Martin J. Bass Allan Donner Ian R. McWhinney

Effectiveness of the Family Physician in Hypertension Screening and Management

SUMMARY

As the initial step of a large randomized trial to test a new strategy of caring for hypertensive patients, the state of blood pressure screening was studied in 34 community-based family practices in southwestern Ontario. The charts of all active adult patients, 20-65 years of age, were reviewed.

At least one blood pressure reading was recorded in the last five years for 71% of the 40,453 patients. The proportion of patients screened increased with age; in each age group, a greater proportion of females than males had been screened. Overall, 8.9% of males and 9.6% of females were labelled hypertensive. The rate of patients so labelled increased with age to a maximum of 30% of the 55-65 age group. More than 50% of patients with diastolic pressures over 105 mm Hg were not taking hypotensive drugs. (Can Fam Physician 1982; 28:255-258).

SOMMAIRE

Comme première étape dans le but d'expérimenter une nouvelle stratégie de soins pour patients hypertendus, on a commencé par étudier les valeurs de la tension artérielle dans 34 pratiques familiales communautaires au sud-ouest de l'Ontario. On a examiné le dossier de tous les patients adultes actifs dont l'âge variait entre 20 et 65 ans.

Au cours des cinq dernière années, 71% des 40,453 patients ont eu au moins une lecture de leur tension artérielle. Le nombre de patients soumis au test de dépistage augmentait selon que le groupe d'âge était plus avancé; une plus grande proportion de femmes que d'hommes ont subi le test dans chaque groupe d'âge. Au total, 8.9% des hommes et des femmes ont été étiquetés comme hypertendus. Le pourcentage de patients ainsi étiquetés augmentait avec l'âge jusqu'à un maximum de 30% dans le groupe d'âge de 55 à 65 ans. Plus de 50% des patients avec des tensions diastoliques audessus de 105 mm Hg ne prenaient pas de médicaments hypotenseurs.

Dr. Bass is an associate professor in the Department of Family Medicine, Dr. Donner is an associate professor in the Department of Epidemiology and Biostatistics, and Dr. McWhinney is chairman of the Department of Family Medicine, at the University of Western Ontario. Reprint requests to: Martin J. Bass, Department of Family Medicine, University of Western Ontario, London, ON. N6A 5C1.

IT HAS BEEN frequently stated that there is a great deal of undetected and uncontrolled hypertension in Canada.[1] Since the majority of primary care is rendered by family physicians, this is indirect criticism of the family physician's ability to screen for and manage hypertension. In this paper we report the state of hypertension detection and care in 34 selected family practices in southwestern Ontario. The study was part of a larger project designed to evaluate a strategy for the detection and management of hypertension in family practice.

Method

All 178 family physicians/general practitioners within a 40 mile radius of London, Ontario, were invited to participate in the project; 87 agreed to take part. Thirty-four physicians who could be pair-matched for location,

practice activity level and length of time in present practice, were chosen to participate in the study. Table 1 shows that participants were more likely to be recent graduates, but similar to all physicians in country of graduation and membership in the College of Family Physicians.

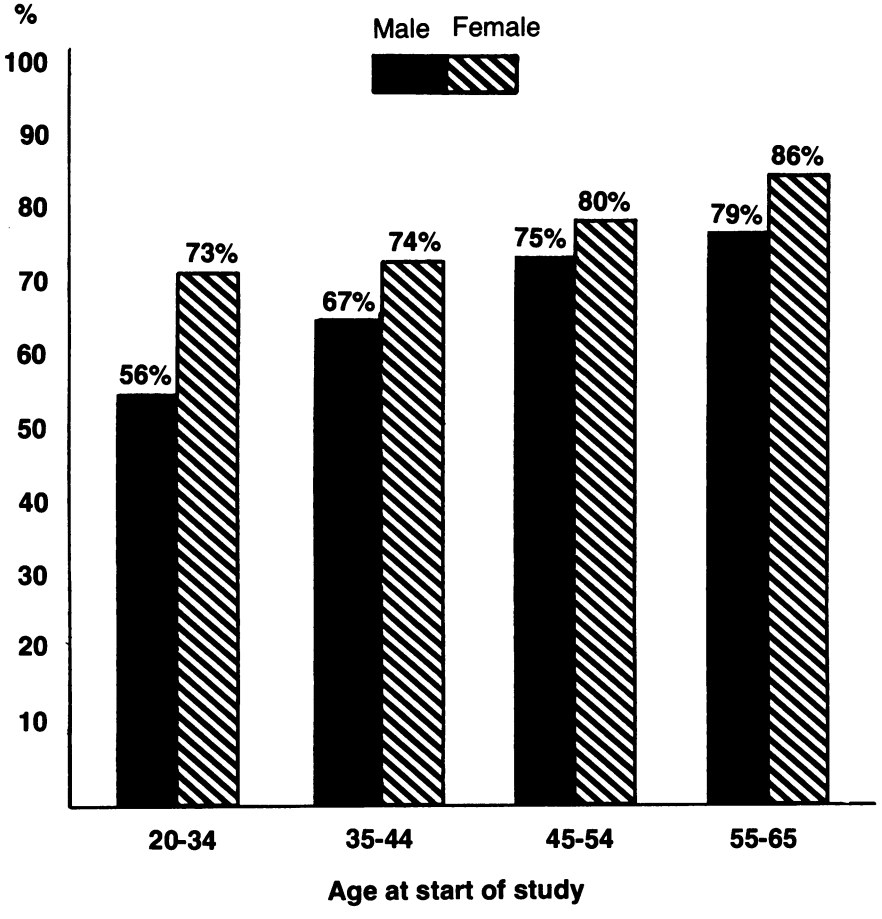
One practice in each matched pair was randomly allocated to an experimental or a control group. In the experimental practices, patients aged 20-65 are being exposed to a hypertension screening and management program.[2] At the end of five years, comparisons will be made between patients in the experimental and control practices concerning morbidity, blood pressure control, and compliance with treatment for hypertension.

In all practices, the patient population was identified in December, 1977, by completing an age-sex register from the practice records. Every patient who had at least one chart entry was considered to be active if he/she or a nuclear family member had visited once in the last two years,[3] and if there was no indication that the patient had moved or died. This definition of an active patient allowed the inclusion of those young and middle-aged males who, while infrequent attenders, nevertheless considered themselves patients of the practice.[4] The office medical record of each active patient was reviewed by a research assistant, who recorded up to two blood pressure readings for the preceding five years and noted whether hypertension had been diagnosed and whether the patient had been receiving a hypotensive drug. All data abstracted were systematically checked to ensure that transcribing inaccuracies were kept below 3%.

A physician checked the records of all patients receiving hypotensive drugs to ensure that they were truly hypertensive, which we established as having two diastolic readings over 90 mm Hg. The only exception to this rule was the rare case of a patient diagnosed as hypertensive before joining the practice, continuously taking hypotensive medication, and having normotensive readings.

Fig. 1

Blood Pressure Screening* in Study Practices by Age and Sex



* blood pressure recorded at least once in preceding 5 years

Results

1. Patient Characteristics

The age and sex distribution of the study population (Table 2) closely resembled that of the census population of the three counties in which participating practices were located.[5] In the study group, there was a slight excess of females aged 20-29 years and a correspondingly lower proportion of people over age 55. In general, these family physicians cared for a representative cross-section of their community.

2. Recorded Blood Pressures

Figure 1 shows an age/sex breakdown of those patients who had at least one blood pressure reading recorded in the five years before the study began.

TABLE 1
Comparative Characteristics of Study Physicians

	Total Number	Average Year of Graduation	Canadian Graduate %	CFPC Member %
Family physicians practicing in area*	178	1960.0	72.5	58.4
Interested in participating	87	1963.6	72.4	66.7
Chosen for study	34	1967.6	79.4	61.8

* excluding fulltime university faculty

TABLE 2
Age and Sex Distribution of Study Population

Age	Male No.	Male %	Female No.	Female %
20-34	8,770	47.6	11,270	51.2
35-44	3,777	20.5	4,094	18.6
45-54	3,272	17.7	3,609	16.4
55-65	2,609	14.2	3,052	13.8
Total	**18,428**	**100.0**	**22,025**	**100.0**

The proportion increased with age and, in each age group, a greater proportion of females than males had been screened. The increase in the proportion screened with age is statistically significant ($P<.001$) for each sex, as judged by a chi-square test for trend.[6] Overall, 28,741 patients (71%) had at least one blood pressure reading recorded in the preceding five years and 22,650 (56.0%) had at least one reading in the preceding two years.

3. *Identification of Hypertension*

The proportion of screened patients in different age groups who were verified as hypertensive is shown in Table 3. A steady increase with age is evident for both males and females. Under age 45, rates of identified hypertension in males tended to be higher than in females, while over age 45, females were more frequently designated as hypertensive. The overall percentages of labelled hypertensives among screened adults aged 20-65 were 8.9% in males and 9.6% in females.

4. *Extent of Hypotensive Drug Use*

Table 4 shows that hypotensive drug prescribing rises steadily with increasing age. At every age the proportion of hypertensive female patients on drugs is slightly higher than the proportion for males. Overall, drugs had been prescribed for 52% of males labelled as hypertensive and 62% of females.

The relationship between the use of hypotensive drugs and recorded diastolic blood pressures is shown in Table

TABLE 3
Proportion of Screened Patients Identified as Hypertensive

Age	Male %	Female %
20-34	4.0	1.6
35-44	8.6	7.1
45-54	17.8	20.0
55-65	25.6	34.7

TABLE 4
Hypertensives on Hypotensive Drug Therapy

Age	Male %	Female %
20-34	37.4	41.7
35-44	46.2	51.8
45-54	59.4	60.1
55-65	65.3	66.8

5. Fewer than 50% of patients with pressures over 105 mm Hg and only 25% of those with pressures over 90 mm Hg were receiving hypotensive drugs. Included in this table are patients who would be receiving these agents for indications other than hypertension.

TABLE 5
Drug Use and Last Diastolic Blood Pressure Level Recorded in Chart

Diastolic BP (mm Hg)	Taking Medication	Not Taking Medication
<90	1,764	23,464
90-104	884	2,430
105+	81	96
Total	**2,729**	**25,990**

Discussion

These selected general practitioners, while showing an interest in participating in the study, were not taking any special measures for the control of hypertension. At the time the baseline data were gathered, no physician had a systematic approach to the detection of hypertension and none had established a patient follow up system. The population attending these physicians was representative of the surrounding population in age and sex distribution. The participating physicians were similar to other physicians in the area in terms of country of graduation and College of Family Physicians membership. However, the participants were, on the average, more recent graduates. This is understandable when one considers the reluctance of a physician near retirement to participate in a five year study. Therefore, pre-World War II graduates who have practiced for more than 35 years are not represented in this study. However, their role in the provision of care in this region is relatively small.

The five year screening rate of 71% was higher than expected. The higher rate may reflect physicians' increased awareness of the importance of detecting hypertension. It also demonstrates that with some extra effort and organization, the potential for total screening of the high risk, over 45 age group could be realized in the family practice setting.

The rates of labelled hypertensives—8.9% for males and 9.6% for females aged 20-65 years—are consistent with other studies when the various definitions of hypertension are considered.[7-10] What is striking is the high rate of patients in the 55-65 year age group having readings in the hypertensive range (25% of men and 33% of women). With the increasing pressure to give medication to all patients having readings over 90 mm Hg,[9] the implications of this finding deserve further consideration.

The drug therapy approach for hypertension leaves much to be desired. The commonly used drugs all have serious side effects and alter normal body function. Since the effects of longterm exposure are unknown, the prospect of having a third of the population, in some age groups, taking these drugs, is not one to be viewed with complacency. This is the time for family physicians to explore non-drug approaches to elevated blood pressure.

The blood pressures in this paper were taken in family physicians' offices by doctors providing patient care. While there was no standardization of technique or opportunity to reduce sources of variability, these data reflect the state of hypertension detection in the practice setting. The tendency for casual pressures to be higher in the office setting is counterbalanced by the physician's preference for lower digit boundaries and the usual practice of retaking elevated pressures after several minutes.[11] Thus the data in this paper are representative of the information used to make clinical decisions.

Many patients with recorded blood pressures over 90 mm Hg were not taking drugs. Considering the state of knowledge in 1977, this was justifiable for those persons having readings under 105 mm Hg. However, more than 50% of patients with diastolic pressures over 105 mm Hg were not taking hypotensive agents. This suggests there is a major problem in managing these hypertensive patients.

Conclusion

Without extra effort or an organized approach, volunteer family physicians had recorded the blood pressure of 71% of their 20-65 year old patients in the course of providing care. Since these physicians were volunteers, our findings may not be strictly generalizable to all Ontario physicians. However, these physicians were similar to other local physicians concerning College of Family Physician membership and country of graduation. The potential for complete population screening by these family physicians is high, with little added cost to the health system. It is in keeping patients' blood pressure under control that the family physician needs assistance. This is the objective of the randomized trial that has been undertaken in the London Hypertension Study.

The high prevalence of hypertension, together with the lower levels at which treatment is now recommended, will mean that unless effective non-drug therapy or preventive approaches are developed, one in three older patients will be taking hypotensive medication. ◉

Acknowledgements

The London Hypertension Study is funded by the Ontario Ministry of Health (DM330). Dr. Donner's work is supported by Health and Welfare Canada. Thanks are extended to Ms. Susan Hoddinott and Dr. Jean Anne Farmilo who meticulously monitored the data collection.

References

1. *Ontario Council of Health: Hypertension. Toronto, Ontario Council of Health, 1977.*
2. *McWhinney IR, Donner A, Bass MJ, et al: Hypertension screening and management in general practice. Prev Med 1978; 7:112.*
3. *North American Primary Care Research Group: Glossary for primary care. J Fam Pract 1978; 7:129-134.*
4. *Boyle R, Rockhold R: An analysis of returning patients in family practice. J Fam Pract 1979; 8:1029-1036.*
5. *Ontario Statistics 1978. Toronto, Ontario Ministry of Treasury and Economics, 1979.*
6. *Armitage P: Tests for linear trends in proportions and frequencies. Biometrics 1955; 11:375-386.*
7. *Silverberg DS, Smith ESO, Juchil B, et al: Use of shopping centres in screening for hypertension. Can Med Assoc J 1974; 111:769-774.*
8. *Baitz T, Shimuzu A, et al: The Hamilton high blood pressure screening project, in Hypertension: A Report of the Ontario Council of Health. Toronto, Ontario Council of Health, 1977.*
9. *Fodor JG, Abbott EC, Rusted IE: An epidemiologic study of hypertension in Newfoundland. Can Med Assoc J 1973; 108:1365-1368.*
10. *Relman AS: Mild hypertension: No more benign neglect. N Engl J Med 1980; 302:293-294.*
11. *Hart JT: Hypertension. London, Churchill Livingston, 1980.*