

How Well Do We Care for Patients With Hypertension?

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Hypertension is the most common reason for patients to visit doctors. The rationale behind this diagnosis and its treatment is very simple: we know that high blood pressure (BP) is associated with an increased risk for cardiovascular events,¹ and so it is recommended that BP be treated down to levels that will provide protection against these adverse outcomes.²

This is a logical paradigm, so it is somewhat surprising to learn that there are many people with hypertension in the United States whose BPs are not adequately managed. For this reason, it becomes important to start examining our performance in managing hypertension and to consider how a variety of clinical, social, economic, logistical, and ethnic issues help explain our performance.

This *Journal* publishes original manuscripts across the whole discipline of hypertension, including epidemiology, clinical trials, therapeutics, and lifestyle strategies. In addition, we focus on such issues as access to care and the other practical considerations that influence the success of hypertension management.

These articles in the *Journal of Clinical Hypertension*, therefore, provide an excellent opportunity to take a look at how well we are performing in managing clinical problems in hypertension and ask the critical question: How do the science and recommendations that underlie hypertension get translated into effective care for our patients?

HYPERTENSION MANAGEMENT IN DIFFERENT SETTINGS

While it is established that hypertension is the main reason for doctor visits in the United States,³ it is interesting to ask whether it matters what kind of medical specialist is involved in providing this care. A provocative article by Dr Jing Fang and colleagues⁴ has explored whether differing strategies are employed by primary care physicians and specialists, particularly cardiologists. These authors are located at a major federal institution that monitors such matters: the National Center for Chronic Disease Prevention and Health Preservation of the Centers for Disease Control and Prevention.

These investigators used data from the National Ambulatory Care Survey 2003–2005 and have reported on strategies used by general practitioner/family physicians (36% of physicians), internists (44%), cardiologists (8%), and other specialists (12%). When the general practitioners (GPs)/family

physicians and internists were combined as a “primary care” group, they represented 80% of doctors who deal with hypertension.

The study reported that cardiologists tended to see hypertensive patients more likely to have concomitant conditions such as coronary disease and heart failure. There was no difference among the specialists and the primary care physicians, however, in their prescribing of antihypertensive drugs. Not surprisingly, cardiologists were more likely to prescribe lipid-lowering drugs and were also more likely to prescribe aspirin, calcium channel blockers and β -blockers than the GP/family physician group. There were no differences among the physician groups in their recommendations for lifestyle changes such as nutritional strategies and exercise. In some important ways this report confirms that physicians, regardless of specialty, appear to be prescribing drugs and otherwise managing hypertension in a consistent fashion.⁴

Although cardiologists represent only a small proportion of clinicians who manage hypertension, they often provide specialty services for more difficult patients. In a report by Dr Adam DeVore and colleagues,⁵ the experience in hypertension management in a large general cardiology practice was analyzed. These investigators represented a cardiology practice in a tertiary care center and studied what predicted BP control in their practice. The basis for their interest is that since barely 50% of hypertensive patients in the United States have their BPs adequately controlled,⁶ it would be valuable to explore in their own practice what predicted good results.

These authors observed that 60% of patients in their practice had controlled BP, ie, achieving levels <140/90 mm Hg. In an interesting finding, these authors observed that race and ethnicity, which have often been cited as presenting problems for BP control,⁷ did not do so in their practice. Presumably this finding reflected similar access to care for all patients who were part of the practice, perhaps obviating one of the common reasons why some minority groups do not get adequate attention for hypertension.

Of particular interest, however, was that patients who had private insurance were more likely to achieve BP control. This finding was not well explained and was not dependent on differing education levels among patients who had, or did not have, insurance. Being a nonsmoker also predicted better BP results. Not surprisingly, the investigators also pointed out that the use of additional medications, as needed, produced progressively greater control of BP.

Perhaps the most important finding from this study was that patients who knew what their systolic BP should be, and were kept current on their progress in achieving those targets, were more likely to have successful outcomes. Clearly, engaging patients in a

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detailed fashion in their own care can be very useful in achieving therapeutic goals.

Another article in this *Journal* by Daniel Belletti and colleagues⁸ explored success rates of achieving BP control across a wide group of physician practices. These investigators were prompted to examine the performance of multiple practices out of a belief that clinical inertia, which represents a disinclination by physicians to adequately pursue and intensify hypertension treatment when required, poses a major impediment to effective hypertension management.⁹

Specifically, these authors conducted a cross-sectional review of 28 physician practices across the United States. This work was done by chart review, and the investigators regarded control as BP <140/90 mm Hg for hypertension in general and <130/80 mm Hg for patients with diabetes.

Overall, the patients surveyed in these multiple practices appeared to be fairly typical for people with hypertension across the United States. Their mean BMI was around 31 and 49% were obese. The average age was 65 years, and 25% of patients had diabetes. It is possible that the slightly higher prevalence of obesity and diabetes in this large cohort reflected a preponderance of practices in the Southern regions of the United States.⁸

Overall, 56% of patients had controlled BP. Those who were least likely to have controlled BP were those with obesity and diabetes and, in addition, a relatively large number of African Americans fell into this category. Approximately 20% of nondiabetic patients and 38% of diabetic patients had BPs that were >10 mm Hg systolic or >5 mm Hg diastolic above their goals.

Perhaps the most compelling finding from this real-world experience was that 36% of non-controlled patients were receiving no drugs or just one medication; and 32% were receiving only two medications. So, it can be seen very readily that between these two groups, 68% of noncontrolled patients had not been offered the full potential of antihypertensive therapy. So, indeed, the speculation by these authors that clinical inertia can be an important factor in explaining poor outcomes in hypertension management appeared to be substantiated. Their argument that more intensive educational efforts to improve hypertension care are required appears well warranted.

Unlike these findings in the United States, it is known that control rates for hypertension in Europe are not particularly satisfactory.¹⁰ In a global survey of 26 countries, known as the International Survey Evaluating Microalbuminuria Routinely by Cardiologists in Patients With Hypertension (iSEARCH), Dr Peter Bramlage and colleagues¹¹ evaluated control rates across a broad spectrum of countries.

These investigators found that only 25% of nondiabetic hypertensive patients achieved BP control, with an even lower control rate in those with diabetes. Not surprisingly, high control rates were reported for

North America, and, best of all, Latin America. Clearly, for the survey as a whole, there was once again evidence that physicians are not as aggressive as they might be, showing that about 70% of patients were not receiving ≥ 3 antihypertensive drugs despite the poor control rates. In another interesting finding, β -blockers were the most popular of the medications used for controlling hypertension despite the fact that relatively few patients had nonhypertensive indications for these drugs. This suggests that cardiologists may be overutilizing β -blockers for hypertension therapy and perhaps not considering other potentially more effective agents for their treatment regimens.

IN-HOSPITAL HYPERTENSION TREATMENT

A large proportion of hospitalized patients have hypertension. In a report from a large university teaching hospital, Dr Neal Axon and colleagues¹² evaluated the predictors of hypertension treatment in hospitalized patients. They discovered that men were more likely than women to receive treatment, and that the likelihood of treatment increased progressively with higher patient age. They also discovered that nonwhite patients were actually more likely than whites to get treatment for hypertension, perhaps reflecting an awareness by clinicians that African American patients may be at greater risk from their hypertension.

These authors also noted that having insurance plans was not a significant factor in patients being selected for treatment, a finding that differed from previous data that suggested a possible bias favoring patients with insurance.¹³ Perhaps not surprisingly, it was also noted that patients in the medical service were significantly more likely than those in the surgical service to be treated for their hypertension.

Once more, it was noted that by far the most commonly selected drug for treating hypertension was the β -blocker, which actually was selected more often than angiotensin-converting enzyme (ACE) inhibitors and angiotensin receptor blockers combined! It would certainly be interesting to learn why physicians so commonly turn to β -blockers as primary drugs for treating hypertension even when there are no compelling indications to do so.

In another report from a hospital-based cohort, Dr Neal Axon and colleagues¹⁴ explored the role of residents (physicians in training) in managing hypertension in hospitalized patients. This is a very relevant area of research since residents play a major part in the daily care of these patients, so that exploring their attitudes toward hypertension becomes a key issue.

It is well known that hypertension in hospitalized patients, although common, is poorly managed even in those with cardiovascular conditions that increase the risk of major events.¹⁵ The investigators noted that most residents in the internal medicine and family medicine programs of a large teaching hospital were influenced in their management of hypertension by the current national hypertension guidelines,² but only a

minority of surgical residents took these guidelines into account. Overall, residents displayed a willingness to adjust medications in order to reduce BP. Clearly, as a group, they had confidence that the hypertension treatment regimens they created were of value to their patients since these treatments were maintained at patient discharge rather than reverting to preadmission regimens.

Despite these encouraging findings, the authors of this report make the appropriate caveat that hypertension guidelines generally are intended for ambulatory patients and that more recommendations by experts are required to help guide the optimal care of patients in the hospital setting.

ROLE OF ETHNICITY

Based on a need to provide guidance in the management of hypertension in African American patients, the International Society for Hypertension in Blacks (ISHIB) published their first set of recommendations in 2003.¹⁶ It is accepted that hypertension in the black community may represent an even greater risk than for people of other ethnicities. African Americans are more likely to have an earlier onset of hypertension, poor control of their BP, and a higher prevalence of target organ damage and coexisting conditions. For instance, type 2 diabetes, stroke, and chronic kidney disease are particularly common in African American patients.

In his essay on this subject, Dr Keith Ferdinand¹⁷ has discussed the issues that predispose to these worrisome findings. The explanations include lesser economic resources, decreased access to health care, and a tendency to lifestyles and diets that tend to exaggerate the overall cardiovascular risk of hypertensive patients. Dr Ferdinand, however, makes the point that these issues are now well recognized and are being effectively addressed.

In addition, Dr Ferdinand has argued that we should be particularly thoughtful in how to select medications for treating hypertension in black patients. Even though drugs that block the renin angiotensin system generally may not be as effective for reducing BP in African Americans as in other groups, they are still indicated for patients with chronic kidney disease and heart failure. It is also evident that these drugs, ACE inhibitors and angiotensin receptor blockers, work far more effectively when combined with either diuretics or calcium channel blockers. Dr Ferdinand, however, draws attention to trials that tested combinations of renin angiotensin system blockers with amlodipine and found that black patients had reductions in major cardiovascular outcomes comparable to patients of other ethnicities.¹⁸

A careful examination of hypertension care of inner-city African Americans was reported from Brooklyn by Dr Esosa Odigie-Onkon and colleagues.¹⁹ In assessing practice patterns in that community, these authors found that 50% of treated black patients were at their

BP goals. About 60% of these patients were receiving >1 drug. For hypertensive patients without diabetes or chronic kidney disease, control rates were closer to 70%. Results were less satisfactory for patients with diabetes, although these authors used the treatment goal of <130/80 mm Hg as their criterion, a value that perhaps is no longer as relevant as in previous recommendations.

Once again, however, the selection of drugs was somewhat surprising. The most popular agents in these black patients were blockers of the renin angiotensin system (almost 70% of patients), with lesser use of calcium channel blockers and diuretics. It is known from previous studies in black patients that diuretics and calcium channel blockers, particularly as single-agent therapies, may be more beneficial than other drug classes in protecting against major cardiovascular events.²⁰

An interesting contrast has been provided by a report from Dr Michelle Martin and colleagues,²¹ who described their findings in lower-income rural minority patients with hypertension. The main interest of these investigators was compliance with medications in a setting where drugs were provided at no cost. It is well accepted that a major cause of poor treatment results in hypertension is the failure to access appropriate medications,²² so this report is especially interesting.

In essence, the authors posed the question: Why would there be problems with treatment compliance for patients who receive their medication without personal cost? In their survey of these patients, the authors discovered that a common reason for not taking medications was that, for whatever reason, the treatments were not available to them at the time when the dosing was required. A second major cause was that these patients had run out of medications and not refilled their prescriptions. Another reason cited for inadequate treatment compliance included side effects, and other patients said that their inability to take medications reliably was related to the inconsistency of their daily routines. Unfortunately, none of these reasons appear compelling.

What was particularly revealing in this report, however, was that 74% of the patients surveyed indicated that they had discomfort about asking questions of their physicians, even when they had good overall relationships with them. It is interesting that 25% of patients stated that they actually found doctor visits to be stressful.

This report underscores that simply making medications available at no cost does not necessarily result in good treatment outcomes. Most of the reasons given for inadequate treatments do not appear to be convincing, and perhaps the biggest lesson from this research is that the connection between many patients and the clinicians who care for them is not sufficiently strong to allow the sort of close communication that can effectively address problems that patients might have.

An article submitted from Japan has reflected a similar set of issues occurring in that country. Dr Hirohiko Yokokawa and colleagues²³ reported an observational study of whether patients in Japan could achieve the recommendations of the Japanese Society of Hypertension.²⁴ These investigators noted that in patients who did not have either diabetes or chronic kidney disease, predictors of failure to achieve the Japanese Society's BP goals could often be related to an inadequate number of drugs being used. Interestingly, the absence of known cardiovascular disease was also a predictor of a poor outcome, suggesting that in patients known to have complications of this kind there was a greater likelihood that physicians would work harder to achieve BP targets.²³

In patients who did have major coexisting conditions such as diabetes or chronic kidney disease, worse outcomes were predicted by a family history of hypertension. In addition, increased consumption of alcohol and active smoking were also associated with failure to achieve BP targets. These findings, in particular the inadequacy of drug therapy, are similar to those discussed earlier in American patients.

TREATMENT IN ELDERLY PATIENTS

Patients of all ages often have inadequate knowledge of their hypertension condition, which can result in poor compliance and to unsatisfactory treatment results.²⁵ Nancy Houston Miller and colleagues²⁶ have reported a survey conducted by Harris Interactive on the awareness and understanding of hypertension in patients labeled as baby boomers or as seniors.

When baby boomer patients (defined as age 44–62 years at the time of the poll) were compared with seniors (63 years or older), the boomers could be characterized as having lesser adherence to antihypertensive treatment, but at the same time expressing a greater concern about their cardiovascular condition. Another finding, perhaps reflecting secular trends affecting the United States, was evidence for increased risk factors such as obesity and diabetes in the baby boomer group as compared with the seniors. Despite this, the boomers were less likely than the seniors to undertake lifestyle changes as part of their overall management.

In addition, the baby boomers provided evidence for relatively poor communication with the clinicians caring for them. Given their increased concern about their cardiovascular condition, it is somewhat paradoxical that they would not have had a closer connection to their physicians. It will be interesting to learn, over time, whether these attitudes change as baby boomers get somewhat older.

A report from Dr Joseph Biskupiak and colleagues²⁷ focused on hypertensive patients 65 years or older in the United States and employed an analysis of electronic medical records from primary care practices. These investigators were prompted to undertake this study by reports that elderly patients are treated

less aggressively and have lower BP control rates than other age groups.²⁸ They had the opportunity, using the electronic database, to obtain data in more than 61,000 people younger than 65 years and almost 50,000 people older than 65 years.

They learned that the older group was more likely to have isolated systolic hypertension and to have elevated BP complicated by coexisting conditions. Despite more complex antihypertensive regimens, their attainment of BP goals was less than in younger people. The investigators also noted that, independent of age, African Americans and obese patients also were shown in this large database to have lower BP control rates.

It may be important in understanding these reports of BP control that the target of <140/90 mm Hg has been usually used as the target. It may be necessary, however, to rethink whether this level of BP is always appropriate for elderly patients. In view of the aging of our population, further guidance on this subject should be sought.

A report by Dr Farhan Aslam and colleagues²⁹ examined the prevalence of hypertension and prescribing trends in elderly patients in the United States. It was recently claimed that elderly patients, including those older than 80 years, benefit in terms of cardiovascular protection from hypertension treatment.³⁰

These authors used a survey of Medicare patients to obtain information about hypertension in the elderly. They calculated that 62% of Medicare patients have hypertension, translating roughly to 20 million people in the United States.

It was noted that in the years from 1999 to 2004, the prevalence of hypertension increased in this population from 59% to 65%. Presumably this may reflect the trends toward obesity and diminished exercise habits seen across the American population. This increase in prevalence was seen most markedly in nonwhite patients and was greater in women than men. It was also noted that patients with concomitant conditions such as diabetes or with histories of coronary or stroke events were more likely to have hypertension than those without these coexisting conditions. It was also noted by these investigators that people older than 85 were less likely than other Medicare patients to receive treatment for hypertension. As discussed previously, more insights into the optimal care of the very elderly clearly are required.

An essay by Dr Vito Campese and Dr Edward Schneider³¹ has focused on antihypertensive therapy in older patients, asking the important question of whether it might be possible to reduce the intensity of this treatment in some individuals. These authors point out that a growing proportion of our population are reaching the age of 85 years,³² raising the important question of how best to manage hypertension in the very elderly. As these authors point out, many patients in their ninth decade of life have stage 2 hypertension, which helps explain why so many of them currently are taking BP medications.

Drs Campese and Schneider raised the possibility that some patients could be reevaluated for the need to take drugs for hypertension or at least whether it might be possible to reduce their treatment burden. They point out that the side effects of commonly used drugs such as thiazide diuretics and β -blockers can markedly reduce the quality of life in the very elderly. Orthostatic hypotension is relatively common in older people being treated for hypertension and presents serious potential risks of its own.

These authors also challenge the dogma that treating hypertension in the very elderly provides all the cardiovascular outcomes benefits that have been claimed. The patients studied in the pivotal trial that has influenced this aggressive approach to treatment were largely not typical of those we manage in the United States.³⁰ Further information is obviously required in the very elderly to clarify not only which approaches for reducing BP are most effective but also whether the cardiovascular protection provided by this treatment warrants the side effects that can be produced.

OTHER EVALUATIONS OF PHYSICIAN PERFORMANCE

Education of primary care physicians and other specialists is an important part of enhancing community control of BP. As one example, it is important to control BP in patients at risk for heart failure.³³ A report by Dr Beatriz De Rivas and colleagues³⁴ from Spain has considered the effectiveness of an educational program targeted at primary care physicians with the intention of improving BP control in their patients. This education was provided by live group sessions or by online training and focused on patients who were regarded as being at risk for developing heart failure.

Despite this well-intentioned program, there was only a slight (but significant) 1-mm Hg reduction in systolic BP and a small 2% absolute increase in the number of patients achieving BP targets. In the view of the authors, this slight change in BP control was not sufficient to provide adequate protection against heart failure. Their argument is that other more innovative educational or motivational strategies may be necessary to assist clinicians in achieving better BP control rates.

The avoidance of using diuretic therapy has often been held as an explanation for poor BP reductions, and a report by Dr Emily Sutton and colleagues has examined the reasons why physicians often avoid prescribing thiazide diuretics. These authors make the point that thiazides often help control BP when added to previously ineffective regimens.³⁵

The investigators studied responses to a letter sent to practicing clinicians asking for more information about their patients whose BPs were not adequately controlled.³⁶ Among the reasons given in responding to this letter were that other types of medications were changed or added and that there appeared as yet to be no need to add a thiazide. In other cases, physicians

pointed out that failure to achieve BP targets was due to poor patient compliance with treatment and that they had worked with their patients to restart their previous therapy. Still other explanations for not adding a diuretic included a decision by clinicians to start lifestyle strategies to augment the previous drug regimens.

Interestingly, some physicians responded by saying that since the first report of inadequate BP control patients had later achieved their targets without the need for further changes. Other physicians indicated that they were following a “watch and wait” strategy, again suggesting an expectation that over time BP might tend to fall into an acceptable range. Other physicians argued that they did not necessarily subscribe to publicly recommended BP targets and considered their patients to be controlled at BP levels higher than the usual goal.

Only very rarely did physicians cite their reluctance to use thiazides because of previous side effects experienced by their patients on those drugs. Another factor, although perhaps not obvious at the time this survey was conducted, is that recent research has suggested that drugs such as calcium channel blockers might be acceptable or even preferable alternatives to thiazides in combination antihypertensive therapy.¹⁸

Compliance with treatment is the cornerstone of effective outcomes in managing hypertension.³⁷ In a thoughtful review by Dr Serap Erdine,³⁸ the issues that affect patient compliance with their prescribed regimens are carefully discussed. Dr Erdine has made a clear focus on the usefulness of combinations of antihypertensive drugs. She argues that the use of fixed combinations allows two or even three medications to be taken in a single tablet on a once-daily basis, thereby adding to the ease and convenience of taking an effective antihypertensive regimen. Of course, useful as they are, fixed-drug combinations are not the only answer to improving compliance. Dr Erdine stresses the importance of physicians including the family as well as the patient in explaining hypertension and the need for its treatment. As a practical point, it appears important to go beyond giving verbal instructions. Writing down important information about the drugs and how they should be taken adds to the likelihood of a successful outcome. Additionally, measuring BPs at home, as discussed previously, is an important way of involving patients in their own care and improving compliance with treatment.

ENGAGING PATIENTS IN THEIR OWN TREATMENT

Beyond the use of pharmacologic agents, lifestyle changes can add usefully to the reduction of BP.³⁹ In a report by Dr Amy Valderrama and colleagues,⁴⁰ who are at the Centers for Disease Control and Prevention (CDC), important data from the 2008 HealthStyles Survey have been presented.

These authors discovered that 80% of hypertensive patients were taking medications, but that only about a quarter of them received advice about lifestyle changes. They noted that younger patients and women were less likely to be offered advice regarding diet, exercise, and other such strategies. Of note, the patients most likely to receive advice on lifestyle changes were African Americans and people in the lowest stratum of household incomes. It is not clear whether the improved advice offered to these patients reflected a judgment by physicians that emphasizing lifestyle strategies could help compensate for potentially limited access to medications for patients with modest personal means. The overall conclusion of this work, though, was that lifestyle advice should be more frequently utilized than is currently the case.⁴⁰

In an extension of the research just considered, the same group of authors from the CDC, now led by Dr Carma Ayala, turned their attention to the importance of dietary sodium as a factor in hypertension. Based on the known association between increased dietary salt and hypertension,⁴¹ these authors compared trends in sodium intake between the HealthStyles Surveys of 2005 and 2008.⁴²

Based on self-reporting by patients, these investigators found that there were increased efforts by patients to decrease their salt intake during that 3-year period. In addition, patients now indicated a greater likelihood of reading food labels to ascertain salt content. Altogether, approximately 50% of patients by 2008 had an awareness of salt issues and had responded in some way to try and reduce their dietary intake. The patients most likely to undertake this strategy were those older than 65 years.

HOME BP MONITORING

As already discussed, getting patients to check their own BPs at home has been recommended as a means for improving compliance with treatment and achieving control of BP.⁴³ In a report by Dr Jiyun Kim and colleagues⁴⁴ that surveyed compliance with home BP measurements among American patients largely of Korean origin, a protocol was established to achieve regular home BP measurements. Patients were told to measure their BPs in the morning and the evening on at least 2 days of the week during a 48-week period. Each of these measurements was the average of three consecutive readings. The investigators reported that older patients were far more compliant than younger individuals in following these instructions. On the other hand, patients who exhibited depressive symptoms were less likely to follow this protocol.

Most importantly, patients who were compliant with the home BP monitoring plan were four times more likely than noncompliant patients to control their BPs. This is really a dramatic demonstration of how getting patients closely involved in the details of their own management can produce compelling results. Hopefully this message will become more

widely appreciated by practitioners caring for patients with hypertension.

CONCLUSIONS

This series of recent articles has addressed issues concerned with achieving effective BP control in patients with hypertension and has put forward a number of interesting findings and recommendations. It is reassuring that so many investigators are now focusing on ways for translating our epidemiologic and clinical trials knowledge about hypertension into effective strategies designed to protect patients from the adverse cardiovascular, stroke, and renal outcomes associated with poorly controlled hypertension.

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