

Integrative Treatment of HYPERTENSION

A Clinical and Mechanistic Approach



Joel A. Blush



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Dedication

To Tzivia, Avi, Asher, and any new additions who come along.

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Preface

The epidemic of hypertension affects about 1 billion people worldwide. In the United States alone, some 90 million people have this disease. It is a major risk factor for cardiovascular disease, stroke, and kidney disease. Although it is mostly a disease of the elderly, with current trends toward obesity, sedentary lifestyles, and poor diets, it is increasingly becoming a disease of the young too. An ever-increasing portion of medical budgets is allocated to its treatment, often making many drug companies quite profitable. Clever advertising and prudent public relations are the driving factors in the popularity of many drugs, despite the fact that most other drugs of the same class have near indistinguishable efficacy and side effects. Yet, despite the apparent popularity of many drugs, no patient really wants to take them. In fact, most patients, especially the younger ones, bargain and plead for more time or alternative treatments. Initially, medication is resisted by everyone, and for good reason, as it usually leads to many others along with dreaded side effects.

Unfortunately, most Western physicians are not trained in alternative treatments of disease. Although medical educators are beginning to address this shortcoming in their curriculum, pharmaceutical-based treatments are still the mainstay of therapy. This is the result of the major and most publicized studies being of this nature, which often are financed by the industry itself. And yet, natural remedies have been used for much longer, often having time-honored success and fewer to no side effects. Their cost is a fraction of the contemporary and competing drugs, but more important, patients gravitate to their use. People often describe natural remedies as healthier alternatives with no side effects. People seem to be empowered by their use, with a sense of taking back control of their health. It is no wonder that an increasing number of public media outlets are promoting these natural treatments. The demand is clearly there. All physicians, especially primary care doctors, are constantly challenged by their patients to provide alternative methods of treatment. Unfortunately, most do not and cannot acquiesce—not out of lack of willingness, but due to a lack of knowledge and reliable information.

Integrative Treatment of Hypertension: A Clinical and Mechanistic Approach is a book that offers an alternative approach to treating hypertension. The author is a board certified internist and nephrologist with a busy community practice as well as a Harvard trained doctor of chemistry, and therefore is in a position to integrate mainstream pharmacological medicine with alternative treatments. The author understands the needs of the medical community, both in terms of medical standards and patients' needs. Alternative treatment methods are meticulously analyzed based on data from respected medical journals to determine their efficacy. This book brings these methods into the realm of acceptance by the standards of the medical community, and provides sound mechanisms of action and practical implementation advice. Its evolution began at the behest of individual patients for alternative ways of treating hypertension and ultimately coalesced into a comprehensive book. *Integrative Treatment of Hypertension* is a unique work that fills a needed niche within the medical community and will no doubt be a welcomed companion to any health care provider.

This book has nine chapters but can be broadly divided into three sections. The first section has four chapters, which include a short introduction to hypertension, a detailed yet simple explanation of the mechanisms of blood pressure and hypertension, concise descriptions of several common causes of hypertension, and a review of standard medications used in treating hypertension and their side effects. The second section has four chapters and describes in detail alternative methods of treating hypertension. Emphasis is placed on mechanisms of action, similarities to standard medications, and practical advice on implementing these methods. This section describes dietary factors in treating hypertension, a review of several alternative yet common diets, the efficacy of nonconsumptive methods in treating hypertension, and descriptions of natural supplements in treating hypertension. The last section contains one chapter that outlines the guidelines for blood pressure goals, categorizes each method of hypertension treatment (medicines and alternative methods) into two broad groups (either anti-renin-angiotensin system or anti-salt/volume system), and suggests ways of implementing an integrative approach to hypertension treatment.

The book is directed toward the medical community, although the intelligent and interested reader will also appreciate it. Physicians, physician assistants, nurse practitioners, nurses, and medical residents will benefit from its content. Although its content is derived from mainstream and accepted medical journals, the proposed alternative treatments are by no means a substitute for standard medical practice or for common sense. As hypertension is the precursor of most cardiovascular disease, guidance from a trained health care provider is essential in its proper treatment.

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The author gratefully acknowledges the contributions of Dr. Joel Neugarten, who provided sound advice throughout the process of writing this book. His guidance and teachings have always been well regarded and he has been an exemplary mentor during my training and thereafter. A special thanks to Dr. Bert Albert, who always provides thoughtful insight and advice. Thank you to Shani Stenger, for the descriptive and accurate illustrations. Last, an expression of heartfelt gratitude to my mother and father for their continued encouragement and advice. In particular to Dr. Marvin Blush, my father, who is my biggest fan, as well as my biggest fan, for always providing support, sound advice, and a unique perspective in the writing of this book and in all other matters.

Author

Joel A. Blush, M.D., Ph.D., is a practicing nephrologist and internist in a large community-based practice. He has a particular interest in the mechanisms of blood pressure regulation and in the treatment of hypertension, having academic responsibilities in teaching nephrology in affiliated university hospitals. He was awarded degrees in chemistry, achieving master's and doctorate degrees from Harvard University. He attended medical school at Albert Einstein College of Medicine followed by residency training in internal medicine at Montefiore Medical Center and fellowship training in nephrology at Albert Einstein College of Medicine. He has since been practicing as a dual board-certified nephrologist and internist. Dr. Blush is well published with many journal articles in chemistry, physics, and medicine, and has received several academic and research awards in these fields. With deference to his scientific training, he also has a strong interest in natural and alternative treatments of disease. Since his time as a medical student, he has pursued its study spending time in the Amazon rain forest taking courses in alternative medicine and botanical drug use. Dr. Blush brings to his practice a mixed scientific/medical and alternative/holistic approach to treating disease, specifically hypertension, and has successfully integrated this in the treatment of many patients.

Diagnosis of hypertension

When first diagnosed with hypertension, people experience a mix of fear and emotion. They wonder what it means. Will they develop a stroke or heart disease? Will they be able to work and live a normal life? Will they require medication, and if so, for how long and what side effects will they experience? They have so many questions. Often they do not even understand what blood pressure is. Fortunately, there are many answers, although much remains unknown. It may be of some consolation that they are not alone. In fact, about 30% of people in the United States have hypertension. This rate is even higher in other developed countries, with over 50% of German people experiencing hypertension.¹ The possibility of developing hypertension is particularly significant in the elderly, who have about a 90% lifetime risk of manifesting it, even those free of disease at age 55.² So, those lucky enough to live to a ripe old age are likely to develop hypertension.

But exactly what is hypertension? Most guidelines define it as a blood pressure of $\geq 140/90$ mm Hg. Despite this absolute definition, normal blood pressure is often defined as $<120/80$ mm Hg leaving an intermediate range of $120\text{--}139/80\text{--}89$ mm Hg, which is not yet clearly defined. There are several well-established guidelines for the diagnosis and treatment of hypertension that do not uniformly agree on the level of blood pressure at which to initiate pharmacologic intervention. Some suggest treatment based on the risk of developing secondary diseases, such as heart disease and stroke. There are different thresholds suggested for starting medications in younger and healthier persons compared with older patients or those with other risk factors, such as diabetes or a history of smoking. Although risk stratification certainly is sensible, it can be cumbersome and confusing to both patients and physicians. The most recent guideline from the United States, published by the Joint National Committee (JNC),³ provides the simplest scheme. Initially, healthy lifestyle changes are advocated, with medications initiated if a blood pressure $<140/90$ mm Hg is not achieved. The goal lowers to $<130/80$ mm Hg in those at high risk for cardiovascular disease such as people with diabetes, kidney disease, or heart disease. Although the JNC guideline is simple and easy to follow, the risk-stratified guidelines are superior in providing a more personalized treatment approach.

Many people wonder about the consequences of having hypertension. Does it really matter and will they become ill if their hypertension is left untreated? The answer is a clear yes, as the risk of heart disease and stroke has been shown to increase in such instances. In fact, these effects may begin at a blood pressure as low as 115/75 mm Hg, and there is a twofold increase in mortality from cardiac disease and stroke with every increase of 20/10 mm Hg.⁴ Data from the Framingham study, which has followed the health of a large cohort of people over many years, clearly shows an association of cardiovascular events with blood pressure elevation even in the range of 130–139/85–89 mm Hg.⁵ The next and important question is whether lowering blood pressure will reduce the risk of a subsequent cardiovascular event. People with hypertension may be otherwise predisposed to cardiovascular disease, and lowering their blood pressure might provide only limited benefit. Studies here, too, demonstrate the benefit of blood pressure lowering, although the target blood pressure is not quite as clear-cut. For example, in people with relatively few cardiovascular risk factors, a target of <140/90 mm Hg would be appropriate,⁶ whereas for those at higher cardiovascular risk, reduction to <130/80 mm Hg is needed.⁷

The final question is which blood pressure medication should be prescribed. There are many classes of medicines and the best choice is often not obvious. Several large studies suggest an absolute reduction in blood pressure is the key factor in reducing cardiovascular risk, and that the specific class of blood pressure medication itself is not as significant.^{8,9} However, in high-risk people such as those with diabetes, stroke, or cardiac disease, there may be compelling need for a particular class of medicine. Physicians should individualize therapy appropriately for their patients.

Measuring blood pressure

Accurate measurement is important in management of hypertension and the proper technique of blood pressure measurement is well described.³ Mercury-type sphygmomanometers were used traditionally, but environmental concerns have led most physicians to use aneroid types. Although safer, these devices require routine maintenance and calibration, a practice that is often neglected. A care provider should have the subject sit in a chair with an armrest at the level of the heart and the subject's feet planted firmly on the ground; the patient should relax for at least 5 minutes prior to inflation of the cuff. Smoking, caffeine intake, and exercise should be avoided for at least 30 minutes prior to the exam. The room temperature should be above 12°C (54°F), as a cold environment may raise the blood pressure. The cuff should be placed using the brachial crease approach, which is just above the elbow, with the bladder length about 80% of the upper arm circumference and the width about 40% of the upper arm

length. A cuff that is too small may result in an artificially elevated blood pressure reading and a cuff too large may yield a low reading. The end of the cuff should be about 3 cm (1 inch) above the elbow crease and the bell of the stethoscope should be placed over the brachial artery just below the end of the cuff. The care provider should then palpate the radial artery pulse and inflate the cuff until the pulse disappears. The cuff should then be inflated by another 20 mm Hg to ensure that the true systolic blood pressure is not missed and then slowly deflated by 2 mm Hg each second. Auscultation for the appearance and then disappearance of the Korotkoff sounds, which correspond to the systolic and diastolic blood pressure, is then performed. At least two measurements should be recorded and an average calculated.

Ambulatory blood pressure monitoring is another accepted modality to both diagnose and monitor hypertension. As these devices are expensive, and often not reimbursed by insurance companies, they are not routinely available in physician offices. Ambulatory monitoring is a better predictor of future cardiovascular events in both hypertensive¹⁰ and non-hypertensive¹¹ people than office blood pressure monitoring. Typically, the blood pressure is checked for a 24-hour period, with measurements taken every 15 to 20 minutes during the day and hourly at night with multiple measurements being recorded. The main advantage of this approach is a better assessment of the blood pressure in a person's typical environment, compared with the stressful confines of a physician's office, which may itself cause the blood pressure elevation. After all, the typical daily blood pressure is what really matters. An interesting study from Italy confirms this effect,¹² reporting an initial increase in blood pressure of 22/16 mm Hg associated with a male physician conducting the exam. After 10 minutes of rest the blood pressure decreased to a plateau level but was still 12/8 mm Hg above the baseline level. When checked by a female nurse, the blood pressure also increased although by smaller amounts of 12/8 mm Hg and 1/0 mm Hg, respectively. This effect is minimized with ambulatory blood pressure monitoring. This method also differentially provides valuable information about the blood pressure during both the daytime and nighttime, which is important in the overall assessment. A 10% to 20% dip in blood pressure is expected during the nighttime, and failure to achieve this is predictive of future cardiovascular events.¹³ It also provides critical information about the early morning blood pressure, which is often the highest reading of the day and most associated with cardiovascular events. The level of blood pressure associated with hypertension is lower in ambulatory monitoring, although the various major guidelines differ slightly in cutoff values. For example, the European Society of Hypertension associates hypertension with an average 24-hour blood pressure of ≥ 125 –130/80 mm Hg,¹⁴ whereas the JNC defines it as $\geq 135/85$ mm Hg while awake or $\geq 120/75$ while asleep.³

Home blood pressure measurement is the final monitoring modality. Commercially available devices, usually automated, are sold in most pharmacies for a modest price, allowing patients to monitor themselves by randomly measuring their blood pressure over the course of many weeks to months. Similar to ambulatory blood pressure monitoring, the results of self-monitoring show lower blood pressure readings than office measurements and also provide a better predictor of cardiovascular events than office blood pressure monitoring.¹⁵ Aside from its cost effectiveness, home blood pressure monitoring more closely involves the individual in their care and health, making it a favored modality in many practices.

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