

Research Article

High-risk patients with hypertension: Are we doing enough?

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Abstract

Despite the increasing risk of cardiovascular disease, especially in patients with multiple risk factors, blood pressure (BP) control remains suboptimal. This study investigated real-world BP goal attainment and prescribing patterns for high-risk patients. A retrospective chart review study was conducted in patients treated by eight large primary care physician group practices between December 2003 and May 2006. A total of 1,917 hypertensive patients were identified with ≥ 1 risk factors: African-American ethnicity (634); diabetes (851); advanced age (1,123); body mass index (BMI) 25 kg/m^2 (1,614). BP control rate was 46% overall, and similar in the advanced age and overweight/obese subpopulations, but substantially lower (28%) in the diabetic subpopulation. Systolic blood pressure ≥ 20 mm Hg above the Joint National Committee on Prevention, Detection, Evaluation, and Treatment Report recommendation was found in 13% of the overall, advanced age and overweight/obese subpopulations, and in 20% of diabetics and 18% of African-Americans. Overall, 62% of patients received ≥ 2 antihypertensive while 36% of diabetics, 31% of African-Americans, 28% of advanced age, and 26% of overweight/obese patients received ≥ 3 antihypertensive classes. Despite availability of multiple antihypertensive classes, BP control rates were still suboptimal in this study's high-risk patients. There is a need for awareness and more aggressive treatment in high-risk patients given their increased risk of poor outcomes. *J Am Soc Hypertens* 2008;2(5): 385–392. © 2008 American Society of Hypertension. All rights reserved.

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Introduction

Despite the availability of several classes of effective antihypertensive agents, blood pressure (BP) control remains suboptimal. In the United States, approximately one-third of all hypertensive adults (treated and untreated) achieve BP control as defined by the Joint National Com-

mittee (JNC 7) on Prevention, Detection, Evaluation, and Treatment Report.¹ Achievement of BP control is an even greater challenge in certain high-risk patient groups, such as those with comorbid diabetes or other metabolic conditions. For instance, in the United States, approximately 60% of hypertensive patients who are treated for hypertension reach their BP goal, whereas less than 30% of diabetic patients also treated for hypertension reach their BP goal.¹ The prevalence of hypertension is very high in these high-risk groups: an analysis of the National Health and Nutrition Examination Survey (NHANES) 2003–2004 data demonstrated that between 50% and 80% of patients with comorbid cardiovascular conditions (dyslipidemia, diabetes, metabolic syndrome, chronic kidney disease (CKD), stroke, congestive heart failure, peripheral arterial disease, coronary artery disease, and cardiovascular disease) had hypertension, compared with 23.1% of patients with no comorbid cardiovascular diseases.² Perhaps an even more alarming finding is that BP control is not being achieved

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in patients with established organ damage. For example, one prospective study of adults attending hypertension clinics found that fewer than 20% of patients with proteinuria (urinary protein excretion >300 mg/day) had BP <130/85 mm Hg; and even fewer had reached the BP target of <130/80 mm Hg.³

Such low rates of control in these high-risk groups are of particular concern, considering that hypertension is often clustered with other risk factors, such as diabetes, obesity, cardiovascular disease, and metabolic syndrome.^{4–6} For instance, the prevalence of diabetes in the general population is approximately 6%,⁷ but rises to 25% in those with hypertension.⁸ Similarly, approximately 55% of obese adults have systolic blood pressure (SBP) >130 mm Hg compared with only about 25% of the general population.⁴ The occurrence of hypertension and metabolic disorders as well as existing cardiovascular damage can lead to a synergistic increase in the risk of cardiovascular events and organ damage.⁵ In a large retrospective analysis of electronic medical records from Kaiser Permanente Northwest between 1998 and 2004, more than 50% of hypertensive members had more than one major risk factor (diabetes, hyperlipidemia, or high body mass index [BMI]).⁹ The relative risk of cardiovascular disease over the 6-year follow-up period increased substantially with the presence of comorbid diabetes and as the number of comorbid risk factors increased. Hypertensive patients with the triad of hyperlipidemia, high BMI, and diabetes were 2.7 times more likely to have a cardiovascular event.⁹

Earlier research has identified additional hard-to-manage subgroups. In the Antihypertensive and Lipid-lowering Treatment to Prevent Heart Attack Trial (ALLHAT), diabetes, African-American race, obesity, and increasing age were significant predictors of poor BP control. Other predictors of poor BP control included left ventricular (LV) hypertrophy and prior antihypertensive treatment.¹⁰ Both the JNC 7 and the American Diabetes Association recognize the increased risk of cardiovascular events in individuals with diabetes and CKD, and both recommend a more aggressive definition of BP control (<130/80 mm Hg).^{11,12} However, more stringent BP levels are not explicitly recommended for other recognized high-risk populations, such as minorities (African-Americans, Mexican-Americans, and Native-Americans), the elderly, the overweight and obese, or patients with LV hypertrophy.¹²

Recognition of the special needs of these hard-to-manage high-risk populations is the first step toward improving BP control rates through more aggressive and appropriate treatment regimens. Therefore the objective of this study was to further investigate BP goal attainment and prescribing patterns in high-risk patient populations (African-American patients, patients with comorbid diabetes, patients of advanced age [males >55 years and females >65 years], and overweight [$25 \text{ kg/m}^2 \leq \text{BMI} < 30 \text{ kg/m}^2$] or obese [$\text{BMI} > 30 \text{ kg/m}^2$] patients) in a real-world clinical setting.

Methods

Study Design

This study was a retrospective, time series analysis assessing BP control and treatment patterns in patients with hypertension plus one or more high-risk factors. The data were obtained via chart reviews conducted at eight large primary care physician group practices located across the United States between December 2003 and May 2006. Physician group practices that could demonstrate a desire to measure hypertension, willingness to participate in a research study, and ability to provide access to a large number of patient charts were recruited by the study sponsor. With the priority of trying to ensure broad representation across the country, eight sites were selected including practices in Chicago, IL; San Diego, CA (two practices); Austin, TX; Houston, TX; Louisville, KY; Brick, NJ; and Worcester, MA. An independent Institutional Review and Privacy Board approved the overall study as well as each site's participation in the study.

Inclusion and Exclusion Criteria

Patients were identified using medical and pharmacy administrative claims data obtained from clinical data systems within the participating physician group organizations. Patients were considered for inclusion if they were 18 years of age or older, had a diagnosis of hypertension (defined as an International Classification of Disease, 9th Revision, Clinical Modifications [ICD-9-CM] code of 401–404 within the first five diagnosis fields), and were continuously under the care of the physician group throughout the timeframe of analysis. Additionally, only patients with at least one of the following conditions were included in this study: African-American descent, comorbid diabetes, male and greater than 55 years of age, female and greater than 65 years of age, or overweight ($25 \text{ kg/m}^2 \leq \text{BMI} < 30 \text{ kg/m}^2$) or obese ($\text{BMI} > 30 \text{ kg/m}^2$). Patients were excluded if they were less than 18 years of age, had a diagnosis of pulmonary hypertension, had no indicators of a previous diagnosis of hypertension, or were missing demographic (ie, race) or clinical (ie, BP and BMI) data.

Data Collection

From each physician group practice, a random sample of approximately 500 patient medical charts was selected. Data were collected from the charts by a nurse or pharmacist trained in standardized data abstraction methods. Variables collected included patient demographics (age, gender, and relevant comorbidities), cardiovascular risk factors, prescribing patterns, and SBP and diastolic blood pressure (DBP) measurements.

A hypertension diagnosis was confirmed when at least one of the following terms was found in the medical chart: “hypertension,” “HTN,” “high blood pressure,” “high BP,”

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