Implications for Research and Policy in the Treatment of Hypertension

Medical Considerations

Michael J. Horan

Hypertension, or high blood pressure, is a disease and a risk factor. Cardiovascular risk is directly proportional to the level of blood pressure. Current therapeutic approaches include the classical medical model of detection, evaluation, and drug treatment of high-risk patients who have elevated blood pressure and also a less-well-studied population approach that seeks to manipulate environmental variables in large groups of subjects to reduce blood pressure and subsequent cardiovascular risk. Future research should center on more precise delineation of cardiovascular risk, evaluation of alternative environmental manipulations to reduce blood pressure, enhanced understanding of the pathophysiological mechanisms of hypertension, better matching of antihypertensive drug therapy to pathophysiology, development of new drugs that not only lower blood pressure but also provide additional benefits with minimal side effects, and finally, investigations to further our understanding of the behavioral aspects of the physician-patient encounter, as well as studies on compliance and other issues that influence therapeutic outcome.

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physical activity, can be manipulated to reduce the blood pressure in large groups of people and thereby accomplish an overall reduction in cardiovascular morbidity and mortality. More research on this population-based environmental change strategy is needed. 3) pathophysiological mechanisms. In addition to prognostic heterogeneity, there seems to be, in accordance with the predictions of Irvine Page, a pathophysiological heterogeneity among hypertensive patients. People who have hypertension do not appear to have it for the same reasons. Therefore, in addition to defining subsets of patients by prognosis, it behooves us to define patient subsets by the pathophysiology characterizing their hypertension. Such an approach is likely to produce more systematic and precise interventions, with theoretically less opportunity for inappropriate treatment and unnecessary side effects. 4) better matching of drugs to pathophysiology. It is now possible to develop highly specific drugs that act not only as diagnostic probes but also as therapeutic agents because of the availability of sophisticated techniques that incorporate molecular biological and cellular biological technologies. An example is the development of the renin inhibitors. This approach to drug development deserves continued support. 5) development of drugs that not only lower blood pressure but also provide additional benefits with minimal side effects. We can redouble our investment by designing drugs that not only lower blood pressure but that also provide additional benefits relative to diseases to which the hypertensive patient may be prone. An example is the treatment of high blood pressure in a patient who already has signs of left ventricular hypertrophy with an agent that not only lowers blood pressure but also leads to the

![Bar graph showing relation of mortality (annual death rate per thousand) to diastolic blood pressure (mm Hg) in men and women aged 55–64 years in the Framingham Heart Study.](image-url)
regression of left ventricular hypertrophy. Although long-term studies on this particular strategy are unavailable, the principle is theoretically sound and is one that ought to be pursued more rigorously in the research setting. 6) holistic approach to prevention of vascular disease. In the final analysis, regardless of the level of sophistication of our pathophysiological insights into the disease processes and the excellence of our pharmacological understanding, the ultimate success of our therapeutic interventions depends on good physician–patient interaction. Thus, we should never lose sight of the importance of promoting the quality of this interaction as well as continuing to support research that furthers our understanding of the behavioral aspects of the physician–patient encounter, compliance, and other issues that impact on therapeutic outcome.

Basic, clinical, epidemiological, behavioral, and public health research investigations have contributed enormously to our understanding of hypertension as a disease and as a risk factor. With continued research, we can anticipate not only more fundamental insights into hypertension but also refinements in our understanding of the progress made to date.

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M J Horan

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