Review ARticle

Managing Hypertension in the Elderly: A Common Chronic Disease with Increasing Age

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Background: Hypertension increases with age, affecting approximately 66% of the elderly population (aged ≥65 years). By the year 2030, 1 of 5 Americans will be aged ≥65 years. A number of placebo-controlled clinical trials have demonstrated that blood pressure (BP) control reduces cardiovascular events in elderly patients, even in those aged >80 years. Despite advances in medical care, hypertension control rates remain low, especially in the elderly population.

Objective: The goal of this article is to review the information that addresses hypertension in the elderly and current strategies that can facilitate improvement in the management of this common, chronic, and life-threatening condition, which is often undertreated or inappropriately managed.

Discussion: The goals and strategies of treating hypertension in the elderly population are different from, and more challenging than, those in younger patients. Lifestyle modification is effective in this population, but it is difficult to maintain. Many antihypertensive medications are available, with thiazide diuretics being the preferred first-line treatment. Beta-blockers and alpha-blockers are generally not recommended in this population. A majority of older patients will require 2 or 3 antihypertensive medications to reach BP goal. This article reviews current data on hypertensive treatment in the elderly and summarizes the strategies and challenges healthcare providers face when dealing with this population.

Conclusion: Understanding the strategies and challenges that apply to the management of hypertension in the US elderly population can help providers and payers better address the growing need for improving the management of this condition in the elderly, because their numbers are expected to increase dramatically in the coming decades.

Hypertension, defined as systolic blood pressure (BP) ≥140 mm Hg, diastolic BP ≥90 mm Hg, increases with age, affecting more than 50% of patients aged ≥60 years, and approximately 66% of those aged ≥65 years.[1-3] It is well known that by 2030, 1 of 5 Americans is expected to be 65 years or older. Hypertension is the number one diagnosis in the ambulatory setting, and is one of the top diagnoses in the nursing home.[4] Data from the Framingham Heart Study suggest that patients who are normotensive at age 55 years have a 90% lifetime risk of developing hypertension.[5]

Between 1988-1994 and 2005-2008, the prevalence of hypertension increased among patients aged ≥65 years.[6] The use of antihypertensive medications also increased during that period.[6] As life expectancy continues to rise, approaching 75 years for men and 80 years for women, the use of antihypertensive medications in the elderly will intensify.[6] Approximately 10% of the current US total annual drug expenditure is spent on antihypertensive medications.[7] In 2009, the total direct and indirect costs attributable to hypertension in the United States were estimated to be $73.4 billion.[8]

Special Considerations in the Elderly Population

In the United States, the prevalence of elderly patients with adequately treated hypertension (defined as BP <140/90 mm Hg) is quite low, estimated to be only 30% (range, 23%-38%).[9] Elderly patients are more prone to having isolated systolic hypertension (ISH)—systolic BP ≥140 mm Hg; diastolic BP <90 mm Hg—which is

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likely a result of an increase in arterial stiffness from arteriosclerosis or impairment of nitric oxide–mediated vasodilation.[10-12]

ISH occurs in the majority of elderly patients with hypertension: more than 65% of hypertensive patients aged ≥60 years and more than 90% of those aged >70 years have ISH.[1,13] ISH is associated with a 2- to 4-fold increase in the risk for stroke, myocardial infarction (MI), or cardiovascular (CV) mortality.[14,15]

Elderly persons are more sensitive to salt intake compared with a younger population, leading to higher systolic BP and higher pulse pressure (ie, the difference between systolic BP and diastolic BP) when more salt is consumed by elderly individuals.[16]

Finally, elderly persons are at increased risk for developing orthostatic hypotension, a potentially dangerous drop in BP during positional change from supine to standing position, increasing the risk for syncope, falls, and injuries.

These characteristics must be taken into account and considered carefully when choosing an appropriate treatment protocol for this patient population.

KEY POINTS

- Approximately 10% of the US total annual drug expenditure is spent on antihypertensive medications.
- It is estimated that only 30% (range, 23%-38%) of elderly patients with hypertension are adequately managed in the United States, leaving considerable room for improvement.
- JNC 7 recommends treating all patients with uncomplicated hypertension, including those aged 65 to 79 years, to a target blood pressure (BP) of <140/90 mm Hg.
- For patients aged ≥80 years, most experts recommend a systolic BP goal of 140-145 mm Hg, to minimize medication side effects.
- A recent ACC/AHA statement suggests that lifestyle modifications may be all that is needed to treat milder forms of hypertension in elderly patients; in those with resistant hypertension, drug treatment is recommended.
- First-line drug therapy with diuretics, angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, or calcium channel blockers should be started at the lowest dose, and titrated as tolerated.
- The unique characteristics responsible for the increased risk for hypertension in the elderly population must be taken into account and considered carefully when choosing a treatment protocol.

Treatment Considerations

The goals and strategies for treating hypertension in the elderly population are different from, and more challenging than, in younger patients. Lifestyle modification is effective in this population, but it is difficult to maintain.

The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) recommends treating all patients, including the elderly population from the age of 65 through 79 years who have uncomplicated hypertension, to a target BP of <140/90 mm Hg.[17] JNC 8 is anticipated to be released at the end of 2012, but it is unclear whether the report will have specific recommendations regarding hypertension management in the elderly population.

The American College of Cardiology (ACC) and the American Heart Association (AHA) recently released the first expert consensus statement to help clinicians effectively manage hypertension in the elderly population.[18] Like JNC 7, the ACC/AHA document recommends BP measurement of <140/90 mm Hg for those aged 65 to 79 years. For patients aged ≥80 years, most experts, including the ACC/AHA statement, recommend a less-stringent systolic BP goal of 140 to 145 mm Hg, to minimize side effects.[18]

This ACC/AHA document further recommends starting the evaluation of the elderly patient with known or suspected hypertension with 3 measurements of BP, including in the standing position, to obtain an accurate BP value. If BP is elevated, the cause should be isolated. Any organ damage should be assessed. Other CV disease (CVD) risk factors or comorbid conditions should be identified, along with any potential barriers to treatment adherence.[18]

According to this ACC/AHA statement, lifestyle modifications may be all that is necessary to treat milder forms of hypertension in elderly patients. In patients with resistant hypertension, drug therapy is recommended and should be started at the lowest dose possible, with gradual increases depending on response. Diuretics, angiotensin-converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARBs), and calcium channel blockers (CCBs) are effective in lowering BP and reducing CV outcomes in the elderly. Beta-blockers are inferior in benefits compared with these drug classes, but they may be used in selected cases in the elderly population.[18]

Nonpharmacologic Treatment

Lifestyle modification is recommended as the first-line treatment for all patients with hypertension, especially in the elderly population, where polypharmacy, potential drug interactions, and nonadherence to treat-

Table Lifestyle Modifications and Benefits[a]

Modification	Recommendation	Approximate SBP reduction[b]
Weight reduction	Maintain normal body weight (BMI, 18.5-24.9 kg/m^2)	5-20 mm Hg/ 10-kg weight loss
Adopt DASH diet	Consume diet rich in fruits/vegetables, and low-fat dairy products with a reduced content of saturated and total fat	8-14 mm Hg
Dietary sodium reduction	Reduce intake to ≤2.4 g sodium or ≤6 g sodium chloride/day	2-8 mm Hg
Engage in physical activity	≥30 minutes aerobic activity per day, most days of the week	4-9 mm Hg
Moderate alcohol intake	≤2 drinks per day for men and ≤1 drink per day for women	2-4 mm Hg

[a]For overall cardiovascular risk reduction, stop smoking.
[b]The effects of implementing these modifications are dose- and time-dependent and could be greater for some individuals.
BMI indicates body mass index; DASH, Dietary Approaches to Stop Hypertension; SBP, systolic blood pressure.
Source: The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. National High Blood Pressure Education Program. Bethesda, MD: National Heart, Lung, and Blood Institute (US); August 2004. Report No. 04-5230.

ment regimens are serious concerns. Weight control, adoption of the Dietary Approaches to Stop Hypertension (DASH), dietary sodium restriction, increasing activity level, and limiting alcohol intake are effective tools in the treatment of hypertension (**Table**).[17,19-23]

One landmark study that proved that nonpharmacologic intervention is effective in treating older patients is the Trial of Nonpharmacologic Interventions in the Elderly (TONE).[21] In this trial, 975 men and women with hypertension (aged 60-80 years; BP <145/85 mm Hg on 1 antihypertensive drug) were recruited. Obese and normal-weight subjects were separated and randomly assigned to the following groups: usual care, salt restriction (≤1800 mg per 24 hours), weight loss (obese patients, ≥10-lb goal), or salt restriction and weight loss. Withdrawal of the drug being taken for hypertension was attempted after 3 months of intervention. The primary outcome end point was a diagnosis of high BP at 1 or more follow-up appointments, treatment with antihypertensive drugs, or a CV event. The study yielded positive results, with significant reductions in BP seen in all intervention groups compared with the usual-care group. The primary end point at 30 months occurred significantly less in the intervention groups compared with the usual-care group, illustrating that "reduced sodium intake and weight loss constitute a feasible, effective, and safe nonpharmacologic therapy of hypertension in older persons."[21]

The beneficial effects of exercise on hypertension control in the elderly population have been illustrated in a number of studies[24-26] and in a meta-analysis.[27] These studies solidify the concept that it is never too late to implement lifestyle changes in the control of hypertension.

One study explored the effect of moderate and intense aerobic exercise on the BP of sedentary patients aged ≥75 years.[28] The subjects were randomized into 1 of 3 groups: a control group (no exercise), a moderate-intensity group (3 days per week for a total of 30 exercise sessions of 40-minute duration each) at 65% to 70% of maximal heart rate), and a high-intensity group (85%-90% of maximal heart rate).

After only 10 weeks of exercise, significant reductions in systolic BP (–7.8 mm Hg) and diastolic BP (–9.6 mm Hg) were seen in the high-intensity group compared with the control group (+2.6 mm Hg). The effects were seen independent of weight changes. The editorial accompanying the study agreed that "these data support the contention that pharmacologic intervention should be coupled with exercise and other lifestyle modification even in our more elderly patients."[29]

Pharmacologic Therapy

Many placebo-controlled trials, as well as meta-analyses, have demonstrated the benefits of antihypertensive therapy in the elderly population.[17,30-47] There is no age limit at which antihypertensive drugs should not be used. Initiation of antihypertensive drugs should be started at the lowest dose, with gradual incremental increase as tolerated. If the first agent fails to lower BP to goal at full dose, a second and third medication should be added as tolerated. When BP is >20/10 mm Hg above goal, consideration toward initiating 2 antihypertensives or a combination drug therapy is warranted. The risks and benefits of treatment should be continuously reevaluated. In the elderly population, especially those aged >80 years, a systolic BP of 140 to 145 mm Hg is acceptable in individual cases.

Diuretics

Thiazide diuretics are inexpensive, are generally well tolerated, and are recommended as a first-line therapy in the treatment of hypertension in the elderly population.[17]

One landmark study that supports the use of thiazide diuretics in the treatment of ISH in older patients is the Systolic Hypertension in the Elderly Program (SHEP).[30] In this trial, 4736 older individuals with systolic BP levels ≥160 mm Hg and diastolic BP levels <90 mm Hg (mean BP, 170/77 mm Hg) were randomized to treatment with the thiazide diuretic chlorthalidone or with placebo. Significant improvement in BP was accomplished in the treatment group compared with the group receiving placebo (systolic BP, 143 mm Hg vs 155 mm Hg, respectively), leading to significant reduction in stroke (36%), coronary artery disease (CAD; 27%), chronic heart failure (HF; 55%, 81% in those with previous MI), and all-cause CVD (32%).[30]

Another landmark trial demonstrating that thiazide diuretics are as effective as any drug for first-line treatment of hypertension in the elderly population is the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT) study.[31] This trial included 42,418 patients (mean age, 67 years) with hypertension and at least 1 other risk factor for CAD. The patients were randomized to a treatment group with a thiazide-type diuretic (chlorthalidone), a beta-blocker (atenolol), a CCB (amlodipine), an ACE inhibitor (lisinopril), or an alpha-blocker (doxazosin). Other than the group receiving doxazosin, which was stopped early because of higher rates of adverse events, final data showed no differences in the primary outcome of fatal or nonfatal coronary events and no mortality difference between the CCB, ACE inhibitor, and diuretic groups. Patients who received the diuretic had a lower incidence of CV events (secondary outcomes) compared with the other groups. The diuretic treatment group had lower HF rates compared with the CCB group (relative risk [RR], 1.33; 95% confidence interval [CI], 1.18-1.49) and lower combined CV outcomes (RR, 1.13; 95% CI, 1.06-1.20), and HF (RR, 1.20; 95% CI, 1.09-1.34) compared with the ACE inhibitor group.[31]

Indapamide, a nonthiazide diuretic, was featured in the Hypertension in the Very Elderly Trial (HYVET).[33] In this highly anticipated study published in 2008, more than 3800 elderly patients (patients aged ≥80 years; mean, 83.6 years) with systolic hypertension, diastolic hypertension, or ISH were randomly assigned to take indapamide or placebo. The primary end point was fatal or nonfatal stroke. Significant reduction in mean BP was achieved in the treatment group (143/78 mm Hg vs 158/84 mm Hg). The study was stopped early as a result of significant reductions in fatal stroke (6.5% in the active group vs 10.7% in the placebo group) and all-cause mortality (47.2% in the active group, 59.6% in the placebo group). This is the first trial that provided evidence that treatment of hypertension in the very elderly (aged >80 years) is beneficial and should be pursued.[33]

Other diuretics, such as loop diuretics, mineralocorticoid antagonists, or sodium transport channel antagonists, can also be used in the elderly as adjunct treatments when appropriate.[18]

Calcium Channel Blockers

CCBs can be used as first-line hypertension treatment in the elderly if a diuretic is contraindicated or if the patient has angina or heart rhythm/conduction problems. In general, CCBs are well tolerated in the elderly. The most common adverse events for the dihydropyridine CCBs are symptoms of vasodilation, such as ankle edema, headache, or postural hypotension. Common adverse events for the nondihydropyridine CCBs include constipation, bradycardia, and potential for heart block; as such, this subclass should be avoided in elderly patients with underlying cardiac conduction defects or with left-ventricular systolic dysfunction.[18]

Several clinical trials have shown that CCBs are effective and safe in the elderly population.[31,34-36] One landmark study involving this drug class includes Systolic Hypertension in Europe (Syst-Eur).[34,35] In this study, more than 4600 elderly patients (mean age, 76 years) with ISH were randomized to receive dihydropyridine nitrendipine or placebo. The trial was stopped earlier than anticipated as a result of a significant reduction in stroke (42% reduction; $P = .003$) and all fatal and nonfatal cardiac end points, including sudden death (26% reduction; $P = .03$) in the treatment group.[34] The authors calculated that treatment of 1000 patients for 5 years with this type of regimen may prevent 29 strokes or 53 major CV end points. The prevalence of vascular dementia was significantly lowered in the group receiving antihypertensives compared with those receiving placebo (3.8 vs 7.7 cases per 1000 patient-years, respectively).[35]

The efficacy and safety of CCBs in combination with other medications for the elderly patients were illustrated in the Avoiding Cardiovascular Events through Combination Therapy in Patients Living with Systolic Hypertension (ACCOMPLISH) trial.[36] More than 11,500 elderly patients with hypertension (mean age, 68 years; mean BP, 145/88 mm Hg) were randomized to receive the ACE inhibitors (benazepril) with a CCB (amlodipine) or a diuretic (hydrochlorothiazide). The primary end point was the composite of death from CV causes, nonfatal MI, nonfatal stroke, hospitalization for angina, resuscitation after sudden cardiac arrest, and coronary revascularization. The trial was terminated early after a mean follow-up of 36 months when significantly fewer primary end points were seen in the group receiving benazepril/amlodipine—552 (9.6%) primary-outcome events in the group receiving

benazepril/amlodipine versus 679 (11.8%) in the group receiving benazepril/hydrochlorothiazide.[36]

ACE Inhibitors

ACE inhibitors lower BP by inhibiting the conversion of angiotensin I to angiotensin II, thereby preventing vasoconstriction (by angiotensin II) and aldosterone production. ACE inhibitors are considered alternative first-line hypertension treatments in the elderly population if a diuretic is contraindicated.[18]

ACE inhibitors have been shown to decrease morbidity and mortality in patients with MI, with HF (systolic dysfunction), or in those with diabetic renal disease.[37-39] The main side effects of ACE inhibitors are dry cough and hypotension.[18] Hyperkalemia can occur with ACE inhibitor use. Close monitoring and extreme caution are recommended if they are going to be used in elderly patients with renal impairment.[18]

One important clinical trial that illustrated the effectiveness and beneficial effects of ACE inhibitors in the elderly population with hypertension is the Second Australian National Blood Pressure Study (ANBP2).[40] This study randomized 6083 patients with hypertension (aged 65-84 years) to receive either enalapril or hydrochlorothiazide. At study end, BP reduction was found to be similar in both groups. The ACE inhibitor group was found to have fewer CV events/all-cause death (695 vs 736, respectively) and fewer cerebrovascular events (152 vs 163, respectively) compared with the diuretic group. In addition, males receiving an ACE inhibitor achieved a 17% reduction in all CV events.[40]

Two landmark trials involving ACE inhibitors and high-risk elderly patients with hypertension are the Heart Outcomes Prevention Evaluation (HOPE)[41] and Perindopril Protection Against Recurrent Stroke Study (PROGRESS).[42] In the HOPE trial, 9297 high-risk patients (aged ≥55 years) who had evidence of vascular disease or diabetes plus 1 other CV risk factor and who were not known to have a low ejection fraction or HF were randomly assigned to receive oral ramipril (10 mg once daily) or matching placebo for a mean of 5 years. Significant reductions in CV death (26%), all-cause mortality (16%), stroke (32%), and HF (23%) were seen in the ramipril group at the end of the study.[41]

In the PROGRESS trial, 6105 patients (mean age, 64 years) who had suffered a stroke or transient ischemic attack were assigned to perindopril (4 mg daily) with the addition of the diuretic indapamide at the discretion of treating physicians or placebo.[42] At the end of the study, combination therapy with perindopril plus indapamide reduced BP by 12/5 mm Hg and stroke risk by 43%. Single-drug therapy reduced BP by 5/3 mm Hg and produced no reduction in stroke risk.[42]

Angiotensin Receptor Blockers

ARBs work by blocking the effects of angiotensin II on vascular smooth muscle, thus causing vasodilation. ARBs also decrease the production of aldosterone, thereby lowering sodium reabsorption and fluid retention. ARBs are considered the alternative first-line treatment for hypertension in the elderly population when a diuretic is contraindicated. In elderly hypertensive patients with diabetes or HF, ARBs are considered first-line treatment and an alternative to ACE inhibitors.

Some landmark trials involving ARBs in the treatment of hypertension in elderly patients are the Losartan Intervention for End point Reduction in Hypertension (LIFE),[43] the Study on Cognition and Prognosis in the Elderly (SCOPE),[44] and the Acute Candesartan Cilexetil Therapy in Stroke Survivors (ACCESS) study.[45]

The LIFE trial randomized 9193 patients aged 55 to 80 years with hypertension and left-ventricular hypertrophy on electrocardiogram to losartan or atenolol.[43] Although reductions in BP were similar in both groups, CV death, stroke, and MI were reduced by >13% in those participants receiving losartan compared with atenolol (508 vs 588, respectively). In addition, significant reduction in fatal or nonfatal stroke was seen in the group receiving losartan (25%; 232 vs 309 actual events, respectively). In the subgroup with diabetes (n = 1195), there was a greater reduction in CV and all-cause mortality for losartan versus atenolol.[43]

The SCOPE trial involved 4964 patients aged 70 to 89 years, with systolic BP 160 mm Hg to 179 mm Hg and/or diastolic BP 90 mm Hg to 99 mm Hg and a Mini-Mental State Examination test score ≥24.[44] Patients were assigned randomly to receive the ARB candesartan or placebo, with open-label active antihypertensive therapy added as needed. Mean follow-up was 3.7 years. Reduction in BP for the group receiving candesartan was 21.7/10.8 mm Hg. Significant reduction in nonfatal stroke was seen (27.8%; 95% CI, 1.3-47.2; P = .04) with a trend for reduction in fatal stroke (23.6%; 95% CI, –0.7-42.1; P = .056).[44]

The ACCESS trial was designed to assess the safety of modest BP reduction by candesartan cilexetil in the early treatment of stroke.[45] The study was stopped early as a result of significant reductions in deaths, CV events, or cerebrovascular events in the candesartan group compared with placebo (odds ratio, 0.475; 95% CI, 0.252-0.895).[45]

Direct Renin Inhibitors

Renin inhibitors bind the active site of renin, such that it cannot act to cleave angiotensinogen to angiotensin I, preventing the conversion of angiotensin I to angiotensin II. This prevents the vasoconstriction of arterial smooth muscle that angiotensin II is responsible

for. In addition, angiotensin II would not be available to stimulate the production of aldosterone and decrease fluid retention.[48]

Renin inhibitors are as effective as ACE inhibitors or ARBs for the treatment of hypertension, and they are well tolerated in the elderly population.[49]

There are few clinical trials involving aliskiren and elderly patients. The Aliskiren for Geriatric Lowering of Systolic Hypertension (AGELESS) trial compared aliskiren with ramipril for treatment of essential systolic hypertension in elderly patients.[46] A total of 901 elderly patients (aged ≥65 years) with systolic BP ≥140 mm Hg were randomized to receive aliskiren or ramipril. The primary end point was noninferiority of aliskiren versus ramipril monotherapy for change from baseline in mean sitting systolic BP at week 12. At week 36, fewer patients receiving aliskiren-based therapy required add-on treatment with hydrochlorothiazide or amlodipine (P = .01 and P = .048, respectively). The authors concluded that "in elderly patients with systolic hypertension, aliskiren proved to be more effective and better overall antihypertensive therapy compared to ramipril."[46]

The Aliskiren Observation of Heart Failure Treatment (ALOFT) trial studied the effects of adding the direct renin inhibitor aliskiren to an ACE inhibitor in elderly patients (mean age, 68 years) with HF.[47] The authors found that the "addition of aliskiren to an ACE inhibitor (or angiotensin receptor blocker) and beta-blocker had favorable neurohumoral effects in heart failure and appeared to be well tolerated."[47]

Beta-Blockers

Beta-blockers are not the optimal first-line treatment for elderly patients with hypertension.[18] They are associated with more adverse events, and their evidence of benefits is weaker compared with other drug classes (ie, diuretics, ACE inhibitors, ARBs, CCBs).[18,30,43] A recent meta-analysis comparing beta-blockers and diuretics showed that diuretics are more effective as monotherapy and are superior to beta-blockers in all clinical outcomes.[50]

Beta-blockers have been shown to provide less protection from stroke in the elderly patient with hypertension according to the International Verapamil SR-Trandolapril Study (INVEST).[51] This randomized, blinded, prospective trial was aimed to understand the differences in outcomes of newer antihypertensive medications compared with the traditional treatment with beta-blockers and diuretics. The study recruited 22,576 elderly patients with hypertension who were randomized to receive either verapamil or atenolol, and followed outcomes for at least 2 years.

The results of the study showed similar control in BP between the 2 treatment groups. However, there was a higher incidence of new-onset diabetes, stroke, and mortality in the atenolol group. Of interest, beta-blockers showed more protection from MIs but were also associated with a higher incidence of persistent depressive mood, which is a rising problem among the elderly population. Although beta-blockers may lower the rate of stroke in patients with hypertension compared with placebo, they have been shown to be inadequate compared with newer antihypertensive medications in the aging population.[51]

Beta-blockers can be added in combination therapy and have a proven role in the treatment of elderly patients with hypertension complicated by CAD, HF, or arrhythmias.[52]

Other Drugs

Alpha-adrenergic blocking agents are used primarily for urinary symptoms related to benign prostate hypertrophy and should not be considered a first-line hypertensive drug in the elderly.[18,31] They can induce orthostatic hypotension and increase the risk of falls and injuries. Minoxidil and hydralazine can cause fluid retention, reflex tachycardia, and atrial arrhythmia, and they should not be used as first-line therapy or monotherapy in the treatment of hypertension in the elderly. Centrally acting agents such as clonidine can cause sedation, bradycardia, and rebound hypertension if stopped abruptly, and they should not be used as monotherapy in the elderly or in those patients who are noncompliant. Nitrates have no role in the long-term treatment of hypertension in the elderly because of tolerance. They can be used as an antianginal agent as needed.[18]

Conclusions

JNC 7 recommends a treatment BP target of <140/90 mm Hg for all patients with hypertension, including the elderly population. Clinical trials that included patients aged >65 years have shown that patients who receive treatment for their elevated BP have fewer strokes, fewer heart attacks, and less congestive HF compared with those with untreated hypertension. In patients aged 40 to 89 years, each 20-mm Hg increase in systolic BP or 10-mm Hg increase in diastolic BP is associated with a 2-fold increase in mortality from ischemic heart disease and a more than 2-fold increase in mortality from stroke.[53]

There is great benefit in the successful treatment of hypertension in the elderly population. Encouraging lifestyle changes is the first-line treatment. Medications should be started as appropriate. Diuretics, ACE inhibitors, ARBs, and CCBs have all been proved as first-line treatment agents, and should be started with the lowest dose and titrated as tolerated. Vigilance is needed to avoid treatment-related adverse events. For very eld-

erly patients (aged >80 years), the risks and benefits of tight control need to be frequently reevaluated. ■

Author Disclosure Statement

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STAKEHOLDER PERSPECTIVE

Improving Hypertension Management in the Elderly a Core Clinical Goal

PATIENTS: According to the National Health and Nutrition Examination Survey 2007-2008, approximately 20% of patients with hypertension aged >60 years are unaware that they have the condition.[1] The symptoms of hypertension are generally silent, and patients often do not understand the importance of blood pressure (BP) control to reduce the risk of stroke, coronary artery disease, and chronic kidney disease. Patients need to be educated about the disease state and the importance of medication compliance. In addition, patients need to understand the impact they can personally have in reaching their BP goals through lifestyle modifications such as those described in the article by Nguyen and colleagues. Patients should also be encouraged to record home BP readings, which can help them understand how certain behaviors affect BP and to give their providers an idea of BP trends outside of office visits.

PAYERS: Payers have several reasons for improving hypertension control in their patient populations. Antihypertensive therapy can reduce the risk of congestive heart failure by approximately 40%, stroke by 30%, coronary heart disease by 15%, and all-cause mortality by 10%.[2] The cost-savings for preventing these long-term complications far outweigh the price of antihypertensive therapy. Furthermore, with the wide variety of generic antihypertensive medications now available, payers have greater flexibility to reduce the cost of hypertension management. Utilization management strategies, such as step therapy through a generic medication and quantity limits to promote dose optimization, can encourage cost-effective options.

An additional reason to improve BP control is the National Committee for Quality Assurance Healthcare Effectiveness Data and Information Set (HEDIS), which evaluates health plans with regard to certain outcomes to facilitate comparison of health plans. The HEDIS measure for hypertension is the percentage of patients (aged 18-85 years) with a diagnosis of hypertension whose most recent BP was adequately controlled (<140/90 mm Hg).[3] Hypertension management is also included in the HEDIS measure that focuses on comprehensive diabetes care.

Payers need to be proactive to ensure that patients have adequate BP control to perform well in these HEDIS measures. Methods that payers can use to assist with BP control include education for providers and for patients, low-priced cost-sharing, and direct incentives if certain BP goals are met.

In addition to HEDIS measures, hypertension has also been chosen as one of the 9 core chronic conditions to qualify patients for Medicare Part D Medication Therapy Management (MTM).[4] Pharmacists and other qualified providers involved in MTM programs will be able to help providers optimize antihypertensive therapy and will be in a position to counsel patients about their medication therapy. Cooperation between patients, providers, and payers is imperative to improve outcomes in elderly patients with hypertension.

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