

MOREHOUSE COMMUNITY PHYSICIANS NETWORK (CPN) HYPERTENSION REGISTRY: PATTERNS OF CARE AND OPPORTUNITIES FOR TARGETED MEDICAL EDUCATION

Background: Provider-focused strategies for improving outcomes in hypertension have produced mixed results. Studies suggest that the effectiveness of a chosen strategy increases when it is tailored to the specific situation.¹ The hypertension registry includes data on African-American hypertensives who receive care in community-based primary care settings. We examined the registry to identify patterns of care and opportunities for provider-focused interventions to improve patient outcomes.

Methods and Results: The registry will include all records of hypertensive patients from 50 community-based primary care practices at full enrollment. Data from nine practices were manually abstracted into an electronic database and analyzed. Seven hundred and ten records were included in this report. Approximately 70% are female, average age 47 ± 13 years, 5.3% are uninsured, and more than 60% have at least a high school education. Registry patients have multiple co-morbid conditions: 28% are diabetic, 8% have left ventricular hypertrophy, 5% have congestive heart failure, 6.5% have renal insufficiency, 5% have cerebrovascular disease, 3.5% have previous myocardial infarction and 2% have peripheral vascular disease. Among those with diabetes, mean glycosylated hemoglobin was 7.4 ± 2 . Pattern of antihypertensive use showed 43% on diuretics, 28% on calcium channel blockers, 24% on angiotensin converting enzyme inhibitors, 20% on beta blockers and 16% on angiotensin receptor blockers. Overall, 37% were at goal blood pressure and among those with diabetes, only 16% reached goal blood pressure.

Conclusion: We conclude that the blood pressure control rates of African Americans in the registry trail those of the general population. This provides a unique opportunity to study the underlying factors and design tailored interventions to address this disparity in health outcome. (*Ethn Dis.* 2005;15 [suppl 5]:S5-120-S5-123)

Key Words: Hypertension, Outcomes, Physician Education, Quality Improvement, Disparities

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INTRODUCTION

Overall, between 50%–55% of known and treated hypertensive patients in the United States are at goal blood pressure.² Control rates among treated African Americans and other minorities are under 45%. Control rates in the presence of co-morbid diabetes, heart disease or kidney disease is lower still.³

Many studies have found the following barriers to be important in the overall health outcome of an individual or group:

- Access to health care⁴;
- Patient factors, such as health beliefs, trust in the health care system and socioeconomic status⁵;
- Provider factors, such as cultural competence⁶;
- System of providing healthcare.

Improvements in access and patient behavior are more dependent on policy initiatives and comprehensive public educational interventions that fit in the larger social context. In the realm of the clinical encounter, provider and organizational factors are amenable to change if adequately enumerated. A clear understanding of the specific barriers to the translation of evidence into practice for minority patients with chronic disease who are cared for in the out-

patient setting is vital to the design and implementation of appropriate quality improvement efforts.⁷

Although failure of routine practice to replicate recommended care has been ascribed to knowledge deficiencies and recalcitrance on the part of physicians, there is evidence that structural problems (financial disincentives, inappropriate skill mix, lack of facilities or equipment); peer group effects (practice patterns determined by local standards and beliefs rather than evidence or consensus statements); professional (issues surrounding knowledge/skills, attitudes and beliefs); and patient factors (personal beliefs, trust in the health system, self-management skills, etc.) also play a role.⁸

Quality improvement initiatives in hypertension have deployed multiple strategies directed at overcoming barriers to the adoption of evidence-based guidelines. The results of such interventions have been mixed. Passive interventions, such as dissemination of guidelines, are less successful than more active interventions like audit and feedback, reminder systems, financial incentives, regulation and policy, as well as organizational change. Overall, however, the value of these interventions on hypertension care processes has been modest at best, and outcomes vary based on the underlying characteristics of the group studied.⁹

Therefore, as part of a comprehensive effort to identify barriers to improved hypertension outcomes among participating practices of the Morehouse Community Physicians Network (CPN), we examined the registry to identify patterns of care and opportu-

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Table 1. Type of health insurance

Type of Health Insurance	Percentage (%)
Private health insurance	32
HMO	20
Medicare plus	7.6
Medicaid	7
Medicare only	7
Uninsured	5.3
Medicare HMO	5
Unknown	1.03
Military	0.3

nities for provider-focused interventions to improve patient outcomes.

METHODS

At full enrollment, the hypertension registry will include all hypertensive patients from 50 primary care practices. Practices were eligible to participate if they had a minimum of 30% African-American patients and were located in the metro-Atlanta area. Characteristics of each practice were obtained from the physicians by way of a practice demographic sheet, which described the type and training of physicians in the practice, practice structure, the number of outpatient visits per year, presence of electronic medical records and payer mix.

The registry was used to collect data on: administrative items such as payer mix; patient characteristics, such as educational attainment; co-morbid medical conditions; anthropometrics; biochemical variables; and patterns of medication use. The registry was approved by the institutional review board of Morehouse School of Medicine and is HIPAA compliant.

The data was manually abstracted from the patient charts by FO, CN, CO and SO at each practice and entered into a database. Each of these chart abstractors is well trained and proficient in medical chart abstraction and in the use of the data entry form. Each associate involved in data entry had a unique identifier assigned such that all

Table 2. Co-Morbid conditions in hypertensive patients

Comorbid Conditions	Percent (%)
Diabetes mellitus	27.8
Left ventricular hypertrophy	8.07
Renal insufficiency	6.52
Congestive heart failure	5.22
Cerebrovascular disease	4.86
Myocardial infarction	3.53
Angina	2.82
Peripheral vascular disease	2.12

data was traceable to the individual who entered it.

The template for datapoints obtained was similar to that used by the Consortium of Southeastern Hypertension Control (COSEHC) centers of excellence. All hypertensive patients in every eligible practice are enrolled in the registry unless they specifically request not to be included. Once the data was entered into the database, accuracy of the data was confirmed by comparing it with results of random chart audits completed by the author and AQ; the database was updated accordingly.

This analysis included all records that are currently in the hypertension registry. Analysis was done using Intercooled Stata® (V-8, Windows2000. Statcorp, College Station, Texas). Descriptive data on the type of patients were assessed. Continuous data were described using mean and standard deviation and categorical data using frequencies and percentages. The main outcome was blood pressure control rates. Blood pressure control was determined for each individual, based on specific co-morbid conditions according to recommendations of the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-7).¹⁰

Secondary outcomes included blood glucose control rates based on glycosylated hemoglobin values and lipid control rates as described by the Third Report of the Expert Panel on Detection, Evaluation, and Treatment of High Blood

Table 3. Biochemical variables in hypertensive patients

Biochemical Variables	Mean ± SD
Triglycerides	135.89 ± 89 mg/dL
LDL cholesterol	117.99 ± 35.96 mg/dL
HDL cholesterol	53.2 ± 16.6 mg/dL
Fasting blood glucose	116 ± 57 mg/dL
Glycosylated hemoglobin (HbA1C)	7.38 ± 1.88

Cholesterol in Adults (Adult Treatment Panel III) of the National Cholesterol Education program (NCEP).¹¹

RESULTS

Many of the practices are solo or small group practices that do not have electronic patient records systems. Seven hundred and ten records were obtained from nine primary care practices. Ninety-six percent of the patients were African American. Sixty-eight (68%) were female. Average age was 47 ± 13 years. Among the women, 68.7% were post-menopausal. The patients in the registry were well-educated, more than 60% had a minimum of a high school education and all but 5.3% had private insurance. Distribution of health insurance types is shown in Table 1. Twenty percent had HMO insurance, 7% Medicaid, 5% Medicare HMO, 7% with Medicare only, 7.6% with Medicare plus, and 32% with other private health insurance.

Co-morbid diabetes was present in 27.8%, left ventricular hypertrophy in 8%, congestive heart failure in 5.22%, renal insufficiency in 6.52%, cerebrovascular disease in 4.86%, angina in 2.82%, peripheral vascular disease in 2.12% and a history of myocardial infarction in 3.53% of the hypertensive patients in this registry (Table 2).

Mean and standard deviations of the biochemical variables shown in Table 3 are as follows: low-density lipoprotein cholesterol (LDL-C), 117.99 ± 36 mg/dl;

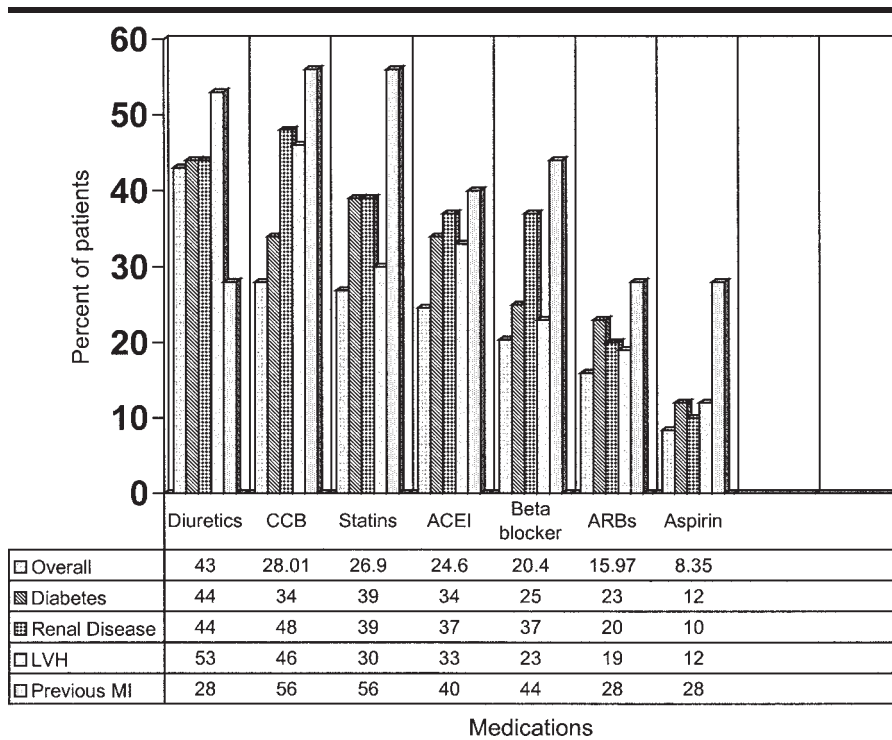


Fig 1. Patterns of antihypertensive medication use

fasting glucose, 116 ± 57 mg/dl; and glycosylated hemoglobin, 7.38 ± 1.88 .

The patterns of medication use are shown in Figure 1, with the most commonly prescribed treatment being diuretics (43%) followed by calcium

channel blockers (28%), beta blockers (20.4%), and angiotensin receptor blockers (16%). Figure 2 shows the number of medications used by blood pressure control status. Forty-two percent of the patients in the registry

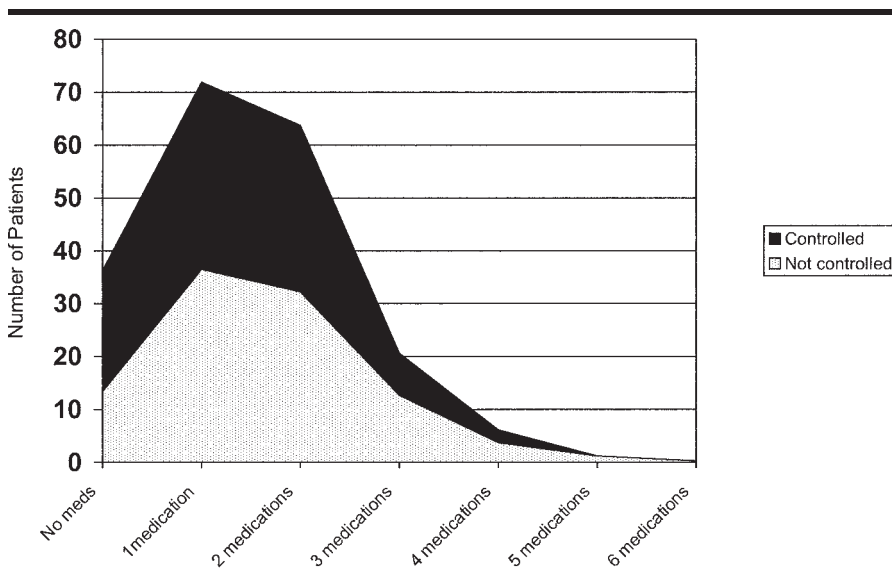


Fig 2. Number of antihypertensive medications by blood pressure control status

were treated with two or more antihypertensive medications. Among diabetics, 42% were on two antihypertensive medications or more (Figure 3). Overall, 37.11% of all the hypertensive patients in the registry reached goal pressure by standards defined by JNC 7. Among diabetics, the blood pressure control rates dropped to 15.87%.

DISCUSSION

This preliminary review of the hypertension registry shows blood pressure control rates of 37% among non-diabetic African Americans, compared with 44% reported in the National Health and Nutrition Examination Survey, NHANES 1999–2000.¹ However, this cohort is a high-risk group as reflected in the high proportions of comorbid conditions. Forty percent of the hypertensives in the registry were diabetic compared with 11% in the general population. Similarly, congestive heart failure was present in 9.13% in the registry compared with 2.5% in the general population.

The documentation of the treatment and outcomes in the registry is significant on several fronts. This registry of hypertensive African-American patients, drawn from the real world of private practice in primary care presents a unique opportunity to study and understand the barriers to optimal blood pressure control as a model for other chronic diseases managed in the primary care setting. The inherent value of the results of such investigations lies in the potential to inform interventions that improve both the process of care as well as overall outcomes in hypertension and other chronic diseases for African-American and other ethnic minorities. The design and implementation of interventions to improve health quality without defining the problems have been suggested as an underlying reason for the broad variation in effect that has

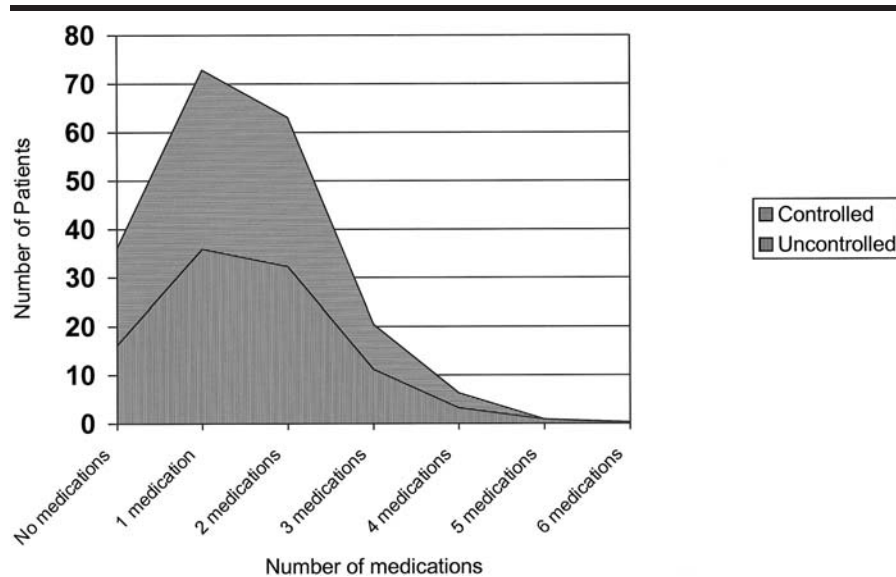


Fig 3. Patterns of antihypertensive medication use by blood pressure control status among patients with diabetes

been observed with quality improvement initiatives.⁸

It is interesting that a gap in treatment outcomes, when compared to the general population, is present even though the majority of patients (more than 90%) have health insurance and more than 60% have at least a high school education. Traditionally, gaps in treatment outcomes have been attributed to issues surrounding access to health care as well as education (a surrogate for socioeconomic status).^{4,5} If these initial results hold when the registry is completed, they indicate a need for a deeper analysis of the following issues: patient factors such as health beliefs, trust in the healthcare system, transportation difficulties, self-efficacy, provider and organizational barriers, and the design of specific interventions to address these problems.

CONCLUSION

We conclude that the African Americans in the registry have multiple

co-morbid conditions and that their blood pressure control rates trail those of the general population. The patients with diabetes show poorer control rates, providing a unique opportunity to study the underlying factors and design tailored interventions to address this disparity in health outcome.

Limitations

The registry is based on results of a chart review in primary care offices; therefore the rates of disease may not be comparable to that of the general population as described in NHANES data. This is a preliminary report from the registry and it may not reflect the overall control rates when the registry is complete. Since this is observational, its value is in the hypothesis generation for further study.

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