

The National High Blood Pressure Education Program: Longtime Partners With New Strategies

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A generation ago, clinicians were busy managing the consequences of uncontrolled hypertension. Malignant hypertension was not uncommon, stroke wards and rehabilitation centers were fully occupied, coronary heart disease was at near-epidemic levels, and patients had long slow recoveries. The Department of Veterans Affairs brought hope that this picture would change when it released the results of a clinical trial demonstrating the remarkable benefits of drug therapy in reducing severe and moderately severe hypertension.¹ This information plus observational studies showing the association between rising blood pressure and increasing cardiovascular events was the driving force in establishing the National High Blood Pressure Education Program (NHBPEP). Then, and perhaps even more so today, important science was not being uniformly applied to clinical practice; more specifically, the data were not being used and clinicians were not treating hypertension. Members of the public, who supported this research, were not benefiting as much as they could from their investment.

In cooperation with the National Heart, Lung, and Blood Institute (NHLBI), the American Osteopathic Association joined with the American Medical Association, the National Kidney Foundation, the American Heart Association, and the American College of Cardiology to organize the NHBPEP Coordinating Committee. Administered by the NHLBI, the NHBPEP has just celebrated its 30th anniversary. The significance of this endeavor becomes clear when one realizes that for the first time, the federal government, health professionals, industry, labor, the communications industry, and voluntary and consumer groups were actively cooperating in an effort to affect the nation's health. It is appropriate to pause and determine what this union has accomplished, how it reads its directional compass, and the path chosen to complete its journey.

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The Coordinating Committee began its task by serving as advisers to the Institute and to each other regarding how to transfer the science to improving the public's health. The activities caught the attention of other professional organizations and societies. Today, the Committee has grown to 39 professional and voluntary societies and seven federal agencies. A clear need became apparent then and remains an important function of the program today: to consolidate different views and positions to provide uniform, easily understood messages to the public and busy practicing clinicians. For example, when the NHBPEP began, systolic hypertension was defined by some as 100 plus one's age; others defined hypertension as 160/100 mm Hg; some used the fourth Korotkoff sound to designate diastolic blood pressure; and others, the fifth Korotkoff sound or the disappearance of sound. Reviewing the scientific evidence, coming to consensus, and producing clear messages helped to alleviate confusion and initiate positive action.

The strategy worked almost immediately. The public's awareness and knowledge of high blood pressure began to improve. People acted on this information and began visiting their physicians. Within a decade of establishing the NHBPEP, visits to physicians for hypertension increased by 90% while visits for other causes remained fairly constant.² Hypertension treatment and control rates for this important chronic disease improved and continued improving into the program's second decade.³ Most important, rates of age-adjusted stroke and coronary heart disease began to fall.⁴ The NHBPEP used several strategies to achieve these results. May was declared High Blood Pressure Month, and this event stimulated community programs to conduct blood pressure screenings at hospitals, firehouses, churches and community centers, and sporting events as well as at civic and social organizations. A mass media campaign alerted the public to visit their physician and stay on therapy. Another important NHBPEP strategy was to develop hypertension clinical guidelines, the Joint National Committee Reports on the Prevention, Detection, Evaluation and Treatment of High Blood Pressure—the "JNC."

The JNC was the first clinical guideline developed to address a chronic disease. These documents, synthesizing the available science, provide guidance (but not mandates) for busy clinicians. Seven such reports have been published as

Table Classification of Blood Pressure for Adults*		
Blood Pressure Classification	Systolic Blood Pressure (mm Hg)	Diastolic Blood Pressure (mm Hg)
Normal	<120	and <80
Prehypertension	120-139	or 80-89
Stage 1 hypertension	140-159	or 90-99
Stage 2 hypertension	≥160	or ≥100

*Age 18 and over, not taking antihypertensive medication.

user-friendly clinical advisories. Because research results are generated and transmitted rapidly, practicing clinicians are continuously inundated with information, some of which goes unnoticed and therefore not used. Thus, a guide that synthesizes the science and clinically relevant research into one report becomes an attractive and useful commodity for the clinician and patients.

The JNC 7 report has recently been published.⁵ It will become a landmark document because it presents some new ideas and concepts and will serve as a fresh stimulus for renewed and new efforts to prevent, control, and end the high blood pressure epidemic. The JNC 7 was designed to be more succinct and practical than its predecessors. Focus groups conducted by NHLBI among primary care clinicians have suggested that brevity will help ensure that the report and the science it promotes will be read and incorporated into clinical practice. The size, utility, readability, brevity, and succinctness of JNC 7 now becomes a model for others who write guidelines for practitioners.

The JNC 7 addresses a need to simplify and clarify the existing blood pressure nomenclature and recommendations. The older terms, *high normal blood pressure* and *borderline blood pressure*, were confusing and misleading. Patients and many clinicians interpreted the terms to mean that blood pressure in these ranges was unimportant or required little action. In reality, the familiar 140/90 mm Hg level used to define high blood pressure is an arbitrary classification. For middle-aged Americans, each increment of 20/10 mm Hg doubles the risk of cardiovascular disease across the entire blood pressure range beginning at 115/75 mm Hg.⁶ The increase is consistent and shows no evidence of a threshold effect. To address this issue and stimulate action, the JNC 7 has developed a new classification for raised arterial blood pressure (Table).

The term *prehypertension* is now introduced to designate those whose blood pressures are 120 to 139 systolic blood pressure and 80 to 89 diastolic blood pressure. Some will suggest that labeling people in this blood pressure range as prehypertensive is unnecessary as the chance for a cardiovascular event in this range is small. Yet long-term follow-up

data from the Multiple Risk Factor Intervention Trial study suggest that one third of strokes occur in people with blood pressures less than 140/90 mm Hg.⁶ In adults, as blood pressure begins to rise above the 115/75 mm Hg level, the long-term and continuous process of arterial stiffness and target organ damage begins. Each mm Hg increase accelerates the process in a near-linear fashion.^{7,8} Stages 2 and 3 hypertension have been combined into stage 2 hypertension because the treatment for these blood pressure ranges is essentially the same.

The JNC 7 suggests that lifestyle modifications can be useful to prevent or delay the rise in arterial pressure. A table describing the blood pressure-lowering effects of lifestyle modifications is provided in the report. This intervention could potentially slow the progression of arterial stiffness and deteriorating renal function that has its origin in the prehypertension range. Clinicians know all too well the difficulty in treating isolated systolic blood pressure, hypertension in patients with diabetes mellitus, or progressively failing kidneys. The JNC 7 provides an easy-to-follow algorithm for selecting appropriate drug choices, which will help hypertensive patients achieve specific goal blood pressures.

The JNC 7 reminds us that treating blood pressure with drugs has been shown in clinical trials to reduce strokes by 40%, myocardial infarction by 25%, and heart failure by 55%. The thiazide-type diuretics should be considered for most with uncomplicated hypertension, but other classes of antihypertensive agents may be considered alone or in combination with thiazide diuretics. For those who are 20/10 mm Hg above goal, JNC 7 suggests two drug combinations be given as initial therapy, one of which may be a diuretic. For patients who present with a compelling condition, such as heart failure, chronic kidney disease, or a previous myocardial infarction, it is suggested clinicians treat the comorbidity in tandem with the blood pressure, using agents that have demonstrated benefit in many large-scale outcome studies.

The NHBPEP Coordinating Committee is now faced with the challenge of translating a remarkable amount of information into practice. There will be many conferences,

workshops, editorials, and commentaries by the NHBPEP partners discussing, debating, and applauding the JNC 7 clinical guidelines. Yet none of those efforts will matter unless clinical inertia is overcome and patients are treated to goal blood pressure levels. Clinicians must treat the blood pressure and motivate patients to practice lifestyle changes and to stay on drug therapy. It is a daunting challenge because there are so many demands on medical practice. But there are some longtime partners who recall the frustration of trying to manage hypertension with meager therapy. It was not satisfying. The new ideas and recommendations in JNC 7 can help reduce the devastating and predictable consequences of hypertension if and only if the research results are known and the recommendations are applied. Longtime partners know this is what matters if people are to live longer and healthier lives. Experienced clinicians understand well and appreciate the value of these guidelines.

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