

Determinants of Drug Treatment Maintenance Among Hypertensive Persons in Inner City Detroit

K. MICHAEL CUMMINGS, PhD, MPH
 JOHN P. KIRSCHT, PhD
 LAURENCE R. BINDER, BA
 ALEGRO J. GODLEY, MD, MPH

IT IS CLEAR FROM PUBLISHED REPORTS that the failure of patients to remain under continuous medical care and inability or unwillingness of patients to adhere to a prescribed treatment are major obstacles to the successful treatment of hypertension (1-3). Although some screening and referral programs have demonstrated success in getting patients to a physician for confirmatory diagnosis and initiation of treatment, post-referral dropouts from treatment are known to be extremely high, especially if followup is not continuous (4-6). According to findings of population surveys and screening campaigns, between 15 to 30 percent of known hypertensives begin, but later terminate treatment, and less than 70 percent of those persons who continue with treatment evidence blood pressure control within the normal range (6-11). Several studies also show that blood pressure control is a greater problem among blacks than among whites. Studies of the patients of private physicians and those attending medical clinics indicate that between 50 and 60 percent of the patients fail to take medications as prescribed and that many patients eventually discontinue treatment altogether (12-15).

The problem of patient adherence to medical recommendations is a complex one. With respect to hypertension specifically, an analysis of dropouts by Caldwell and co-workers (2) suggested the involvement of several factors including socioeconomic status, education regarding the disease, and the patient's beliefs about

the severity of the condition and perceived value of adhering to the treatment. Kirscht and Rosenstock (16) report similar findings from a study of patient adherence to antihypertensive medical regimens in a group of 132 patients of private physicians. Patients' beliefs about their susceptibility to the sequelae of hypertension (that is, heart attack, stroke, and so forth), about the severity of the condition, and the efficacy of the prescribed regimen were all associated with adherence.

Studies by Finnerty and co-workers (15,17) on dropouts from hypertension treatment emphasized barriers to care, especially in the area of physician-patient relationships. In interviews with patients who had dropped out of treatment, inconvenient clinic hours, lengthy waiting room stays, and insufficient time for consultation with health professionals were the most frequently mentioned reasons for dropping out of treatment. Changes in office procedures, such as replacing open clinic hours with an appointment system, offering services during some evenings and weekends, and establishing an oncall telephone service dramatically reduced the number of dropouts from treatment. Wilber and Barrow reported a similar followup experience with hypertensives detected in a community program in Georgia (6). In a more recent study of dropouts among hypertensive patients, Gillum and co-workers (18) concluded that the severity of illness, coupled with the costs and inconvenience of care and lack of physician enthusiasm for the treatment of mild hypertension, are the major factors leading to dropouts from treatment.

This study examines the relationship of health beliefs, knowledge about hypertension, barriers to receiving medical care, and personal characteristics to drug treatment maintenance in a group of 206 hypertensives. In addition dropouts from treatment were questioned regarding their reasons for discontinuing therapy. The findings from this study are used to suggest ways to enhance treatment maintenance.

Dr. Cummings is research scientist, Department of Cancer Control and Epidemiology, Roswell Park Memorial Institute. Dr. Kirscht is professor, Department of Health Behavior and Health Education, School of Public Health, University of Michigan. Mr. Binder is biostatistician, and Dr. Godley is director, Detroit Hypertension Control Program, Detroit Health Department.

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Tearsheet requests to K. Michael Cummings, PhD, MPH, Department of Cancer Control and Epidemiology, Roswell Park Memorial Institute, 666 Elm St., Buffalo, N.Y. 14263.

Method

The data analyzed in this paper are a subset of the data collected in the Detroit Hypertension Study, a 5-year demonstration program designed to evaluate the effectiveness of an intensive blood pressure screening, referral, and followup effort in increasing the number of controlled hypertensives in an inner area of that city with a predominantly black population. The research design for the study involves a comparison of two matched areas, one exposed to the blood pressure screening, referral, and followup program and the other without any special blood pressure control services. The two areas were matched on the basis of the proportion of whites and blacks in each area, the age distribution and the educational and income levels of the areas' populations, and the general housing characteristics of each community (that is, proportion of single and multiple dwelling units). Each area is comprised of 13 census tracts, containing about 50,000 adults. The study is now in its fourth year. The data we discuss come from a baseline survey of the two areas conducted in the fall of 1978.

Sample survey. A two-stage probability sample was drawn to represent the noninstitutionalized population of adults (aged 18 and older) residing in the two study areas. In the first stage of the sample, 1,400 households (700 in each area) were selected at random from the city directory. The directory listing was supplemented by information on new construction and demolition as well as updated listings from earlier surveys in the areas. Addresses which included five or more housing units were separately listed and sampled. If an address covered four or fewer housing units, all four units were included in the sample.

In the second stage of the sample, a random selection procedure was used to select one adult in each designated household to be interviewed (19). Of the 1,400 addresses sampled, 221 were dropped because the units were vacant, the addresses selected were not private households, or the addresses could not be located. Trained interviewers conducted interviews and measured the blood pressure levels of 773 respondents, representing an overall response rate of 66 percent of the eligible sample. Comparison of respondents and nonrespondents revealed that males below age 40 were less likely to participate in the interview than were older men or women. As a result, the sample underrepresents younger men in the population.

Blood pressure measurements were obtained according to a standard protocol by trained interviewers who were periodically tested for accuracy of measurement. Three consecutive readings were obtained on each per-

son interviewed and the average of the last two 5th-phase diastolic pressures was used to define blood pressure level. For this analysis, a person was considered hypertensive if the average diastolic pressure was greater than 95 mm Hg or if the diastolic pressure was less than 95 mm Hg and the person was under a physician's care for treatment of high blood pressure.

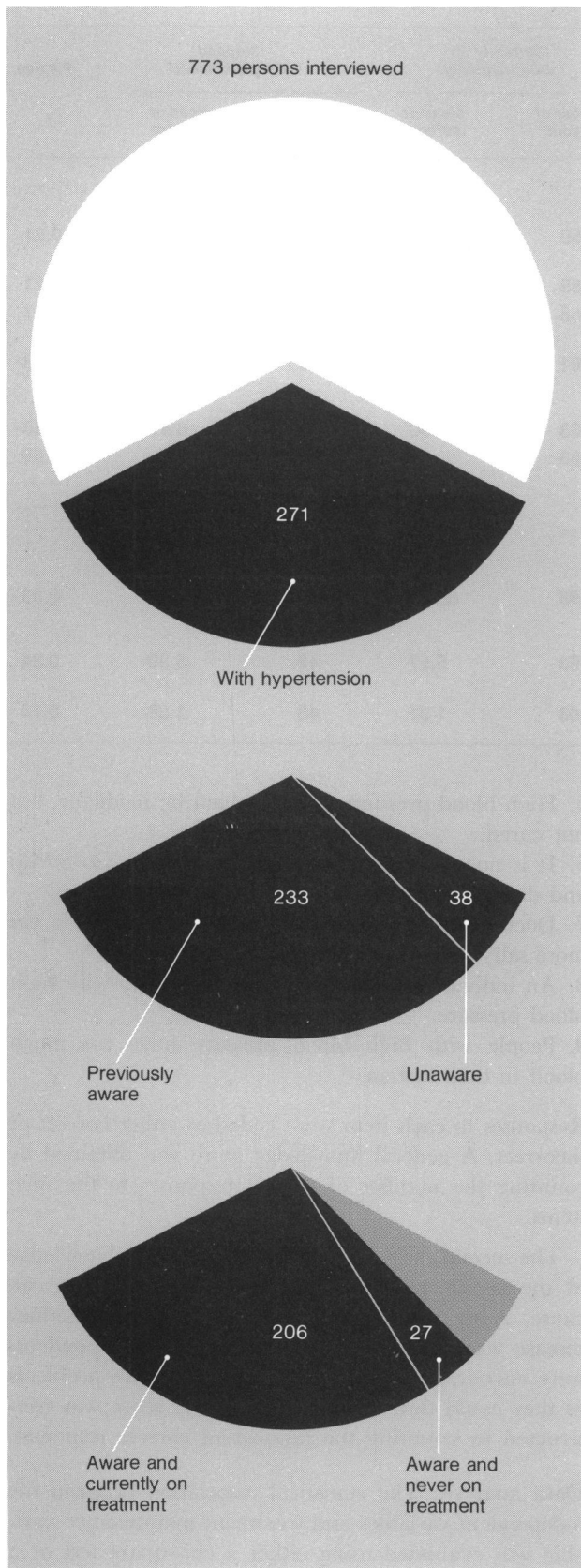
The prevalence of hypertension in the combined survey populations was 35 percent. Of the 271 hypertensives identified, 14 percent (38 persons) were unaware of their hypertension and 10 percent (27 persons) were previously aware of their hypertension but never received treatment. The analyses presented in this paper are based on the 206 hypertensives who were previously or currently on drug treatment for high blood pressure. The chart illustrates how respondents were identified for data analysis.

Sociodemographic characteristics of respondents. The average age of the 206 respondents was 58 years. Twenty-nine percent of respondents were male, and 97 percent were black. The median annual family income was less than \$4,000, with 38 percent making between \$4,000 and \$10,000 annually and 24 percent making more than \$10,000 annually. Only one-third of the respondents finished high school. Thirty-seven percent of the group were married, 6 percent had never married, and the remainder were widowed, divorced, or separated. Payment sources for medical care included Medicaid (21 percent), Medicare (29 percent), Blue Cross or another carrier (41 percent), and 9 percent were uninsured.

Medical characteristics of respondents. The average diastolic blood pressure of the 206 respondents was 89 mm Hg, but 29 percent had average diastolic readings above 95 mm Hg. Forty-nine percent of the group reported that hypertension was their only health problem. Of the 104 reporting other chronic health problems, 63 percent reported having heart trouble, 36 percent reported diabetes, 45 percent reported kidney trouble, 13 percent had had a stroke, and 37 percent had arthritis.

Drug treatment maintenance. Treatment maintenance was defined as continuing to take antihypertensive medication following a diagnosis of hypertension. Operationally, the drug treatment maintenance variable was defined by constructing a dichotomous variable to distinguish between hypertensives currently on drug treatment for high blood pressure and those who, at the time of the interview, were no longer on treatment although they had not been advised by a physician to discontinue taking their blood pressure medicine.

Respondents in Detroit survey of hypertension



Independent variables. The psychosocial factors examined were intended to cover a range of variables that have been shown in other studies to be related to adherence.

Perceived susceptibility to the sequelae of hypertension. A 3-item index was developed to represent the respondents' views about their susceptibility to the potentially harmful health effects of hypertension. Items included the likelihood of having (a) heart disease, (b) stroke, and (c) kidney disease. All items were measured on a 5-point scale ranging from definitely yes to definitely no. The index was constructed by computing the mean of the three items: the internal consistency coefficient of the index is 0.71.

Perceived severity of hypertension. A single item was used to measure the respondents' perception of the severity of hypertension. They were asked to rate how serious a health problem they considered high blood pressure to be on a 4-point scale ranging from very serious to not at all serious.

Benefits of antihypertensive therapy. A 6-item index measuring the respondent's beliefs about the benefits of following the physician's advice about treatment of high blood pressure was developed. Items in the index included (a) prevention of heart disease, (b) prevention of stroke, (c) prevention of kidney disease, (d) lowering blood pressure, (e) living a longer life, and (f) living a normal life. All items were measured on a 7-point scale ranging from no chance to certain. The index was constructed by computing the mean of the six items. The internal consistency coefficient of the index is 0.79.

Barriers to treatment maintenance. Four separate measures of the barriers to treatment maintenance were constructed. The first measure dealt with the respondent's view of how difficult it was to follow the physician's advice. Respondents were asked to rate how much trouble it was to follow this advice on a 4-point scale ranging from no trouble to a lot of trouble. The second measure was a 5-item index which dealt with access to medical care. Respondents were asked if they had ever delayed visiting or talking with a physician about a health condition because (a) they couldn't get an appointment, (b) they didn't have the money, (c) they didn't know whether their medical insurance would pay for the cost of treatment, (d) they didn't know where to go to get medical care, and (e) they didn't have a way to get to a doctor. The index was constructed by counting the number of "yes" responses

Table 1. Health beliefs, barriers to receiving medical care, and knowledge of hypertension of persons who stopped taking antihypertensive medications and persons who continued taking medications

Variable	Currently on drug treatment		Stopped drug treatment		P value
	Number of persons	Mean or percent	Number of persons	Mean or percent	
<i>Health beliefs</i>					
Index of perceived susceptibility to the sequelae of hypertension	159	1.72	43	1.69	0.81
Percent rating hypertension as a "very serious" health problem	163	87.5	43	76.7	0.21
Index of beliefs in the benefits of treatment for hypertension	158	4.88	42	4.97	0.47
Percent reporting difficulty in following their physician's medical advice	161	40.9	43	39.5	0.28
<i>Barriers to medical care</i>					
Number of barriers to accessing medical care	163	0.90	43	0.81	0.53
Usual source of medical care	163	...	43	...	0.86
Percent with no regular source	...	7.4	...	9.3	...
Percent with private physician	...	50.3	...	53.4	...
Percent using hospital outpatient clinic	...	28.8	...	20.9	...
Percent using neighborhood health clinics including HMOs	...	11.6	...	13.9	...
Percent using health department clinic	...	1.8	...	12.3	...
Percent reporting medical insurance	158	90.5	42	95.2	0.33
<i>Knowledge of hypertension</i>					
Correct responses in general knowledge test	163	5.57	42	5.30	0.34
Correct responses on knowledge of health problems hypertension can cause	163	1.31	43	1.09	0.16

to these five items. The third measure dealt with the respondent's source of medical care. Respondents were asked to indicate the place where they usually went when ill or in need of medical advice. Responses were coded as (a) no regular source of medical care, (b) private physician's office, (c) hospital outpatient clinic, (d) neighborhood health clinic, and (e) health department clinic. The fourth barrier measure concerned whether the respondent had medical insurance that paid for ambulatory care.

Knowledge about hypertension. Two measures of a respondent's knowledge about hypertension were constructed. The first assessed the respondent's general knowledge about high blood pressure and its treatment. Respondents were asked to indicate whether they agreed or disagreed with the following nine statements about high blood pressure:

1. A person who has high blood pressure is usually tense and nervous.
2. Blacks are more likely to have high blood pressure than whites.
3. All people with high blood pressure take the same medicine.
4. People with high blood pressure usually have headaches, nosebleeds, or dizzy spells.

5. High blood pressure can be helped by medicine, but not cured.
6. It is normal for a person's blood pressure to go up and down over the course of a day.
7. Doctors tell people with high blood pressure to eat more salty foods.
8. An individual's weight has nothing to do with high blood pressure.
9. People with high blood pressure have too much blood in their system.

Responses to each item were coded as either correct or incorrect. A general knowledge score was obtained by counting the number of correct responses to the nine items.

The second measure assessed respondents' knowledge of the health problems that high blood pressure can cause. A mention of heart disease, stroke, or kidney disease was coded as a correct response. Respondents were encouraged to mention as many health problems as they could think of. The knowledge score was constructed by counting the number of correct responses.

Data analysis. The statistical association between the independent variables and treatment maintenance variable was evaluated using either a chi-square test or a

Table 2. Comparison of characteristics of persons who stopped taking antihypertension medications and persons who continued taking medications

Variable	Currently on drug treatment		Stopped drug treatment		P value
	Number of persons	Percent	Number of persons	Percent	
<i>Sociodemographic characteristics</i>					
Percent male	163	30.1	43	25.6	0.56
Mean age (years)	162	59.1	42	55.3	0.11
Percent who were married	163	37.4	42	33.3	0.51
Percent who were high school graduates or better	161	33.5	43	30.2	0.90
Percent with total family income greater than \$10,000 per year.	135	24.4	34	23.4	0.64
<i>Health status and blood pressure</i>					
Percent rating their health status as excellent or good	162	28.9	43	41.9	0.04
Percent who report having had heart trouble	161	36.0	42	19.0	0.04
Percent who report having had a stroke	160	7.5	43	4.7	0.51
Percent who report having had kidney trouble	158	20.9	43	27.0	0.33
Mean number of months on drug treatment for high blood pressure	156	95.6	43	87.3	0.71
Percent with diastolic blood pressure below 90 mm Hg	162	54.3	43	60.5	0.47
Mean diastolic blood pressure (mm Hg) ¹	161	89.1	42	87.6	0.57

¹ Mean diastolic blood pressure adjusted for age.

two-sample *t*-test as appropriate. In the tables that follow, the number of cases in the treatment maintenance category are not always the same due to isolated instances of missing interview data.

Results

Forty-three of the 206 respondents reported discontinuing drug treatment for their high blood pressure without being advised by a physician to do so. Of these 43 respondents, 20 indicated that they were still following other types of antihypertensive therapy such as a diet or exercise regimen. Overall, 183 of the 206 respondents reported being on some form of antihypertensive therapy, and 89 percent of the 183 were taking medications. Sixty percent were advised by a physician to reduce the amount of salt in their diet, 41 percent were advised by a physician to lose weight, 24 percent were advised by a physician to exercise more, and 17 percent were told to stop smoking cigarettes. The combination of antihypertensive medications and a low sodium diet was the most commonly reported therapy (74 percent).

Determinants of drug treatment maintenance. The association of health beliefs, barriers to receiving medical care, and knowledge variables with drug treatment maintenance is shown in table 1. Among health belief variables, there was a slight tendency for persons who stopped taking their blood pressure medicine to view hypertension as less serious a condition than persons

who continued taking their medicine. Those who discontinued drug treatment differed very little from those who remained in treatment in terms of perceptions about personal susceptibility to the sequelae of hypertension, beliefs in the benefits of treatment for hypertension, and reported difficulty in following a physician's advice.

Regarding barriers to receiving medical care, persons who discontinued drug treatment actually reported fewer problems gaining access to care than persons who continued to take their blood pressure medicine. Persons who stopped taking their blood pressure medicine were also more likely to report having medical insurance than persons currently receiving drug treatment for their hypertension.

In terms of knowledge about hypertension, those receiving drug treatment for hypertension scored slightly higher than persons who discontinued drug treatment on the measure of general knowledge of high blood pressure and on the measure of knowledge of the health problems that high blood pressure can cause. However, the differences observed were not statistically significant at the 5 percent level.

Table 2 shows the relationship between discontinuing drug treatment for hypertension and selected sociodemographic characteristics and health status variables. Sociodemographic characteristics such as sex, age, marital status, educational level, and annual family income level are poor discriminators between persons

Table 3. Main reason given by 43 respondents for discontinuing antihypertensive medications

<i>Main reason for discontinuing</i>	<i>Percent of respondents</i>
Experiencing side effects from medicine	7.0
Treatment costs a lot of money	11.6
Prescription had run out	20.9
Felt fine without the medicine	39.5
Medicine was inconvenient to take	4.7
Just got tired of taking medication	4.7
Physician moved	2.3
Feared becoming addicted to the medication	2.3
Don't know	7.0

who continue drug treatment and those who stopped taking their blood pressure medicine.

Two health status items did distinguish between persons who continue drug treatment from those who discontinue it. First, those perceiving their health status to be poorer are more likely to continue taking blood pressure medicine. Second, respondents who report having had heart trouble in the past are more likely to continue to take their blood pressure medicine. There is no difference between persons who stopped taking antihypertensive medications and persons who continued to take their blood pressure medicine in the length of time that they had been on drug treatment for this condition.

With regard to blood pressure control, there were no differences in the percentage of respondents with controlled blood pressure (that is, diastolic reading of less than 90 mm Hg) or age-adjusted average diastolic blood pressure between persons currently or previously on drug treatment.

Comparison of the 20 persons who discontinued drug therapy but continued other forms of antihypertensive therapy with the 23 persons who discontinued all forms of antihypertensive therapy revealed no statistically significant difference in health beliefs, access to care variables, knowledge about hypertension, sociodemographic characteristics, health status measures, or blood pressure. (Data on these comparisons are not shown.)

Reasons for discontinuing drug treatment. Respondents who discontinued drug treatment for high blood pressure were questioned regarding their reasons for doing so. Table 3 summarizes the reasons given for dropping out of drug treatment. Of the 43 in this group, 39.5 percent reported that they felt good without the medicine. Nine persons, or 20.9 percent, reported they had discontinued drug treatment because the prescriptions for their medicine had run out, and five persons, or 11.9 percent, reported that they dis-

Table 4. Why 113 respondents sometimes missed taking blood pressure medicine

<i>Reasons for missing blood pressure medicine</i>	<i>Percent of respondents indicating reason</i>
Forget to take the medicine	58.5
Prescription for the medicine ran out	57.8
Treatment costs a lot of money	13.2
Experiencing side effects from medicine	24.1
Felt fine without the medicine	38.9
Away from home	39.1
Wanted to see how I felt without the medicine	38.6
Too many pills to take	19.8

continued drug treatment because the medicine was costing them a lot of money. Only three persons (7 percent) reported side effects as a reason for discontinuing drug treatment, and only two (4.7 percent) reported dropping out of drug treatment because the medicine was inconvenient to take.

Reasons for not taking medicine as prescribed. Of the 163 persons on drug treatment for high blood pressure, 70 percent (113 persons) reported having missed taking their blood pressure medicine at least once. Table 4 presents the reasons they gave for missing. The most common included forgetting to take the medicine (58 percent), being away from home (39 percent), feeling fine without the medicine (39 percent), and wanting to see how they felt without the medicine (39 percent). Only 24 percent of those who reported ever missing taking their blood pressure medicine mentioned side effects as a reason for noncompliance, and only 13 percent reported treatment costs as a reason.

Sixty-seven respondents (41 percent) reported that they had special ways which they used to help remember to take their blood pressure medicine. The most frequently mentioned methods included taking the medicine at mealtimes (28 percent), taking the medicine at a specific time of day (21 percent), or placing the medication in a location where it would be easily remembered (29 percent). Only three people indicated that they depended upon someone else to help them remember to take their medicine, and only two people reported using a written chart to help them remember to take their medicine.

Discussion

The respondents' perception of their health status seems to be an important factor influencing their decision to continue drug treatment. Our findings showed that poorer perceived health status was associated with continuing to take blood pressure medicine. Perceived

health status was found to be positively correlated with the number of health problems reported by an individual ($r = 0.41$). This observation may reflect the fact that those with more health problems are more likely to be under treatment regularly and more likely to visit a physician within a given period. Other health problems, such as diabetes or arthritis, may provide occasions to see a physician, and blood pressure is then coincidentally given care. Thus, regular contact with a physician for other health problems may be the important intervening factor.

The most common reason for discontinuing treatment by persons who stopped taking their blood pressure medicine was that they felt well without the medicine. Given the asymptomatic nature of hypertension, it is conceivable that many of those who discontinued treatment did so because they saw no need to continue therapy. Interestingly, the same reason, "feeling fine without the medicine," was mentioned by more than one-third of those persons currently taking blood pressure medicine as a reason for failing to take medication. Gillum and co-workers (18) reported a similar finding in a study of dropouts among hypertensive patients seen in a medical clinic. They reported that patients with less severe hypertension, with no symptoms, and without other chronic ailments were more likely to discontinue therapy. It was suggested that the low perceived severity of the illness, coupled with a lack of enthusiasm of the provider in treating and following up patients with uncomplicated hypertension, leads to a lack of concern by the patient for treating the condition. Conversely, physicians may treat those patients with several conditions more vigorously and more continuously.

Side effects associated with the treatment were not a major determinant of discontinuing drug treatment. Only 7 percent of those who stopped taking their blood pressure medicine reported side effects from the medication as their main reason for discontinuing drug treatment. Similarly, fewer than one in four persons currently taking blood pressure medicine mentioned side effects as a reason for occasionally failing to take their blood pressure medicine.

Health beliefs generally were not predictive of discontinuing drug treatment. There was a slight tendency for persons who stopped taking their blood pressure medicine to view hypertension as less serious a condition than persons continuing drug treatment. Persons who discontinued drug treatment were also slightly less knowledgeable about high blood pressure and the health problems high blood pressure can cause than persons who continued to take their blood pressure medicine.

Variables measuring access to medical care did not distinguish between persons who discontinued drug

treatment and those who continued treatment. In fact, our findings indicated that persons who stopped taking their blood pressure medicine actually had fewer problems gaining access to medical care than did persons who continued to take their blood pressure medicine. However, this finding may be confounded by the fact that persons who discontinued taking antihypertensive medications had fewer health problems than persons who continued to take their medications and, as a result, would probably have less contact with the medical care system and less opportunity to experience difficulty gaining access to care. Finally, in the present study we found no strong relationship between sociodemographic variables and discontinuing drug therapy.

The lack of difference in age-adjusted diastolic blood pressure readings and blood pressure control status between those who stopped taking their blood pressure medicine and those who continued cannot be explained by the fact that many of the persons who discontinued drug therapy were still on other forms of antihypertensive therapy. Comparisons yielded little difference in age-adjusted diastolic blood pressure and blood pressure control status. One explanation for this lack of difference between persons who stopped taking their blood pressure medicine and persons who continued to take their medications is that those with less severe hypertension are more prone to discontinue drug treatment. It is also possible that, among persons who continued to take their blood pressure medicine, failure to adhere closely to the prescribed medication regimen may reduce the effectiveness of treatment. It is also conceivable that respondents were not accurately reporting their status or that they had misinterpreted what a physician told them about taking their medications.

The percentage of persons who reported discontinuing treatment for hypertension in this study was low compared with the proportion in other studies. For instance, Gillum and co-workers (18) reported dropout rates between 30 and 50 percent after 2 years of treatment for hypertensive patients in an urban medical clinic, and Caldwell and co-workers (2) reported that 62 percent of hypertensives drop out of treatment after 2 years. The lower rate of discontinuing treatment we observed may be related to the cross-sectional study design employed. It is likely that, at any point in time, between 10 and 20 percent of known hypertensives will not be in treatment. However, it is also likely that many of those persons currently in treatment have discontinued treatment at sometime in the past and will discontinue treatment sometime in the future. It is possible that variables found to be unrelated to discontinuing drug treatment in this study would be predictive of treatment maintenance in a prospective study.

Practically speaking, the findings from this study point out the need for providers to emphasize to their hypertensive patients the need to continue to take their blood pressure medicine and comply with their treatment regimen even when they feel well. A number of studies have demonstrated that compliance can be enhanced through increased provider supervision or vigorous followup or both (4, 6, 17, 20-23).

References

1. Blackwell, B.: Patient compliance. *N Engl J Med* 289: 249-252, Aug. 2, 1973.
2. Caldwell, J. R., Cobb, S., Dowling, M. D., and DeJongh, D.: The dropout problem in antihypertensive treatment. *J Chronic Dis* 22: 579-592, February 1970.
3. Podell, R. N.: Physician guide to compliance in hypertension. Merck and Company, West Point, Pa., 1975.
4. Gillum, R. F., et al.: Improving hypertension detection and referral in an ambulatory setting. *Arch Intern Med* 138: 700-703, May 1978.
5. Nugent, C. A., and Gerlach, B. A.: Hypertension control: the role of screening and referral to community physicians. *Prev Med* 9: 569-577, August 1980.
6. Wilber, J. A., and Barrow, J. G.: Reducing elevated blood pressure: experience found in a community. *Minn Med* 52: 1303-1305, August 1969.
7. Langfeld, S. B.: Hypertension: deficient care of the medically served. *Ann Intern Med* 78: 19-23, January 1973.
8. Roberts, J.: Blood pressure levels of persons 6-74 years: United States, 1971-1974. *Vital Health Stat* [11], No. 203, National Center for Health Statistics, 1977.
9. Schoenberger, J. A., Stamler, J., Shekelle, R. B., and Shekelle, S.: Current status of hypertension control in an industrial population. *JAMA* 222: 559-562, Oct. 30, 1972.
10. Wilber, J. A., and Barrow, J. G.: Hypertension: a community problem. *Am J Med* 52: 653-663, May 1972.
11. Wassertheil-Smoller, S., et al.: Recent status of detection, treatment, and control of hypertension in the community. *J Comm Health* 5: 82-93, winter 1979.
12. Alderman, M. H., and Ochs, O. S.: Treatment of hypertension at the university medical center. *Arch Int Med* 137: 1707-1710, December 1977.
13. Nelson, E. C., Stason, W. B., Neutra, R. R., and Solomon, H. S.: Identification of the noncompliant hypertensive patient. *Prev Med* 9: 504-517, August 1980.
14. Sackett, D. L., and Haynes, R. B., editors: Compliance with therapeutic regimens. Johns Hopkins University Press, Baltimore, 1976.
15. Finnerty, F. A., Jr., Mattie, E. C., and Finnerty, F. A.: Hypertension in the inner city. Part I: Analysis of clinic dropouts. *Circulation* 47: 73-75, January 1973.
16. Kirscht, J. P., and Rosenstock, I. M.: Patient adherence to antihypertensive medical regimens. *J Comm Health* 3: 115-124, winter 1977.
17. Finnerty, F. A., Jr., Shaw, L. W., and Himmelsbach, C. K.: Hypertension in the inner city. Pt. 2. Detection and follow-up. *Circulation* 47: 76-78, January 1973.
18. Gillum, R. F., Neutra, R. R., Stason, W. B., and Solomon, H. S.: Determinants of dropout rate among hypertensive patients in an urban clinic. *J Comm Health* 5: 94-100, winter 1979.
19. Kish, L.: Procedure for objective respondent selection within the household. *J Am Stat Assoc* 44: 380-387 (1949).
20. Alderman, M. H., and Schoenbaum, E. E.: Detection and treatment of hypertension at the work site. *N Engl J Med* 293: 65-68, July 10, 1975.
21. Foote, A., and Erfurt, J.: Controlling hypertension: a cost effective model. *Prev Med* 6: 319-343, June 1977.
22. Gates, S., and Colburn, D.: Lowering appointment failures in a neighborhood health center. *Med Care* 14: 263-267, March 1976.
23. Hypertension Detection and Follow-up Program Group: Therapeutic control of blood pressure in the hypertension detection and follow-up program. *Prev Med* 8: 2-13, January 1979.

SYNOPSIS

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Drug treatment maintenance among a group of 206 hypertensive persons was examined in relation to their health beliefs, knowledge about hypertension, barriers to receiving medical care, health status, and personal characteristics. The data came from

a cross-sectional survey of approximately 800 adults living in Detroit, Mich., which included blood pressure measurements of respondents. Treatment maintenance was defined as continuing to take antihypertensive medication following a diagnosis of hypertension.

Twenty-one percent of the 206 hypertensives interviewed reported discontinuing drug treatment for their high blood pressure without being advised by a physician to do so. The only factor that distinguished dropouts from nondrops was the respondents' perception of their health status; the poorer a person perceived his or

her health to be, the more likely the person was to remain in treatment. Among persons who dropped out of drug treatment, the most common reason given for discontinuing was that they felt well without the medicine.

Given the asymptomatic nature of hypertension, it is suggested that many of those who stop taking medication do so because they see no need to continue therapy. The findings from this study point out the need for providers to emphasize to their hypertensive patients the reasons for continuing on treatment even when they feel well.