Hypertension Control
Trends, Approaches, and Goals

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Hypertension is a major contributor to the global disease burden. Overall, according to recent estimates, the worldwide prevalence of hypertension in 2000 was \( \approx 26\% \), totaling \( \approx 1 \) billion people. Because a larger proportion of the world’s population is expected to be older in 2025, hypertension prevalence has been projected to increase to \( \approx 29\% \) by that time. However, there is considerable variation among countries and geographic regions for the reported prevalence of hypertension (\( \approx 5\% \) to 70\%) and hypertension control rates (\( \approx 5\% \) to 58\%). Although hypertension is more prevalent in economically developed countries, the larger population of developing countries results in a considerably larger absolute number of individuals affected.

Based on an analysis of cross-sectional National Health and Nutrition Examination Surveys (NHANES) between 1960 and 1991, age adjusted hypertension prevalence (blood pressure \( \geq 140/90 \) mm Hg) in US adults reportedly decreased from 29.7\% to 20.4\%; hypertension awareness rates increased from 51\% to 73\%, and hypertension control rates increased from 10\% to 29\%. In a more recent analysis of NHANES data, it was estimated that between 1988–1991 and 1999–2000 hypertension prevalence in the adult US population actually increased from 25.0\% to 28.7\%, an estimated 58.4 million individuals. Hypertension was defined as a systolic blood pressure \( \geq 140 \) mm Hg, a diastolic blood pressure \( \geq 90 \) mm Hg, or taking antihypertensive medications. Increasing age, increasing body mass index, and non-Hispanic black ethnicity were independently associated with hypertension. On a more positive note, hypertension awareness and control rates have consistently increased over time since 1960. In addition, mean blood pressures of the US population decreased by 10/5 mm Hg between 1960 and 1994, and the age-adjusted mortality rate for stroke and coronary heart disease declined by 60\% and 53\%, respectively. Cardiovascular mortality has continued to decline since 1994, although at a less steep rate. A number of factors have contributed to these favorable trends, including a better understanding of the risks of “benign” hypertension and the benefits of treatment, the increased availability of effective antihypertensive agents, the recommendations of professional groups for lifestyle interventions and therapeutic targets for blood pressure control, and a number of federal and community-based high blood pressure prevention and control efforts.

Since the 1970s, community-based programs have been instrumental in raising awareness, increasing knowledge, and promoting health behavior change to improve blood pressure control, particularly for poor, undeserved, and uninsured individuals. As recently reviewed, blood pressure control strategies at the national, state, and community levels, involving a spectrum of health care providers and community health care workers, have been shown to increase awareness, as well as to improve adherence to lifestyle interventions and drug therapy.

In the current issue of Hypertension, Ong et al report another analysis of NHANES data regarding hypertension prevalence, awareness, and control in US adults between 1999 and 2004. Overall, between 1999–2000 and 2003–2004, hypertension prevalence increased from 26.8\% to 29.3\%, although this difference was not statistically significant. Hypertension awareness between these 2 time periods increased significantly from 68.7\% to 75.7\%, and hypertension control rates increased from 29.2\% to 36.8\%. The increases in awareness and control were most prominent in individuals aged \( \geq 60 \) years. The overall hypertension prevalence and control rates for 1999–2000 are similar to results of previous analyses of NHANES data. The striking and new observation in this report is the increase in hypertension control between 1999–2000 and 2003–2004.

Taken together, these analyses of NHANES data indicate a high and perhaps increasing prevalence of hypertension in the adult US population. It seems reasonable to suggest that the increasing prevalence of obesity is a contributing factor. High rates of hypertension were also associated with age and with non-Hispanic black ethnicity. On a more positive note, hypertension awareness and control rates have consistently improved over time since 1960. In addition, mean blood pressures of the US population decreased by 10/5 mm Hg between 1960 and 1994, and the age-adjusted mortality rate for stroke and coronary heart disease declined by 60\% and 53\%, respectively. Cardiovascular mortality has continued to decline since 1994, although at a less steep rate. A number of factors have contributed to these favorable trends, including a better understanding of the risks of “benign” hypertension and the benefits of treatment, the increased availability of effective antihypertensive agents, the recommendations of professional groups for lifestyle interventions and therapeutic targets for blood pressure control, and a number of federal and community-based high blood pressure prevention and control efforts.

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The National High Blood Pressure Education Program was established in 1972 as a cooperative effort among professional and voluntary health agencies, state health departments, and community groups. The goal of the program,
Healthy People 2010 Blood Pressure Control Goals

<table>
<thead>
<tr>
<th>Goals</th>
<th>1988–1994 Rate, %</th>
<th>2010 Target, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease hypertension prevalence</td>
<td>28</td>
<td>16</td>
</tr>
<tr>
<td>Increase the proportion of adults with controlled hypertension</td>
<td>18</td>
<td>50</td>
</tr>
<tr>
<td>Increase the proportion of adults with hypertension who are taking action to control blood pressure</td>
<td>82</td>
<td>95</td>
</tr>
<tr>
<td>Increase the proportion of persons aged ≥2 years who consume &lt;2400 mg Na+/day</td>
<td>21</td>
<td>65</td>
</tr>
<tr>
<td>Increase the proportion of adults who are aware of their blood pressure status within the preceding 2 years</td>
<td>90</td>
<td>95</td>
</tr>
</tbody>
</table>

which is coordinated by the National Heart, Lung, and Blood Institute, is to reduce death and disability related to high blood pressure through programs of professional, patient, and public education. By working to translate research into practice, the National High Blood Pressure Education Program has developed and promulgated guidelines for the evaluation and management of hypertension and has recommended therapeutic targets for hypertension control. Between 1977 and 2003, the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure has issued 7 reports, and with successive reports, lower blood pressure levels have been recommended both for defining hypertension and for targets of hypertension control.

In January 2000, the Department of Health and Human Services launched Healthy People 2010, a national health promotion and disease prevention initiative. The Table lists the 1988–1994 status of hypertension control in the US (data sources include NHANES, the Center for Disease Control, the National Center for Health Statistics, and the National Health Interview Survey), as well as the blood pressure–related goals for Healthy People 2010. The targets for 2010 are aggressive, and all may not be achievable by that time. However, if hypertension control continues to improve at previously reported rates, including the recent increase in control reported by Ong et al., a hypertension control rate of 50% by 2010 may be an attainable goal. Although there is reason to be optimistic that previous trends of increasing hypertension awareness and control will continue, achieving these goals will require addressing multiple patient, provider, and health system barriers to effective blood pressure control. Recent meta-analyses have reviewed effective approaches for reducing barriers and facilitating blood pressure control. It is likely that improved hypertension control has contributed to decreased cardiovascular morbidity and mortality in the US. Nevertheless, hypertension prevalence remains high, and hypertension control rates are unacceptably low. From research, patient care, and public health perspectives, multifaceted strategies will be required to more effectively prevent and control hypertension. Approaches should include population-based preventive strategies, as well as targeting high-risk populations and identifying and effectively treating high risk individuals. To paraphrase Robert Frost, “we have miles to go before we sleep.”

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Disclosures
None.

References