

The management of hypertension — a study of records in general practice

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SUMMARY. We investigated the management of a group of 322 hypertensive patients by 71 general practitioners in the Lothian Health Board Area by a survey of the general practitioners' records. Eighty-five per cent of patients were diagnosed by the general practitioner and 57 per cent were cared for entirely by him. Two thirds of the patients were women. Hospital referral was more common in men and in patients with high initial blood pressures. One third of patients had only one blood pressure recorded before treatment. The result of treatment as measured by the latest diastolic blood pressure was similar for patients treated by the general practitioner and those referred to hospital, being 100 mm Hg or less in 77 per cent of patients.

Introduction

THE beneficial effects of treating certain categories of hypertension have been established (Veterans Administration Co-operative Study Group on Anti-hypertensive Agents, 1967 and 1970) but little is known about its management in the community. We report here the results of a survey conducted between June and September 1976 into the management of hypertension in general practice, which forms part of a study of the investigation, treatment, and continuing care of hypertensive patients in hospital and general practice.* An earlier study (Fulton *et al.*, 1979) reviewed opinions amongst general practitioners on several aspects of care and the present work records current practice.

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Methods

The same group of practitioners who took part in the initial stage of the opinion study (Fulton *et al.*, 1979) was invited to co-operate in the present work. Seventy-seven doctors, the complete complement of 16 practices, were approached and 71 (92 per cent) agreed to co-operate. This was not therefore a randomly selected group.

Each doctor was asked to list the first five patients whom he considered to have hypertension, regardless of whether or not they were on antihypertensive drugs, who attended the surgery for any reason after a specific date. Only those patients who had been under the care of the practice since the diagnosis was made were included. Patients attending for a repeat prescription were eligible, but pregnant women and patients under 16 years were excluded.

A practice average of five patients per full-time partner was accepted. Three hundred and twenty-two patients were finally included, three less than the expected number after allowance had been made for part-time general practitioners. The information extracted from the general practitioners' records and letters received after hospital visits was recorded on standard forms and included: the patient's age and sex, blood pressure readings, the date when a diagnosis of hypertension was first made and by whom, whether or not he was referred to hospital, and the investigations undertaken by the general practitioner and the hospital. The drugs prescribed and the type and frequency of follow-up visits were noted. The level of the latest blood pressure was used as a measure of the outcome of care. We present blood pressure results mainly as diastolic recordings. Patients managed by the general practitioner are described as general practitioner cases and those referred to hospital as hospital referrals.

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Results

Two hundred and seventy patients (84 per cent) were identified at repeat attendances, 19 (six per cent) were newly diagnosed and 33 (10 per cent) were found when attending for repeat prescriptions. There were 110 men and 212 women, with approximately twice as many women as men in each age group. The mean ages were 58.6 years for men and 58.4 years for women.

The majority (75 per cent) of patients had been diagnosed since 1970. The initial diagnosis of hypertension had been made by the general practitioner in 85 per cent of cases; only four patients (one per cent) had been detected by screening programmes.

The distribution of highest (or only) pre-treatment diastolic blood pressure recordings by age is shown in Table 1. There was no significant difference in initial blood pressure levels (systolic or diastolic) between men and women, but they were significantly higher in the older age groups. One hundred and seventeen patients (36 per cent) had one blood pressure recorded before therapy was started and 123 (38 per cent) had three or more recorded. Three patients had no blood pressure recording in their notes.

Hospital referral

One hundred and three patients (32 per cent) were referred to hospital and 184 (57 per cent) were managed entirely by the general practitioner. The remaining 35 patients had attended hospital other than by specific general practitioner referral—in most cases they had been found to be hypertensive while attending hospital for other reasons. Therefore, where the decision on management rested with the general practitioner he chose to manage 64 per cent of patients himself.

Table 1. Highest recorded diastolic blood pressure (mm Hg) by age.

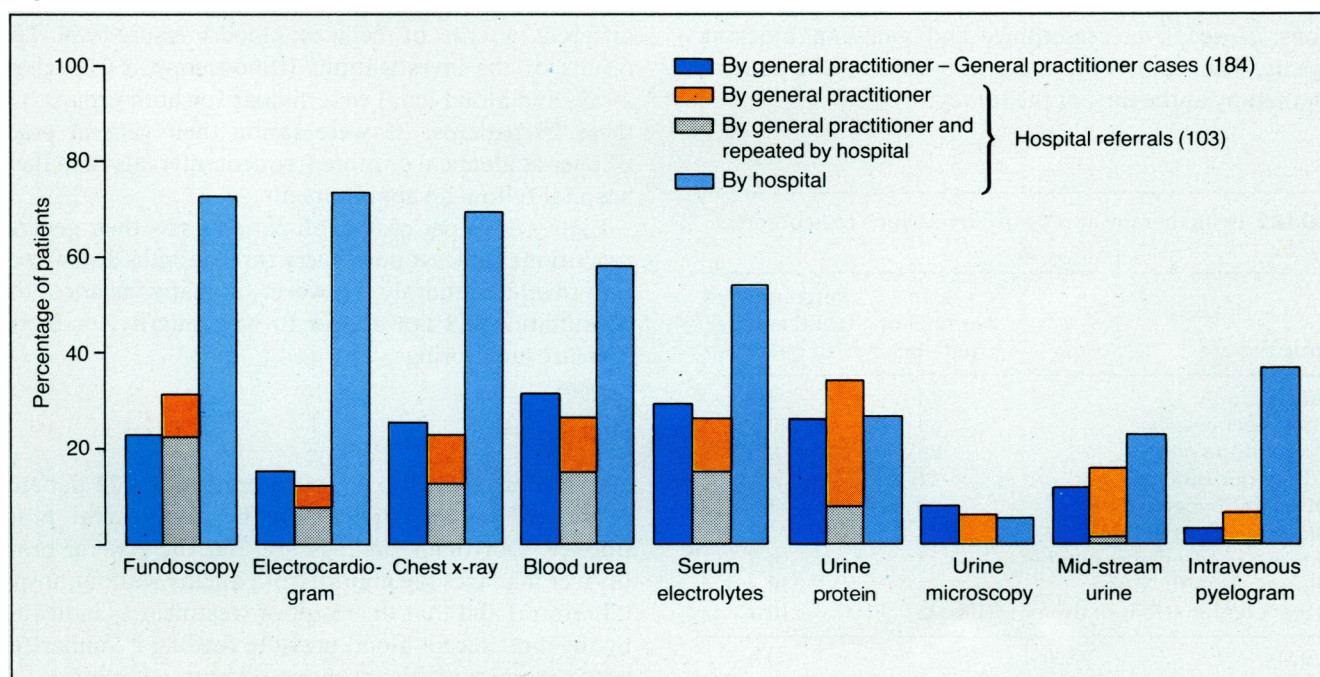
Blood pressure (figures are given as percentages)						
Age (years)	<100	<110	<120	<130	≥130	Total number of patients
<50	25.0	37.2	25.5	15.8	15.3	72
50 to 59	16.7	21.6	28.4	36.6	29.2	93
60 to 69	25.0	29.4	29.4	29.3	29.2	93
70 and over	33.3	11.8	16.7	18.3	26.4	61
Total number of patients	12	51	102	82	72	319

The decision to refer a patient to hospital was influenced by a number of factors including the initial blood pressure; 78 per cent of patients with a diastolic pressure of less than 110 mm Hg were general practitioner cases but only 34 per cent of those with a diastolic pressure of 130 mm Hg or more. Men were referred more often than women but there was no association between hospital referral and age. The longer the interval since diagnosis the more likely was referral to hospital. The significance of these three factors was demonstrated by logistic discriminant analysis which was used to separate inter-related variables (Day and Kerridge, 1967; Truett *et al.*, 1967).

Investigations

For the majority of investigations the only information abstracted from the records was whether or not they had been performed. However, the results of the tests were

Figure 1. Proportion of patients who had investigations performed within six months of diagnosis.



recorded for fundoscopy, chest x-ray, ECG, and blood urea.

The factor which had the greatest influence on the number of investigations performed within six months of the initial diagnosis was hospital referral (Figure 1). It led to more intensive investigation averaging 4.2 investigations per patient compared with 1.7 in general practitioner cases. The number of investigations done by the hospital was not related to age or to the blood pressure level before treatment. The amount of investigation by the general practitioner of general practitioner cases and of hospital referrals was very similar (Figure 1). Patients with abnormal findings in their tests were more frequently referred, but only for fundoscopy was this association statistically significant. In general practitioner cases men had more investigations than women, and fewer were performed on more recently diagnosed patients. Seventy-seven (42 per cent) of this group had no investigations recorded in the notes and 47 (25 per cent) had three or more.

Treatment

Thirty patients were not and never had been under treatment with antihypertensive therapy; they were younger and had lower initial blood pressures than those who had received treatment at some stage. At the time of the study 51 patients were receiving no specific treatment. In general, treatment was started very soon after diagnosis, 36 per cent of patients starting on the same day (almost all of whom had only one blood pressure recorded), and a further nine per cent within a week. The interval between diagnosis and starting drug therapy was unrelated to the level of the initial blood pressure.

The initial choice of therapy was influenced by the year of diagnosis. The use of beta blockers had increased with time, whereas there were very few prescriptions of sedatives, reserpine, and ganglion blocking agents. Table 2 lists the drugs in use in the 271 patients on therapy at the time of the survey.

Table 2. Drug therapy at time of survey (June to September 1976).

Drug therapy	Number of patients	Percentage of total number of patients
Diuretic only	74	27.3
Beta blocker only	55	20.3
Methyldopa only	26	9.6
Adrenergic blocker only	11	4.1
Other antihypertensive	4	1.5
Diuretic + beta blocker	32	11.8
Diuretic + adrenergic blocker	13	4.8
Diuretic + methyldopa	28	10.3
Other combinations of drugs	28	10.3
Total	271	100.0

Results of treatment. The latest blood pressure recorded in the notes was used to assess the results of treatment. The means of the initial and most recent diastolic blood pressures for those receiving and not receiving treatment are shown in Table 3. Both groups show a significant fall. Twenty-three per cent of patients had a latest diastolic pressure of over 100 mm Hg and 6.5 per cent of over 110 mm Hg.

There was a significant correlation ($r = 0.72$) between the initial pressure and the observed fall with the greatest reductions occurring in patients with the highest initial pressures. All patients with initial pressures over 130 mm Hg were currently receiving antihypertensive therapy (apart from one where a fall from 150 to 85 mm Hg was recorded). The latest blood pressure was unrelated to age and sex and there was no difference between general practitioner cases and hospital referrals.

Table 3. Means of initial and most recent diastolic blood pressures for patients receiving and not receiving treatment.

	Diastolic blood pressure (mm Hg)		p value
	Initial	Latest	
Treated patients (271)	118.9 (SD 13.6)	96.8 (SD 11.5)	<0.001
Not currently treated (51)	108.9 (SD 10.6)	97.0 (SD 11.2)	<0.001

SD = Standard deviation.

Follow-up

Twenty-eight (27 per cent) of the hospital referrals were still attending hospital as outpatients, and the majority (58 per cent) were seen at least once every three months.

The patients still attending hospital were younger than those discharged to general practice, but were not different in terms of the latest blood pressure level. The results of the investigations (fundoscopy, ECG, chest x-ray, and blood urea) were similar for both groups. Of these 28 patients, 23 were seeing their general practitioner at identical or more frequent intervals than their hospital follow-up appointments.

Eighty-three per cent of all patients saw their general practitioner at least once every three months and 47 per cent saw him monthly. However, in many instances the consultation did not appear to be primarily for blood pressure monitoring.

Discussion

We have investigated the management of 322 patients considered to be hypertensive by the general practitioner. Our main findings are that the general practitioner manages the majority of patients without hospital referral and that the result of treatment as indicated by the most recent blood pressure reading is similar for both general practitioner cases and hospital referrals.

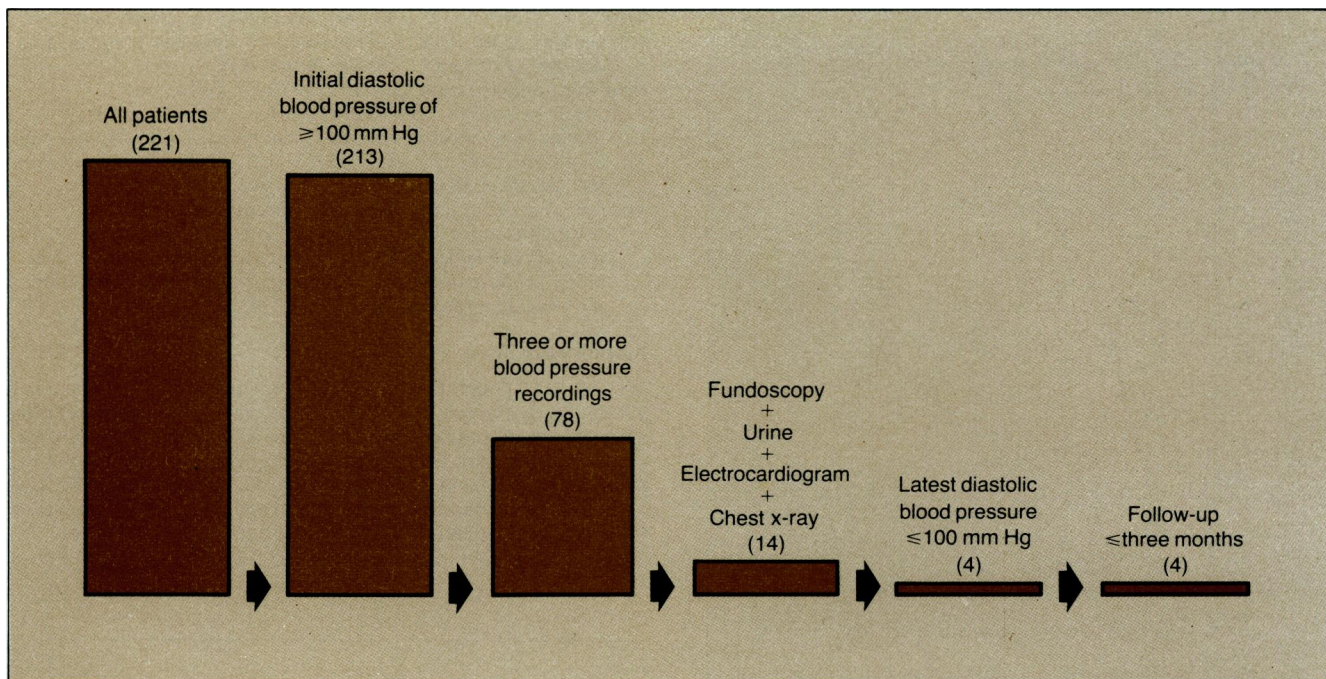


Figure 2. Number of patients who were investigated and managed according to criteria suggested by the Journal of the Royal College of General Practitioners (1976).

Two thirds of the group were women. Hypertension is known to be more common in women over the age of 40 than in men but, in addition, blood pressure is often measured only when patients have symptoms (Barlow *et al.*, 1977) and women visit their general practitioners more often than men (RCGP, 1974).

Hart (1975) considers that three separate blood pressure readings are essential before the diagnosis of hypertension can be confirmed and has shown that a single reading leads to a misleadingly high prevalence (Hart, 1970). In over one third of general practitioner records only one blood pressure reading had been entered before beginning treatment. A recent editorial (*Journal of the Royal College of General Practitioners*, 1976) recommended that certain tests be performed on all hypertensive patients and suggested a target diastolic blood pressure of less than 100 mm Hg with a follow-up at least once every three months. Figure 2 shows how these criteria were satisfied in 221 patients diagnosed since 1970.

Any reduction in blood pressure is considered to be worthwhile in moderate or severe hypertension (Veterans Administration Co-operative Study Group on Antihypertensive Agents, 1967 and 1970; Hamilton *et al.*, 1964). A substantial reduction in blood pressure occurred in the group as a whole, reflecting the fall in the majority of patients whether or not they were receiving antihypertensive therapy. As would be expected, the greatest reduction in pressure was observed in those patients with the highest initial recordings. It has been known, and recent work has confirmed, that a

substantial fall in pressure occurs in patients treated with a placebo (Medical Research Council, 1977) or merely under surveillance by a clinic and given regular health examinations (Glasunov *et al.*, 1973). In the light of these findings and the knowledge that one blood pressure reading is often misleading, it seems probable that a proportion of patients currently taking antihypertensive drugs need not be doing so. The opinion survey (Fulton *et al.*, 1979) asked what was regarded as a satisfactory target blood pressure in patients aged 40 to 60 years. Figure 3 compares the answers with the latest diastolic recordings in the 142 patients in this age group.

The prescription of drugs such as rauwolfia derivatives, sedatives, and tranquillizers, the use of which is described in studies undertaken in the early 1970s (Barlow *et al.*, 1977; Heller and Rose, 1977) was rare. As suggested by the opinion survey (Fulton *et al.*, 1979), a diuretic alone was most frequently prescribed (27 per cent of patients) followed by a beta blocker alone (20 per cent of patients).

Conclusions

Our study was an attempt to clarify the management of hypertension in general practice, not to compare hospital and general practitioner care. It has shown that the general practitioner is willing to care for the majority of patients himself, to undertake a certain amount of investigation, and to use up-to-date therapy. The result of his treatment in terms of the latest blood pressure is comparable with that of the hospital.

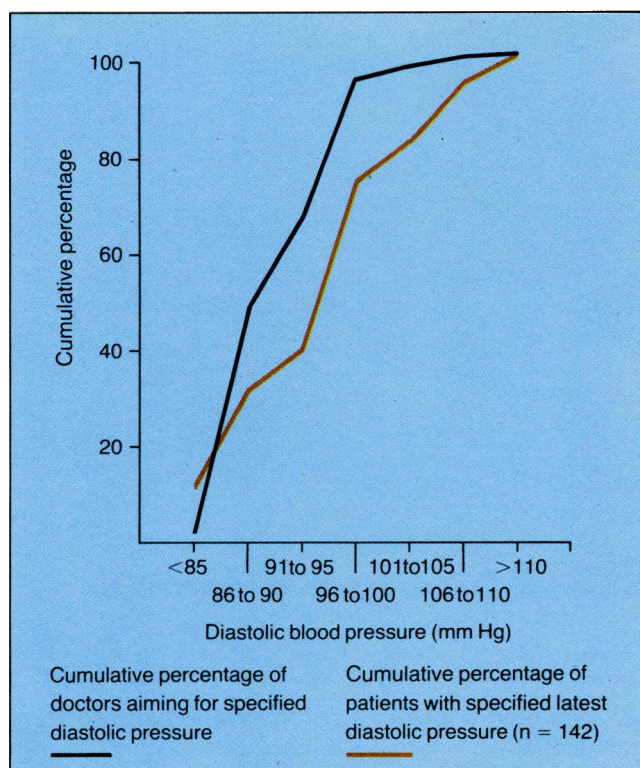


Figure 3. Aims and results of treatment in patients aged 40 to 60 years.

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Results of coronary artery bypass surgery

Seven hundred and sixty-eight men aged under 65 with angina pectoris, at least 50 per cent obstruction in two or more major vessels, and a left ventricular ejection fraction ≥ 0.5 took part in a prospective randomized trial of the effect of coronary artery bypass on prognosis. Three hundred and seventy-three patients were allotted to medical and 395 to surgical treatment. There was no significant difference between the two groups in the distribution of variables recorded at the time of randomization. One 'surgical' patient was lost to follow-up. Twenty-six 'surgical' patients did not undergo surgery and 50 'medical' patients were operated on. All these 76 patients were retained in their original treatment groups for the analysis.

At two years there was no significant difference in mortality between the two groups. A significant difference was, however, found in the subset of patients with three vessel disease, survival being significantly better for surgical patients. Operative (in-hospital) mortality was 3.6 per cent in all operated patients and 1.5 per cent in the last third.

On average, 1.9 grafts per patient were inserted in the two vessel disease subgroup and 2.4 grafts per patient in the three vessel disease subgroup. Graft patency rate was 90 per cent within nine months and 77 per cent between nine and 18 months after surgery. Symptomatic improvement was significantly better and deterioration less in the surgical group.

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