American Society of Hypertension Regional Chapters: Leveraging the Impact of the Clinical Hypertension Specialist in the Local Community

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Hypertension control has remained at 24% to 27% for the past decade, despite revision of national treatment guidelines, expansion of therapeutic options, and evidence from clinical trials that higher control rates are attainable. Uncontrolled hypertension contributes to the enormous health and economic burden from cardiovascular and renal disease. The risk for hypertension-related complications is increasing in the United States as comorbidities such as diabetes mellitus and congestive heart failure rise in a population that is becoming progressively older, more obese, and more ethnically diverse. Given regional variations in demographic characteristics and disease burdens, implementing evidence-based guidelines will be more effective if tailored appropriately to the local community.

The Clinical Hypertension Specialist program is a positive response to an impending health care crisis. The impact of the Hypertension Specialist on blood pressure control can be leveraged by extending the academic mission of education, patient care, and health services research to the local community. The American Society of Hypertension regional chapter can serve as a forum for Clinical Hypertension Specialists from academic medicine and the community to define mutual goals, develop an action plan which is responsive to community needs, and monitor progress. With support from the chapter, Clinical Hypertension Specialists in the community can have an impact on the practice of medicine locally by contributing to the education of primary care providers, receiving referrals of patients with complicated hypertension, monitoring progress in meeting evidence-based goals, providing feedback to peers, and participating in multicenter trials. Am J Hypertens 2002;15:372–379 © 2002 American Journal of Hypertension, Ltd.

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Hypertension affects more than 50,000,000 adults in the United States. Approximately 40,000,000 patients do not have their blood pressure (BP) controlled to goal.1 Uncontrolled hypertension contributes to the enormous health and economic burden of stroke, congestive heart failure, coronary heart disease, and end-stage renal disease. In recognition of these facts, the Healthy People 2000 report established a goal of controlling BP to ≤140/90 mm Hg in 50% of hypertensive patients. Although progress toward the goal has been minimal, clinical trials and work site programs have shown that hypertension control rates of 50% or more are attainable. Improving control rates from 25% to 50% would reduce the number of strokes by approximately 15% and help stem the rising health and economic toll from cardiovascular disease.2

Changing Demographics and Comorbidities Raise the Urgency for a Regional Approach to Hypertension Control

Hypertension has the greatest adverse effects on cardiovascular health in those at highest risk. The high-risk groups include the elderly, diabetics, ethnic minorities and those with other cardiovascular risk factors and pre-existing cardiovascular disease.1 The high-risk groups are the most rapidly growing segments of the population. Unless constructive action is implemented promptly, the health and economic consequences of suboptimal BP control will increase dramatically over the next 20 years.2 This challenge is heightened by regional differences in demography and disease risk, which emphasizes the importance of
developing action plans tailored to the needs of local communities. The American Society of Hypertension (ASH) regional chapters can serve as a focal point for community experts to design, implement, and monitor a strategic action plan that addresses the specific needs of the region and its local communities. The following represent some important factors that impact regional considerations. For example, median age is rising more rapidly in the “Sunbelt” as retirees from the North relocate to warmer climates. The Southeast has a higher percentage of African American and the Southwest a higher proportion of Hispanic individuals than other regions. Disease burdens also vary by region independently of age and ethnicity, with greater event rates in the Southeast.

An Aging Population

The mean age of the United States population is increasing rapidly.4 The segment of the population with the largest absolute increases and the highest percentage gains include those ≥60 years of age. Systolic BP rises progressively with advancing years and assumes greater significance as a cardiovascular risk factor.5 The benefits of treating hypertension in the elderly, including isolated systolic hypertension, are particularly impressive (Table 1).6,7 Although awareness of hypertension is high among the elderly, older patients and their physicians are often unconcerned about the dangers of systolic hypertension.8,9 The BP threshold at which physicians initiate and increase antihypertensive therapy in older patients is often higher than warranted by the medical evidence. Approximately 40% of physicians indicate that they would not initiate or increase therapy in an older hypertensive patient unless the systolic BP was >160 mm Hg.8 Practice patterns confirm the reluctance to treat. In the Veterans Administration study, in which the mean age of patients was 65 years, antihypertensive therapy was increased on only 20% of visits when the systolic BP was >165 mm Hg and the diastolic BP <90 mm Hg.10 Because failure to control systolic BP is the overwhelming contributor to uncontrolled hypertension,11 physicians’ attitudes remain a barrier to improving hypertension control.

The declining BP control rates with advancing years do not represent age-related resistance to antihypertensive compounds. Clinical trial results suggest that the decline of systolic BP is often two to three times that of diastolic BP, especially in older hypertensive patients with isolated systolic hypertension.8,9 Treatment of older hypertensive individuals is associated with impressive declines in clinical event rates, even though systolic BP on average did not reach goal.8,9 Despite concerns about adverse effects of treating older hypertensives, therapy is well tolerated in this group, and quality of life either remains unchanged or improves.12,13

Table 1. Effects of blood pressure reduction on cardiovascular events in clinical trials: impact in older hypertensive patients with an average decrease of 12/5 mm Hg

<table>
<thead>
<tr>
<th>Complication</th>
<th>Stroke</th>
<th>CAD</th>
<th>CHF</th>
<th>All CVD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classification of hypertension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Systolic/diastolic hypertension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australian</td>
<td>33</td>
<td>18</td>
<td>—</td>
<td>31</td>
</tr>
<tr>
<td>EWPE</td>
<td>36</td>
<td>20</td>
<td>22</td>
<td>29*</td>
</tr>
<tr>
<td>STOP</td>
<td>47*</td>
<td>13</td>
<td>51*</td>
<td>40*</td>
</tr>
<tr>
<td>MRC</td>
<td>25*</td>
<td>19</td>
<td>—</td>
<td>17*</td>
</tr>
<tr>
<td>HDFP</td>
<td>44*</td>
<td>15*</td>
<td>—</td>
<td>16*</td>
</tr>
<tr>
<td>Isolated systolic hypertension</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHEP</td>
<td>33*</td>
<td>27*</td>
<td>55*</td>
<td>32*</td>
</tr>
<tr>
<td>Syst-Eur</td>
<td>42*</td>
<td>30</td>
<td>29</td>
<td>31*</td>
</tr>
<tr>
<td>Syst-China</td>
<td>38*</td>
<td>27</td>
<td>—</td>
<td>25*</td>
</tr>
</tbody>
</table>

CAD = coronary artery disease; CHF = congestive heart failure; CVD = cardiovascular disease; EWPE = European Working Party on High blood pressure in the Elderly; STOP = Swedish Trial in Old Patients with hypertension; MRC = Medical Research Council trial on treatment of hypertension in older adults; HDFP = Hypertension Detection and Follow-up Program; SHEP = Systolic Hypertension in the Elderly Program; Syst-Eur = Systolic hypertension in Europe; Syst-China = Systolic hypertension in China.

* Statistically significant P < .05.

Ethnic Minorities

African American individuals are at high risk for cardiovascular and renal complications with rates 50% to 500% higher than in white populations.14,15 In the Hypertension Detection and Follow-Up Program, stroke death rates in African Americans were more than double those of white patients in usual care. Although stroke mortality was reduced among both ethnic groups assigned to stepped-care, the twofold racial disparity in stroke mortality seen in usual care was reduced by more than 50% among patients assigned to stepped care.15 Although this information has been available for 20 years, the twofold greater stroke mortality among African American than white individuals persists, especially in the Southeast.14–16
Diabetes Mellitus

Diabetes mellitus doubles risk for cardiovascular disease. Although coronary heart disease has declined significantly among nondiabetic populations, this beneficial trend has been less impressive among those with diabetes, particularly women. The prevalence of diabetes is rising rapidly and may be explained by the combined effects of increasing age and obesity. This unfavorable trend reinforces the notion that cardiovascular and renal complications will rise in the years ahead unless constructive action is taken soon. Fortunately, the benefits of better BP control are impressive among diabetic populations (Table 2).

Pre-Existing Cardiovascular Disease

Pre-existing cardiovascular disease is a powerful predictor of subsequent events. Patients with pre-existing cardiovascular disease benefit more from antihypertensive therapy than those without target organ damage. Patients in the Hypertension Optimal Treatment (HOT) Study with previous ischemic heart disease had fewer strokes when assigned to a treatment diastolic BP goal of <80 as compared with <90 mm Hg. In the Systolic Hypertension in the Elderly Program (SHEP) Study, patients with a prior myocardial infarction had an 81% lower risk of developing congestive heart failure with treatment than with placebo, compared with a 49% reduction in the overall treatment group.

Increasing Risk Level of Hypertensive Patients

The risk level of hypertensive patients is increasing. Application of the Joint National Committee (JNC-VI) Sixth Report risk factor stratification to the National Health and Nutrition Examination Survey (NHANES) I from 1971 to 1974 indicated that approximately 19% of hypertensive patients met criteria for JNC-VI Risk Group C. Over the last 18 months, we obtained data on 2211 patients, with

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Table 2. Summary of outcomes among diabetic patients in multicenter hypertension trials

<table>
<thead>
<tr>
<th>Trial</th>
<th>N</th>
<th>BP Intense Rx</th>
<th>Δ BP v Less Intense</th>
<th>↓ CVD Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABCD</td>
<td>470</td>
<td>132/78 mm Hg</td>
<td>6/8 mm Hg</td>
<td>None</td>
</tr>
<tr>
<td>HOT*</td>
<td>1501</td>
<td>140/81</td>
<td>4/4</td>
<td>30-67%</td>
</tr>
<tr>
<td>SHEP</td>
<td>583</td>
<td>164/68</td>
<td>9/3</td>
<td>22-56%</td>
</tr>
<tr>
<td>Syst-Eur</td>
<td>492</td>
<td>153/78</td>
<td>9/4</td>
<td>62-69%</td>
</tr>
<tr>
<td>UKPDS</td>
<td>1148</td>
<td>144/82</td>
<td>10/5</td>
<td>32-44%</td>
</tr>
</tbody>
</table>

BP = blood pressure; Rx = BP intensively treated group; ABCD = Appropriate Blood Pressure Control in Diabetes; HOT = Hypertension Optimal Treatment study (*diabetic subset reported together with main study results); UKPDS = United Kingdom Prospective Diabetes Study; other abbreviations as in Table 1.

FIG. 1. The percentage of individuals with high blood pressure who met criteria for Joint National Committee Sixth Report (JNC-VI) Risk Groups A, B, and C are shown from a retrospective analysis of the National Health and Nutrition Examination Survey (NHANES) I survey (1971 to 1974) and for the current Hypertension Initiative of South Carolina (2000 to 2001).
more than 90% of data provided by primary care clinicians throughout South Carolina. Approximately 40% of patients meet criteria for JNC-VI Risk Group C (Fig. 1). This is double the proportion of Risk Group C patients in NHANES I and is consistent with evidence that cardiovascular risk is higher in the Southeast and may be increasing.3,14,25 Implementation of evidence-based guidelines at the local primary care level is the most efficient strategy for addressing the risk.

Closing the Gap: Translating Research Into Practice Controlling Blood Pressure in High-Risk Patients

Blood pressure is controllable among high-risk patients. Clinical trials and work site studies indicate that hypertension can be controlled in the majority of patients.22,26 For example, patients in the Hypertension Optimal Treatment (HOT) Study had a mean age of approximately 62 years on entry, initial diastolic BP values of 100 to 115 mm Hg, and a high level of comorbidities such as obesity and diabetes.22 Nonetheless, diastolic BP was controlled to <90 mm Hg in approximately 90% of patients by means of a comparatively simple stepped-care algorithm. Although systolic BP was not targeted in HOT, approximately 60% of patients reached values of <140 mm Hg. The improved BP control required more medication. On entry, approximately one third of patients were on combination therapy with roughly two thirds on monotherapy. Within the first year, these proportions reversed.

The benefits of treating hypertension were established more than 30 years ago and led to the National High Blood Pressure Education Program and six Joint National Committee reports. Although these educational efforts raised awareness and improved hypertension control in the 1970s and early 1980s, little progress has been made for more than a decade.1,11 The failure to improve BP control has occurred despite the refinement of evidence-based treatment guidelines as well as greater availability of effective, well tolerated antihypertensive medications. Several factors contribute to the gap between achievable and actual BP control (Fig. 2A).5,10,27,28 Some factors are complex and not easily addressed, and could lead providers and policy makers to the conclusion that hypertension control rates are unlikely to improve anytime soon.

Focusing on the Provider

Even in settings in which access to care is good and medications are provided either free or at subsidized cost, hypertension control rates are typically no better than the national average.10,29 In a survey of primary care providers, the lowest scores were obtained on knowledge of prevention guidelines with questions addressing the management of hypertension.30 Moreover, physicians and their patients are often less concerned by an elevated systolic than diastolic BP, despite the medical evidence.8,9 Many physicians do not initiate or increase antihypertensive therapy for elevated systolic BP values at which treatment has been demonstrated to reduce risk.8,10 Despite these formidable barriers, hypertension control rates can improve dramatically and rapidly.31

A survey of approximately 20,000 patient records from practices participating in the University of Pennsylvania managed care program found that hypertension control rates at baseline were 19%.31 Physicians received information on JNC treatment guidelines for hypertension. Charts were reviewed quarterly and physicians received feedback on BP control rates for their own patients and those of colleagues. During the next year, hypertension control rates improved steadily from 19% to 53%. The effect of feedback to the physician is so striking that it may be useful to examine some likely explanations.

Impact of Feedback on Physician Behavior

Several studies document that providing physicians with specific feedback from their practice can improve success rates in meeting performance standards and reaching evidence-based treatment guidelines.31-33 There are gaps in physicians’ knowledge of evidence-based goals and the best practices for preventing major health problems.30 Effective feedback may close some critical gaps in knowledge. Physicians often fail to effectively implement what they do know.10,30 The dramatic impact of feedback on BP control in the University of Pennsylvania experience suggests that provider behavior was changed toward greater use of effective antihypertensive treatment.31

Feedback to Physicians and Patient Compliance

Approximately 80% of hypertensive patients are aware of their diagnosis, and most are receiving primary health care.2,11,34 In fact, most have received a prescription for antihypertensive medications. However, approximately 50% of individuals who begin antihypertensive medication discontinue treatment within the first year.35 Of those who remain on treatment, roughly 50% take less than 80% of the medication prescribed, which is generally required to control BP. These facts are consistent with evidence from clinical practice that approximately one in four hypertensive patients has BP controlled.11 The rise in BP control rates from 19% to 53% in the University of Pennsylvania experience suggests that patient adherence to medication or lifestyle advice probably improved with effective feedback to physicians.31

The primary care provider plays a critical role in patient adherence to lifestyle change and medications as well as achieving BP control.30 A regular primary care provider—not just access to care—is fundamental in improving outcomes and reducing health disparities. We speculate that changes in physician behavior as a result of feedback lead
to a more productive interaction (Fig. 2B) between patients and their primary care providers, enhance patient compliance and improve outcomes.

**Role of the ASH Chapters in Leveraging the Impact of the Clinical Hypertension Specialist Rationale for Regional Tailoring**

As noted earlier, the challenges presented by changing demographic patterns and disease profiles vary with different areas of the country. Thus, regional tailoring may effectively complement national policies for optimizing hypertension control and may facilitate efforts aimed at reducing racial and ethnic health disparities. The ASH chapters provide a forum for developing and implementing a constructive regional response to the burden of uncontrolled hypertension.

**Critical Importance of Hypertension Control in Primary Care**

The logistical challenge of providing specialty care for 40 million patients with uncontrolled hypertension is overwhelming. Success by primary care providers is critical.
To achieve the Healthy People 2010 goal of controlling BP in 50% of hypertensive patients, the majority of the progress must occur at the primary care level. Increasing the number of ASH Clinical Hypertension Specialists tenfold is likely to improve care for a substantial number of hypertensive patients but is unlikely, through direct patient care, to have a significant impact on national control rates for high BP. The impact of the Clinical Hypertension Specialist on hypertension control rates in the local community can be leveraged. The Clinical Hypertension Specialist, with support from academic colleagues, can assist in this goal by educating other primary care providers, facilitating policies and procedures that promote BP control, monitoring progress in controlling BP to goal, and providing feedback to clinicians, administrators, and policy makers.

**Feasibility of Monitoring and Feedback in Diverse Primary Care Settings**

Over the past 18 months, several primary care physicians throughout South Carolina have participated in a project to monitor care of hypertensive patients in their practices. With input from community physicians, a data card reporting system was developed that does not include any direct patient identifiers (Fig. 3). The report cards are forwarded weekly to the data coordinating center in Charleston. The information is entered into a Microsoft Access database (Microsoft, Redmond, WA) and examined using a series of queries developed by our group. Procedures are being developed for automated input of data from practices with electronic medical records.

Physicians receive summary reports on the JNC-VI Risk Group distribution of their patients. Reports indicate the percentage of patients that are meeting BP control targets as well as the percentage of dyslipidemic patients meeting LDL cholesterol goals and diabetic patients achieving target hemoglobin A1c values. The data in Table 3 show that physicians participating in the monitoring and feedback program are performing quite well in controlling BP, LDL cholesterol, and HbA1c to target values. An additional 20% of patients are within 10 mm Hg systolic of having their BP under control. A summary of medications used to treat hypertension for all patients and for each risk group is also given to providers (not shown). Physicians in the program indicate that the reports are useful in characterizing their patient population and in providing an objective basis for changes that result in improved risk factor control. With the support of the ASH chapter, this successful model can be extended to communities throughout the Carolinas.

The Carolinas Chapter plans to develop a network of primary care physicians throughout the region who will become the Clinical Hypertension Specialist for their community. To facilitate this process, the authors initiated a continuing medical education program 2 years ago known as the “Experts in Hypertension Seminar Series.” Programs are held in various communities throughout the state to encourage participation by providers in that locale. Most participants live within about 50 miles of the program site. Evaluations of the program by participants indicate that the presentations and discussions are highly
relevant to their practice and patient population. Approximately 30 physicians began participating in the monitoring and feedback program, and 17 became interested in the ASH Clinical Hypertension Specialists certification examination through the Experts in Hypertension Seminar Series. Thirteen physicians from South Carolina passed the certifying examination offered June 9, 2001, bringing the total of ASH Clinical Hypertension Specialists in the state to 23. The 5-year plan is to develop a statewide network of hypertension specialists that includes approximately 5% of the primary care physicians, with at least one expert in each county throughout North and South Carolina.

The chapter will facilitate the development and implementation of a strategic plan by its members to maximize the impact of educational efforts and resource use, toward the common goal of improving cardiovascular risk factor control and reducing associated health complications. The chapter will serve as a coordinating center for monitoring progress toward these mutual goals and for revising and improving the strategic plan. In addition, the chapter will examine and prioritize a range of educational objectives and advocacy initiatives with its members to maximize improvement in cardiovascular risk factor control throughout the Carolinas. Finally, it will serve as a forum for extending the academic mission to the community with the main goal of implementing evidence-based guidelines in primary care practices throughout the region.

### The Role of the Clinical Hypertension Specialist

The Hypertension Specialist will serve as an extension of the tripartite academic mission, which includes education, patient care, and research. The Hypertension Specialist will function as an educator and information resource for other providers in the community. The chapter plans to develop speaker training programs as well as teaching materials and guidelines to maximize the educational impact of its members. Industry has demonstrated support for the educational efforts of hypertension experts locally.

The Hypertension Specialist will receive referrals of patients with complicated and treatment resistant hypertension, ie, patient care. To facilitate a growing referral base within the local community, the chapter will work on guidelines and incentives that encourage specialists to appropriately manage patient referrals expeditiously and return patients to their primary care physicians promptly.

The Clinical Hypertension Specialist will have opportunities to participate in monitoring hypertension control rates and complications, and to play a leading role in optimizing risk factor control in the local medical community. This component will benefit from a partnership between Hypertension Specialists in the community and those in academic medicine. The network and database may lead to opportunities for multicenter studies of new diagnostic and therapeutic approaches to cardiovascular risk factor control and disease prevention including those based on advances in molecular biology.

### Summary

Uncontrolled hypertension contributes significantly to the health and economic toll of cardiovascular and renal disease. Treating hypertension and the associated dyslipidemias and diabetes using evidence-based guidelines is highly effective in reducing the tremendous health and economic burden. The time to begin is now, as demographic changes will only magnify the adverse impact of
uncontrolled hypertension. The primary care provider has a major effect on hypertension control rates. Thus, the first objective of the Hypertension Initiative and ASH Carolinas Chapter is to develop a network of community Hypertension Specialists that can address the regional and local challenges by serving as an extension of the academic mission. The Clinical Hypertension Specialist will serve as the point person in the community or multispecialty group practice for hypertension education, patient referral, health services research, and clinical trials. With the commitment of these pioneering individuals to translate research into practice, a new and exciting paradigm for improving hypertension control can begin immediately.

References


