HYPERTENSION AND STROKE
CLINICAL HYPERTENSION
AND VASCULAR DISEASES

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This book is dedicated to the memory of my father.
Venkatesh Aiyagari, MBBS, DM

To my parents, Ruth and Harold Gorelick, dedicated in honor of your sense of family and unwavering support during life’s journey.

Philip B. Gorelick, MD, MPH, FACP
Foreword

The importance of hypertension as it relates to cerebrovascular disease and events has been greatly appreciated by physicians and scientists since the results of the earliest Veterans Administration Cooperative Trials in the 1960s and the isolated systolic hypertension trials in the United States (SHEP) and Europe (Syst-Eur) that followed in the 1980s and 1990s. This appreciation of the severity of the complications of this common disorder particularly in advanced age has led to substantial reductions in stroke over the past 50 years. Nevertheless, there is always room for improvement and cognitive decline associated with hypertension and vascular disorders remains an elusive problem in clinical medicine. Drs. Aiyagari and Gorelick’s volume on Stroke and Hypertension is therefore a most clinically relevant contribution in the area of stroke neurology – this book brings together the basic pathophysiologic, epidemiologic, diagnostic, and therapeutic advances in the evaluation of hypertension in patients with stroke or who are at great risk of stroke.

The editors have nicely organized this volume into sections that cover the general pathophysiology and epidemiology of hypertension, overviews of the epidemiology of stroke and its relationship to hypertension, clinical evaluation that covers a variety of topics such as neuroimaging, diagnostic evaluation, and cognitive assessment, and nonpharmacologic and pharmacologic approaches to the management of high blood pressure in primary and secondary stroke prevention. There are very comprehensive chapters on the evidence supporting various strategies for stroke prevention including blood pressure-lowering therapies, anticoagulation, and management of other cerebrovascular risk factors.

Substantial coverage has been appropriately given to the impact of pharmacologic treatments on stroke prevention based on clinical trials in older hypertensive people in Chapters 10, 11, and 12 of the volume. There are also interesting chapters devoted to special problems in cerebrovascular disorders that highlight problems which are of particular concern in our patients, including progression of white matter disease, cognitive dysfunction, and hypertensive encephalopathy. These sections contribute to the novelty of this book since the chapters are grounded in clinical investigations that have led to enhanced understanding of the evaluation and treatment of hypertension in these special populations. The prevention of dementia in older patients is complex and clinically challenging with advances targeted toward better modalities of early clinical evaluation and improved neuroimaging modalities as outlined in Chapters 14 and 15.

The chapters in Stroke and Hypertension have been written by a number of well-known, expert authors who have provided comprehensive, scientifically sound, and clinically appropriate information. As series editor of Clinical Hypertension and Vascular Diseases, I am pleased by the publication of this timely, well-organized book and know that Stroke
and Hypertension will become a highly utilized textbook for all specialists in neurology and cardiovascular medicine as well as any physician who takes care of older adults.

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Preface

*Hypertension and Stroke: Pathophysiology and Management* reviews the pathophysiological relationship between hypertension and cerebrovascular disease and the management of blood pressure in a variety of settings such as primary stroke prevention, acute ischemic and hemorrhagic stroke, secondary stroke prevention, and vascular cognitive impairment. Hypertension is one of the most important global public health challenges, and there is a close linkage between hypertension and cerebrovascular disease. Hypertension is the most significant modifiable risk factor for cerebrovascular disease. The importance of adequately treating elevated blood pressure in the primary prevention of stroke and management of cerebrovascular disease is widely accepted. It is estimated that about 25% and up to 50% of strokes could be prevented by blood pressure control. In the course of clinical practice, however, questions arise about the management of blood pressure in the acute, subacute, and chronic phases of stroke. For example, when is it safe to initiate blood pressure-lowering therapy after acute ischemic stroke? Is it dangerous to lower blood pressure in elderly persons who have had a stroke? What is the blood pressure-lowering target after a stroke has occurred to maximize recurrent stroke prevention? Which blood pressure-lowering agents are most efficacious and safe for persons who have had a stroke or for those in the general population to prevent a first stroke? In this book we explore answers to these and many more important aspects of hypertension and stroke. In recent years, several large clinical trials which address blood pressure management for cerebrovascular disease have been published. In this book we have attempted to collate and synthesize this rapidly expanding knowledge base in a form that can be easily accessed and utilized by treating physicians.

*Hypertension and Stroke* provides a broad approach to the understanding of this topic from the perspectives of leading experts in the fields of vascular neurology, preventive medicine, nephrology and other cardiovascular diseases, epidemiology, pharmacology, neuropsychology and cognitive function, brain imaging, and nursing. In addition, we have recruited international experts who are well-versed in the area of stroke management, and who provide a unique clinical and epidemiological viewpoint from geographic regions where stroke risk is high.

The book consists of five sections and corresponding chapters which provide insights about the following: (1) epidemiology of blood pressure and hypertension in relation to measurement, definition, diagnosis, and observational epidemiological studies and clinical trials in relation to stroke; (2) mechanisms of hypertension and how hypertension may cause stroke; (3) acute management of blood pressure after hemorrhagic and ischemic stroke, hypertensive encephalopathy, management of blood pressure to prevent recurrent stroke, non-blood-pressure-lowering effects of some antihypertensive agents, and a guide to overall cardiovascular risk factor assessment and management for prevention of recurrent stroke; (4) importance of blood pressure in cognitive function, newer brain imaging modalities...
to elucidate brain structure and function in hypertension, and the role of cerebral amyloid angiopathy and brain microhemorrhages on cognitive function; and (5) organization of stroke care to improve blood pressure control and overall stroke prevention.

We believe that this text will provide the most up-to-date and expert information on a myriad of important aspects relating to hypertension and stroke. We anticipate that primary care physicians, neurologists, physician extenders, residents and medical students, and epidemiologists, stroke and other cardiovascular researchers, and public health specialists will benefit from this treatise. The global public health challenge of elevated blood pressure will continue to increase. Hypertension and Stroke is designed to help meet these challenges.

Venkatesh Aiyagari, MBBS, DM
Philip B. Gorelick, MD, MPH, FACP
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