Traditional approaches to the study of hypertension have relied upon experimental models and patients with established hypertensive disease to delineate both mechanisms of increased arterial pressure and the impact of therapeutic interventions. For both the scientist and the clinician, perspectives obtained from the study of blood pressure (BP) in younger populations may provide an added dimension to our understanding and treatment of hypertension. Over the past 15 years, there has been a decrease in coronary heart disease and stroke mortality, and this has been attributed, at least in part, to the widespread availability of effective antihypertensive therapy. Another approach to the prevention of cardiovascular disease may involve the identification and modification of risk factors at young ages. Several reports in this Supplement indicate that BP of young people at one age is predictive of BP at a later age, and that this "tracking" phenomenon may begin in infancy. These longitudinal studies may define the natural history of hypertension and stimulate innovative approaches to the primary prevention of cardiovascular disease if we are able to identify young people destined to develop hypertension at a later date. Interpretation of studies of hypertensive mechanisms in established hypertension may be confounded because alterations observed in sympathetic nervous system activity, vascular reactivity, hormone measurements, sodium excretion, and other factors may be a consequence rather than a cause of hypertensive disease. Identification of BP correlates in populations of young people may provide a unique opportunity to identify clues concerning mechanisms involved in the pathogenesis of elevated arterial pressure. Studies in young people, including twin studies, may also yield new insights about the relative importance of genetic and environmental effects on BP.

From a clinical perspective, the most significant lesson to be learned from studies of high BP in the young is an awareness of the importance of BP measurements at young ages. Based on large numbers of such measurements, data are being compiled that provide a rational basis for the designation of normal BP. Indeed, similar to charts pediatricians have been using for years for height and weight, a chart for normal BP by age and sex has recently been developed by the NHLBI Task Force on Blood Pressure Control in Children. Although the clinical implications of BP levels in the upper percentiles must be interpreted with caution, recognition of correlates of BP such as body size, sodium intake, and possibly physical activity suggest therapeutic options that may be introduced at a young age. The frustration for the physician is the awareness that such interventions have not been demonstrated to affect long-term outcomes. Even among adult patients with mild hypertension, until recently, it had not been possible to demonstrate that pharmacologic antihypertensive therapy has a beneficial effect on cardiovascular mortality. The challenge for all of us is to design and implement strategies to evaluate the impact of altering risk factors at young ages on the primary prevention of cardiovascular disease.

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