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Underserved Urban African American Men: Hypertension Trial Outcomes and Mortality During 5 Years

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Background: African American men with hypertension (HTN) in low socioeconomic urban environments continue to achieve poor rates of HTN control.

Methods: In a 5-year randomized clinical trial with 309 hypertensive urban African American men aged 21 to 54 years, the effectiveness of a more intensive educational/behavioral/pharmacologic intervention provided by a nurse practitioner/community health worker/physician team was compared to less intensive information and referral intervention. Changes in behavioral factors, health care utilization, blood pressure (BP) control, left ventricular hypertrophy (LVH), and renal insufficiency were evaluated.

Results: Follow-up rates exceeded 89% of available men. The ranges of mean annual systolic BP/diastolic BP change from the baseline to each year follow-up were −3.7 to −10.1/−4.9 to −12.3 mm Hg for the more intensive group and +3.4 to −3.0/−1.8 to −8.7 mm Hg for the less intensive group. The annual proportion of men with controlled BP (<140/90 mm Hg) ranged from 17% to 44% in the more intensive group and 21% to 36% in the less intensive group. At 5 years the more intensive group had less LVH than the less intensive group and 17% of the men were deceased primarily due to narcotic or alcohol intoxication (36%) and cardiovascular causes (19%).

Conclusions: An appropriate educational/behavioral intervention significantly improved BP control and reduced some sequelae of HTN in a young African American male population. Improvement in risk factors other than HTN was limited and sustained control of HTN was difficult to maintain during 5 years. Am J Hypertens 2007;20:164–171 © 2007 American Journal of Hypertension, Ltd.

Key Words: African Americans, hypertension, men, multidisciplinary intervention, comprehensive intervention, community health worker, urban.

Despite early onset and high prevalence of hypertension (HTN) in African American men, their rates of treatment and control are lower and rates of early target organ damage higher than those of whites.[1] Treatment of HTN lowers blood pressure (BP), improves HTN control, and decreases target organ damage.[2–4] To our knowledge, this is the first hypertension clinical trial specifically targeting high risk, underserved young urban African American men.[5–10] This article describes changes in HTN care utilization, behavioral factors, physiologic outcomes, and mortality during 5 years.

Methods

Study Population

The study population included 309 hypertensive African American men residing in inner city Baltimore. All subjects had systolic BP ≥140 mm Hg or diastolic BP ≥90 mm Hg on two separate occasions or were on antihypertensive medication. Men who were on dialysis, had acute, terminal, or serious mental illness, or were participating in another HTN study were excluded. At baseline, the mean age of the sample was 41 ± 6 years. Only 60% had high

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Table 1. Trial intervention components

More intensive intervention	Less intensive intervention
• Education • Individualized NP/CHW/MD Team Care • NP visits as needed at least every 2 to 3 months • ARB Losartan 50 to100 mg (free) • ± Hydrochlorothiazide (HCTZ) ≥12.5 to 25 mg (free) • Additional HTN meds as needed • Home visits annually • Social support engaged and mobilized by CHW • Transportation • Social services referrals as needed • Employment guidance • Birthday and holiday cards, encouragement postcards	• Education • Provided list of community HTN care sources

ARB = angiotensin receptor blocker; NP/CHW/MD = nurse practitioner/community health worker/physician.

school diploma or equivalent, 27% were employed part-time or full-time, and 71% had annual income less than $10,000. The majority (58%) had never married and 64% reported history of incarceration. Mean (±SD) systolic BP/diastolic BP was 147 ± 20 mm Hg/99 ± 15 mm Hg. Fifty-three percent were on antihypertensive medication, and of these 19% had controlled BP (<140/90 mm Hg). Baseline demographic and clinic characteristics, study design and methods,[11] and outcomes at 3 years[12] were reported previously.

Study Protocol

This 5-year randomized clinical trial compared the effect of a more intensive to a less intensive intervention. After approval by the Johns Hopkins Institutional Review Board, eligible men who gave written informed consent were assessed for baseline characteristics and randomly assigned to the more intensive (n = 157) or less intensive (n = 152) group. Men in the more intensive group received comprehensive HTN care by a nurse practitioner (NP)/community health worker (CHW)/physician (MD) team, with counseling regarding the importance of adherence to treatment recommendations and appointment keeping.[13] The NP visits were scheduled every 1 to 3 months as needed. In year 1, the CHW made a home visit to engage and assist the person identified by the participant as the individual providing them with support regarding health and nonhealth matters. Subsequent CHW visits were based on the men's needs, with referrals related to social services, job training, and housing. Barriers to care and treatment were addressed by the team and free medication provided at visits. The NP adjusted medication according to a Sixth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-VI) guideline-based protocol beginning with progressive titration of losartan (50 to 100 mg) and losartan/HCTZ (50/12.5 to 100/25 mg).[14] If indicated, the study MD or participant's primary care provider provided consultation.[13] The MD provided consultation and participated in case discussions. Table 1 lists the trial intervention components. Men in the less intensive group were referred to HTN care sources in the community. On enrollment both groups received education about benefits of controlling HTN. They were reminded of the importance of HTN control every 6 months by telephone call and at annual research visits when behavioral and physiologic outcomes were evaluated and informed consent for study continuation obtained. Men were paid $25 to $100 for attending annual visits.

Measurements

Men in both groups were seen annually. Trained Outpatient General Clinical Research Center staff, blinded to group assignment, using an appropriately sized cuff after the participant was seated for 5 min, obtained three BP measurements at 1-min intervals with a Hawksley random zero sphygmomanometer (WA Baum Co., Inc., New York, NY).[15,16] The second and third BP measurements were averaged. The BP control was defined as BP <140/90 mm Hg.

Transthoracic echocardiography was performed by a trained sonographer. Left ventricular mass (LVM) was calculated by a cardiologist blinded to participant characteristics. The two-dimensional 5/6 area–length method was used because of its potential for generating greater accuracy and reproducibility than M-mode methods.[17] Two measurements were made and the mean was used. The LVM was indexed to body surface area (BSA) and left ventricular hypertrophy (LVH) was defined as LVM/BSA >131g/m^2.[18] Target organ damage at baseline has been described in detail.[19]

Serum creatinine, total cholesterol, and HDL cholesterol (in milligrams per deciliter) were measured by standard procedures through Quest Laboratories. Diabetes was defined as diagnosis of diabetes or random serum glucose >200 mg/dL. Illicit drug use was determined by urine drug screen. Staff interviewed participants about sociodemographic and behavioral risk factors, using items from

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