with stage-2 hypertension, started them on a diuretic plus another agent. African American patients do not respond to ACE inhibitor monotherapy well, but do respond to the combination of an ACE inhibitor plus diuretic. If patients, regardless of race, have comorbid conditions that lend themselves to alternate antihypertensive treatment (ie, beta-blocker therapy post-myocardial infarction), then use these therapies first-line.

**Mandi Sehgal, MD**  
University of Cincinnati

## Evidence summary

Three large cohort studies determined that African Americans have a higher prevalence of hypertension and worse

cardiovascular and renal outcomes when compared with white Americans. For African American patients, the standard blood pressure goals apply: below

**FAST TRACK****Start therapy with a low-sodium DASH diet and a thiazide diuretic**

140/90 mm Hg with uncomplicated hypertension and below 130/80 with diabetes or renal disease.<sup>1</sup>

**Dietary interventions**

An RCT compared the effects of consuming the DASH diet (consisting of 4–5 servings of fruit, 4–5 servings of vegetables, 2–3 servings of low-fat dairy per day, and <25% fat) with a typical high-fat control diet among 459 adults with normal or elevated blood pressure.<sup>2</sup> Among 133 patients with hypertension, the DASH diet reduced systolic and diastolic blood pressure by 11.4 mm Hg (97.5% confidence interval [CI], –15.9 to –6.9) and 5.5 mm Hg (97.5% CI, –8.2 to –2.7) respectively when compared with the control diet. Among African Americans with hypertension, the DASH diet was even more beneficial, reducing their systolic and diastolic blood pressure by 13.2 mm Hg and 6.1 mm Hg respectively.<sup>1</sup>

Another RCT studied the effect of different levels of dietary sodium in conjunction with the DASH diet.<sup>3</sup> A total of 412 participants were randomly assigned to eat either a control diet or the DASH diet. Within the assigned diet, participants ate foods with high (150 mmol/d), intermediate (100 mmol/d), and low (50 mmol/d) levels of sodium in random order. In this study, low-sodium DASH diet was associated with additional lowering of blood pressure, an effect that was also found to be stronger for African Americans patients than others.<sup>3</sup> When compared with the combination of the control diet and a high level of sodium, the DASH diet and a low level of sodium lowered systolic blood pressure by 11.5 mm Hg for participants with hypertension (12.6 mm Hg for blacks; 9.5 mm Hg for others), and by 7.1 mm Hg for participants without hypertension (7.2 mm Hg for blacks; 6.9 mm Hg for others).<sup>3</sup>

**Medical interventions**

The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial<sup>4</sup> (ALLHAT) and African American Study of Kidney Disease and Hypertension<sup>5</sup> (AASK) have demonstrated the benefit of blood pressure reduction using specific classes of antihypertensive agents.

The ALLHAT trial, a double-blind RCT of 42,448 high-risk hypertensive patients aged >55 years, compared chlorthalidone (a thiazide-type diuretic) with amlodipine (Norvasc), lisinopril (Prinivil, Zestril), or doxazosin (Cardura). In this study, which included 36% African Americans, chlorthalidone, lisinopril, and amlodipine did not differ in preventing major cardiovascular events. However, lisinopril was associated with an increased risk for heart failure (relative risk [RR] for African Americans=1.32; 95% CI, 1.11–1.58) and stroke (RR for African Americans=1.4; 95% CI, 1.17–1.68), and amlodipine was associated with a higher risk of heart failure (RR in African Americans=1.47; 95% CI, 1.24–1.74). Additionally, ACE inhibitor–induced angioedema or cough occurred more frequently among African American patients than white patients.<sup>4</sup>

Although a randomized controlled trial<sup>5</sup> and a review of multiple studies<sup>6</sup> demonstrated that African Americans may be less responsive to monotherapy with ACE inhibitors, the AASK trial confirmed that ACE inhibitors can provide significant clinical benefits for African Americans with hypertensive renal disease. AASK, a double-blind RCT of 1094 African American patients with renal insufficiency, compared the effects of an ACE inhibitor (ramipril [Altace]), a dihydropyridine calcium channel blocker (amlodipine), or a beta blocker (metoprolol [Lopressor]) on the progression of hypertensive renal disease.

The study showed a 44% relative risk reduction (95% CI, 13%–65%; number needed to treat [NNT]=25) in progression to end-stage renal disease, and a significant decrease in the combined

endpoints of glomerular filtration rate events (decrease >50%), end-stage renal disease, and death (decreased by 38%) in the ramipril group compared with the amlodipine group (95% CI, 13%–56%; NNT=56 per patient-year).<sup>5,7</sup> Metoprolol appeared to have intermediate outcomes.<sup>8</sup>

### Recommendations from others

Both the International Society on Hypertension in Blacks (ISHIB) guidelines<sup>1</sup> and the JNC 7<sup>9</sup> recommend therapeutic lifestyle modification that includes DASH diet, dietary sodium restriction, and weight reduction. Both guidelines recognize the importance of thiazide diuretics and recommend its use as first-line therapy or as a part of combination therapy for hypertension among African Americans. They also recommend initiating therapy with 2 agents for blood pressure significantly above target level (20/10 mm Hg above target per JNC 7, 15/10 mm Hg above target per ISHIB).

The ISHIB report emphasizes the need for not overlooking renal protection with an ACE inhibitor for African Americans with renal disease. The American Diabetes Association recommends that all patients with diabetes and hypertension be treated with a regimen that includes either an ACE inhibitor or an ARB.<sup>10</sup> ■

### REFERENCES

1. Americans: consensus statement of the Hypertension in African Americans Working Group of the International Society on Hypertension in Blacks. *Arch Intern Med* 2003; 163:525–541.
2. Appel LJ, Moore TJ, Obarzanek E, et al. A clinical trial of the effects of dietary patterns on blood pressure. DASH Collaborative Research Group. *N Engl J Med* 1997; 336:1117–1124.
3. Sacks FM, Svetkey LP, Vollmer WM, et al. Effects on blood pressure of reduced dietary sodium and the Dietary Approaches to Stop Hypertension (DASH) diet. DASH-Sodium Collaborative Research Group. *N Engl J Med* 2001; 344:3–10.
4. ALLHAT Officers and Coordinators for the ALLHAT Collaborative Research Group. The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial. Major outcomes in high-risk hypertensive patients randomized to angiotensin-converting enzyme inhibitor or calcium channel blocker vs diuretic: The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT). *JAMA* 2002; 288:2981–2997.
5. Agodoa LY, Appel L, Bakris GL, et al, and the African American Study of Kidney Disease and Hypertension (AASK) Study Group. Effect of ramipril vs amlodipine on renal outcomes in hypertensive nephrosclerosis: a randomized controlled trial. *JAMA* 2001; 285:2719–2728.
6. Richardson AD, Piepho RW. Effect of race on hypertension and antihypertensive therapy. *Int J Clin Pharmacol Ther* 2000; 38:75–79.
7. McConaghy J. What is the best treatment for slowing the progression to end-stage renal disease (ESRD) in African Americans with hypertensive nephropathy? *J Fam Pract* 2001; 50:744.
8. Wright JT, Bakris G, Greene T, et al, and the African American Study of Kidney Disease and Hypertension (AASK) Study Group. Effect of blood pressure lowering and antihypertensive drug class on progression of hypertensive kidney disease: Results of the AASK trial. *JAMA* 2002; 288:2421–2431.
9. Chobanian AV, Bakris GL, Black HR, et al, and the National Heart, Lung, and Blood Institute Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure; National High Blood Pressure Education Program Coordinating Committee. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA* 2003; 289:2560–2572.
10. American Diabetes Association. Standards of Medical Care in Diabetes—2006. *Diabetes Care* 2006; 29:S4–S42.

### FAST TRACK

**African Americans have less blood pressure response to beta-blockers, ARBs, and ACE inhibitors**