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Review Article

Hypertension: a policy perspective, 1976–2008

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Abstract

Hypertension has important public health, clinical, and economic consequences for the health care system and for society. This report summarizes key issues pertaining to the global economics of hypertension; describes findings from recent cost-effectiveness analyses; and raises key policy issues with respect to insurance coverage and opportunities to increase the value of efforts to treat hypertension. J Am Soc Hypertens 2009;3(2):113–118. © 2009 American Society of Hypertension. All rights reserved.

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Introduction

Hypertension has important public health, clinical, and economic consequences for the health care system and society. It affects 73 million Americans, including one-third of adults, and has been estimated to account for 50% of potentially reversible heart disease and 75% of stroke risk worldwide.[1] In 2008, estimated national costs totaled $69 billion, including $51 billion in direct medical care costs and an additional $16 billion in costs from lost productivity.[1] The latter amount almost certainly underestimates hypertension's true costs when both related morbidity from cardiovascular events and medication side effects are considered.

This report summarizes key issues pertaining to the global economics of hypertension; describes findings from recent cost-effectiveness analyses; and raises important policy issues with respect to insurance coverage and opportunities to increase the value of hypertension treatment.

Historical Perspective on the Cost-Effectiveness of Treatment for Hypertension

In 1976, Milton Weinstein, PhD, and I had the opportunity to apply the principles of cost-effectiveness analysis to the treatment of hypertension.[2–4] We did this work in the spirit of multidisciplinary health care research while attempting to shed new light on an important clinical and public health problem. Our focus was on the spectrum of clinical presentations of hypertension, including both essential hypertension of all levels of severity, and secondary hypertension from definable causes, including renal artery stenosis and various endocrine disorders. Extensive use was made of Framingham Heart Study data and other published sources to define relationships between blood pressure (BP) levels and subsequent clinical outcomes. We focused on measuring the benefits of treatment in terms of added years of life, morbidity prevented, and the side effects of treatment, and used quality-adjusted life years (QALYs) as an approach to summarizing these effects in a composite measure of benefit. Relevant costs included those for antihypertensive medications and the treatment of medication-induced side effects and cost savings from cardiovascular events prevented. Medical care costs in the years of life gained by treatment of hypertension were included, and future costs and benefits were both discounted in present-value analyses that were in accord with prevailing economic theory. Cost-effectiveness values were expressed in terms of net increases of health care costs in relation to the increases in quality-adjusted life expectancy. The lower this cost-effectiveness ratio is, the greater the value of treatment for hypertension compared with other uses of health care dollars.

The main result was that treatment of hypertension appeared to be a very good use of health care resources—averaging from $8,000 to $18,000 per QALY in 1976 dollars

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(about $20,000 to $45,000 in current dollars). Compared with the often quoted cut-off of $50,000 per QALY or upper limit of $100,000 per QALY as cut-offs for ''cost-effective'' health care services, this range looks like a good value. The cost-effectiveness of hypertension treatment in our analysis depended importantly on several key factors:

1. The level of untreated BP and related cardiovascular risks;
2. The ability to achieve and maintain target levels of BP over time; and
3. The costs of antihypertensive medications that were used.

Treatment of mild hypertension, for example, was much less cost-effective in our analyses than treatment at higher BP levels. Also important was the ability to achieve patient adherence to medical regimens over long periods and reductions in costs through the use of lower cost medications—as long as they were is well-tolerated and BP control is achieved.

Progress in Improving Control of Hypertension

Gratifying progress has been made over the past 30 years in increasing awareness of hypertension, increasing the proportion of individuals with hypertension who are on treatment, and improving the control of BP. Achievements, as reported by the American Heart Association, are summarized in the Table.[1] Particularly impressive has been that these improvements have been widespread across races and ethnicities, genders, and age groups.

Progress in Controlling Hypertension Since the 1970s

Despite these achievements, however, important challenges remain. Among these are persisting ambivalence among health professionals and patients alike about the value of controlling isolated systolic hypertension; challenges in balancing emphasis on BP control and the treatment of concurrent chronic diseases; and important residual disparities in access to long-term, effective health care across race, cultural, language, and economic barriers.

Changes in Emphasis for Hypertension Treatment

Important changes have occurred since our earlier work that affects both the goals and methods of treatment. These changes have important implications both for the effectiveness of treatment and cost-effectiveness of treatment. Perhaps the most striking change has been increased emphasis on systolic BP as the more important risk factor and the principal target of treatment. Our earlier cost-effectiveness analyses targeted diastolic BP. Results might well have been different, especially in older Americans, had we placed greater emphasis on systolic pressure. Another important change has been the inclusion of Stage 1 hypertension (systolic BP 140–159 mm Hg or diastolic BP 90–99 mm Hg) as a target for treatment with medications in Joint National Committee (JNC) 7.[5] Widespread drug treatment of such individuals will certainly increase the total costs of hypertension care and will, very likely, stretch the boundaries of cost-effective health care except in high-risk patient subgroups such as diabetics and patients with heart failure or chronic renal disease, in whom the value of lower target BPs have been well-documented in clinical studies. Dramatic increases have occurred in the types of antihypertensive medications. Although this plethora of medications has markedly increased options for clinicians to target treatment at specific patients and specific underlying mechanisms of disease, it has also dramatically increased the complexity and expense of treatment. Questions revolve around ''payoffs'' in terms of improved BP control, reductions in cardiovascular morbidity unrelated to BP per se, reduced medication side effects, and improved adherence to regimens. Finally, advocacy for extending drug treatment to individuals with prehypertension (diastolic BP of 80–89 mm Hg or systolic BP of 120–139 mm Hg) has raised a plethora of important questions.

Table
Progress in controlling hypertension since the 1970s

Criterion	Improvements Achieved
Awareness	From 51% to 72%
On treatment	From 31% to 61%
Blood pressure controlled	From 10% to 35%

Recent Studies of the Cost-Effectiveness of Hypertension Treatment

Important attributes of cost-effectiveness studies of hypertension treatment are that they adequately reflect differences in levels of cost-effectiveness based on differences in risk of the populations being examined, success in controlling BP levels over time, and the time horizons to which the results apply. For example, risk profiles run the gamut from prehypertension to severe hypertension or hypertensive crises; and important added risks are conferred by the presence of coexisting diseases such as symptomatic coronary artery disease, diabetes mellitus, and other chronic diseases. In the case of prehypertension, in fact, serious questions remain about whether treatment is effective, let alone cost-effective. Cost-effectiveness analyses can be based either on shorter or longer term time horizons. Long-term studies with projections of lifetime benefits and costs are ideal. This is the approach Weinstein and Stason took in their studies.[1–3] Shorter term studies are also valuable provided the time horizons for benefits and costs are clearly specified. The following recent cost-effectiveness studies are among the