

# Preface

The third edition of *Blood Pressure Monitoring in Cardiovascular Medicine and Therapeutics* is devoted to the topic of circadian variation in cardiovascular disease, with a special emphasis on blood pressure and the clinical evaluation and treatment of hypertension. Clinical investigation related to home and ambulatory monitoring of the blood pressure has led to significant improvements in our ability to confirm hypertension as well as to identify clinical entities in patients with hypertension and vascular complications. This research is important not only because hypertension is so ubiquitous among adults around the globe, but also because the attributable cardiovascular morbidity and mortality associated with the hypertensive disease process are so substantial.

Since the first edition of this book in 2000 and its second edition in 2007, research efforts in basic and clinical hypertension have progressed, and work devoted to the measurement of blood pressure and blood pressure variability has been a major part of this scientific advancement with new measurement devices, novel drug and device therapies, and outcomes research in observational studies and clinical trials. During the past 8 years, numerous important research papers in the fields of ambulatory and home blood pressure monitoring have been published, and regular consensus conferences have been held at the European and/or International Society of Hypertension meetings as well as at the American Society of Hypertension annual meeting and expositions. Thus, it remains important and clinically relevant to have an updated third edition of my book that cohesively aggregates research findings involving blood pressure monitoring in clinical medicine and in cardiovascular therapeutics.

The volume has been organized into four major sections which cover broad areas in blood pressure measurement or monitoring as it relates to epidemiology, methodology, clinical associations and outcomes, and practical utility. The five chapters in Part I describe the methodology of clinical, home, and ambulatory blood pressure monitoring in research and clinical practice. Dr. Myers presents a concise chapter on different means to accurately measure the blood pressure in the medical care environment based on his many years of work in this area in Toronto. A comprehensive assessment of home blood pressure monitoring research as it translates into

clinical practice including review of the epidemiologic data and other outcome findings, the importance of blood pressure variability, and discussing its use for the general management of patients was provided by Dr. Parati and colleagues from Milan. My former colleague, Dr. Mansoor from St. John's, Antigua, explains the importance of the environment and physical activity recordings in cardiovascular disease. These techniques may be helpful for obtaining meaningful data during ambulatory blood pressure recordings in clinical trials. Advances in actigraphy research have allowed investigators to pinpoint changes in physical activity that may directly impact on blood pressure variability. Vanessa Barber and I from Farmington, Connecticut, have updated an overview of ambulatory monitoring of the blood pressure, including descriptions of device validation, patterns of blood pressure variation discovered with the advent of this technique, and usefulness of the methodology in clinical hypertension practice. Drs. Atkins and O'Brien have updated their chapter on the importance of device validation and their reliability. While seemingly an unexciting topic, the importance of device validation cannot be overestimated as it is a requirement for investigators to confirm the overall validity of these recorders being used in clinical trial research and clinical practice.

The five chapters in Part II bring in new information related to our understanding of the pathophysiology of the circadian biology of cardiovascular disorders. A number of prior authors from the second edition as well as new authors and topics comprise this section. Drs. Smolensky, Portaluppi, and Hermida begin with an overview of the chronobiology of blood pressure regulation in humans. This chapter lays the groundwork for the rest of this section with its comprehensive discussion of the progress that has been made in research involving the chronophysiology of human disease with major emphases on hypertension, coronary artery disease, and stroke. Dr. Asayama and colleagues from Leuven have written a new chapter on relevance of blood pressure variability as a potential determinant of cardiovascular morbidity and mortality. During the past two decades, there has been substantial controversy over the independent relevance of short-term blood pressure variability derived from ambulatory monitoring versus longer-term variability that is associated with weekly or monthly clinical visits—these topics are covered in this balanced chapter. Dr. Burnier and coworkers from Lausanne have also written a new chapter covering the importance of neurohormonal activity, sodium and other cations, renin–angiotensin system, obstructive sleep apnea, and the environment on blood pressure variability. Drs. Angeli and Verdecchia from Perugia have once again provided a state-of-the-art chapter on the prognostic value of ambulatory blood pressure monitoring based on their long-term research in this field as well as through other databases from around the world. To wrap up this section, Dr. Gorelick and colleagues from Grand Rapids, Michigan, have written a new chapter for the book on ambulatory blood pressure and stroke—the authors are experts in vascular neurology who have had a long-standing interest in the relationships among blood pressure, stroke, and cognitive function, and their chapter is a welcome addition to this book.

There are eight chapters in Part III which focus on ambulatory blood pressure in special populations of patients with hypertension: Drs. Gulati and White from Hartford and Farmington, Connecticut, cover the older patient with systolic

hypertension from the perspective of clinical cardiology and their longitudinal work on small vessel brain disease as it relates to out-of-office blood pressure; Dr. Flynn from Seattle comprehensively covers children and adolescents from the perspective of a leader in pediatric nephrology and hypertension; Drs. Hermida and Ayala from Vigo, Spain, comprehensively evaluate data during pregnancy from the perspective of experts in physiology and maternal–fetal medicine; Dr. Peixoto and coworkers from New Haven, Connecticut, and Rio de Janeiro provide us with a substantially updated and complete chapter on patients with chronic kidney disease and those on dialysis from the perspective of experts in clinical nephrology.

There are also four new chapters in Part III: a focus on ambulatory blood pressure in patients with ischemic heart disease and heart failure by Drs. Campbell and Javed from Little Rock and New Orleans from their perspective as experts in heart failure and hypertension; Dr. Viera from Chapel Hill, North Carolina, has an update on masked hypertension based on his own research as well as that of others in this important new field, while Dr. Krakoff from New York has written an update on white coat hypertension from the perspective of a hypertension specialist and a long-time researcher in out-of-office blood pressure monitoring. Finally, Dr. Lemmer from Heidelberg has written a new chapter on the importance of gender from the perspective of a clinical pharmacologist using examples from both animal models and clinical data.

In Part IV, there are three chapters, with two new authors for the book's third edition. The focus of the section is on the applications of home and ambulatory monitoring in clinical research and hypertension management. Drs. Stergiou and Ntineri from Athens have written a very comprehensive review of the use of home (or self) monitoring of the blood pressure in clinical research with a particular focus on therapeutic trials—at the time of publication of the prior edition of this book, there were very few studies published in this area. We welcome this new chapter by dedicated experts in this area. Drs. White and Malha from Farmington and New York have developed an updated, extensive review of the usefulness of ambulatory blood pressure monitoring during antihypertensive drug development as well as in novel trials of device therapy, such as renal denervation. Ambulatory blood pressure monitoring elucidates the efficacy of new antihypertensive therapies versus placebo as well as in comparator trials of two therapies. It also is an important tool to assess device therapy of hypertension to reduce the impact of observer bias. In the final chapter, Dr. Townsend, a hypertension specialist from Philadelphia, has written a new chapter on the use of ambulatory blood pressure monitoring in clinical practice. This is case-based chapter with nearly a dozen different clinical examples demonstrating the utility of ambulatory monitoring as an adjunct to the rest of the diagnostic work-up.

The clinicians and investigators who contributed to this textbook have written comprehensive and up-to-date information from a field in hypertension and vascular medicine that is dynamic and in which knowledge is advancing at a rapid pace. Just 20 years ago, most research in the field of ambulatory monitoring of the blood pressure was descriptive and did not correlate the data to target organ disease or cardiovascular outcomes. Hence, practicing physicians were not provided with enough

solid information to have an impact on the day-to-day management of their patients. This certainly is no longer the case as after nearly 30 years of outcomes studies that include target organ disease and events, ambulatory blood pressure monitoring has matured into a highly useful methodology for clinical hypertension research as well as an important aid in the management of patients with hypertension and vascular disease. In fact, policymakers in many countries have supported its use in the evaluation and treatment of newly diagnosed patients with hypertension.

I am truly grateful for all of the outstanding chapters provided by my contributing authors, which greatly enhanced my job as volume editor. Diane Webster, my long-time assistant at the University of Connecticut School of Medicine, provided outstanding support in helping to organize the manuscripts during the course of their production as well as to review references, author information, permissions, and titles. Special thanks to Vanessa Barber, a talented research assistant in our clinical research center who not only coauthored a chapter with me but also spent a large amount of time and effort assessing the 21 chapters for overlap and redundancy as well as format. Finally, I would like to extend my ongoing gratitude to my wife, Nancy Petry, a highly accomplished researcher, author, and editor in the field of behavioral medicine and devoted mother of our dear children Hannah and Noah White, for her love and support during the past decade.

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Blood Pressure Monitoring in Cardiovascular Medicine  
and Therapeutics

White, W.B. (Ed.)

2016, XVIII, 418 p. 85 illus., 34 illus. in color., Hardcover

ISBN: 978-3-319-22770-2

A product of Humana Press