North Hammersmith stroke prevention project

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SUMMARY The North Hammersmith stroke prevention project was designed to reduce the number of deaths from stroke in this health district by improving the detection of hypertensive patients and thereafter reducing the default rate from treatment. Starting in May 1979 general practitioners in the district were asked to register hypertensive patients over the age of 40 so that the proportion of such patients in each practice was known and could be compared with the average for all practices. This confidential information was fed back every year to the individual general practitioners so that they could assess their performance. Forty of 44 eligible general practitioners agreed to participate and 29 proceeded to register patients. Over a three year period 1006 patients were registered, representing 4.3% of the project population over the age of 40. Individual practice registration rates ranged from 1.1% to 9.1%. Sixty five per cent of the registered patients were women, 34% of all registrations were in the age group 60–69, 31% in the group 50–59, 12% in the group 40–49, and 23% in the group over 70. The average blood pressure before treatment was 190/111 mm Hg. After one and two years the patients were contacted or their notes examined to ensure that they were still receiving treatment. Persistent default from treatment occurred in under 12% over the three year period.

The North Hammersmith stroke prevention project is a community based study involving local general practitioners that aims to improve the care of hypertension in the former North Hammersmith health district, now known as the Hammersmith Special Health Authority.

Hypertension is a common condition. It may remain undetected or untreated in up to two thirds of patients¹ and even when diagnosed, good blood pressure control may be obtained in only about 10–20%.^{2,3} Moreover, it has been suggested that the main problem is not simply detection of the condition but detecting the condition at a site where continuous treatment is available.¹

The objectives of the North Hammersmith project are, firstly, to increase detection by the person most able to provide medical care—that is, the general practitioner—and, secondly, to reduce default from treatment. Up to 20% of patients default during the first year of treatment.⁴ In achieving these objectives it is hoped to reduce mortality from stroke in this district in comparison with the other 32 London health districts.

Methods

The project was launched in May 1979 with a meeting to which all general practitioners in the district were invited. A general practitioner was considered eligible to take part if more than 25% of his patients lived in the North Hammersmith district and if he intended to remain in the practice for at least one year. Practitioners who did not attend the meeting were contacted by post, telephone, or a personal visit or a combination of these. The objectives and methods of the project were outlined and participation encouraged. Doctors agreeing to take part were offered an age-sex register of all patients on their lists aged over 40.

To encourage case finding a system of case registration was introduced. Each general practitioner who agreed to participate was asked to register all hypertensive patients under his care by filling in a form asking for details such as age, race, date of diagnosis, and pretreatment blood pressure. Diagnostic criteria for hypertension were not defined by the research team. Moreover, the registration of a case as “under care for

hypertension" did not apply only to patients taking drugs but included patients receiving close supervision and dietary advice.

When a general practitioner decided to participate in the project his consent was also obtained to gain access to his practice list at the local family practitioner committee, so that an age-sex register for patients aged over 40 could be constructed. The registration rate for hypertensive patients was calculated as the percentage of patients aged over 40 who had been registered as having hypertension. General practitioners were free to register hypertensive patients aged under 40, but these were not included in the statistics.

At the end of each year an annual general meeting was held to which all general practitioners were invited whether or not they were participating in the project. At the meeting they were informed of the progress of the project, of their confidential individual registration rates for hypertensive patients, and also of the average rate for the district. Doctors with low registration rates were thereby encouraged to discover and register more hypertensive patients. The age-sex registers were also presented to the doctors at this meeting.

The problem of default from treatment was approached by a follow up programme. Two alternatives were offered to the general practitioners. The first was to write, on their behalf, to all their registered patients asking (1) whether the patient was still taking the advised treatment and (2) when the patient had last had his or her blood pressure measured. The second alternative was to send a list of registered patients to the general practitioner who in turn informed the research team of any patients who had defaulted.

Results

Table 1 gives details of the general practitioners who were contacted in the North Hammersmith district. Initially, 40 out of 44 eligible general practitioners agreed to take part in the project. Twenty nine (66% of all those eligible) have since registered patients.

Table 1 *Number of general practitioners with any patients in the former North Hammersmith district (in 1979)*

Doctors excluded:			
With <25% residing in district	16		
Intending to retire within one year	4	20	
Doctors did not agree to take part	4		
Doctors did not register patients	11		
Doctors registered patients	29*	44	
Total		64	

*Twenty nine doctors but only 28 practices.

Doctors agreed to take part as follows: seven at the first annual general meeting, nine after details of the project were posted to them, 15 after a personal visit to their surgeries, and nine after discussions with their colleagues. Six of the 11 who then failed to register any patients withdrew from the project in the first six months and the other five have been contacted regularly but have not collaborated to date. Once a practitioner had decided *not* to participate he was contacted only once a year in order to invite him to the annual general meeting. On average, participating practices have been contacted once a year by personal visits, once by telephone, and four times a year by letter.

Table 2 shows the registration details by practice for April 1982. Data from each practice are presented together with the practice size, the age, sex, and race distribution of the registered patients; and the average last untreated blood pressure. The registration rates ranged from 1.1% to 9.1%. More women were registered than men (65% against 35%), 14% were Negro, and 34% were 60-69. Thirty one per cent of registered patients were aged 50-59, 23% were over 70, and only 12% were 40-49. The rates were not related to practice size, and high rates were not statistically associated with the registration of patients with lower untreated blood pressures. High registration rates were not significantly associated with the registration of a higher proportion of women, nor with an increased number of the elderly, nor with the proportion of negroes. Table 3 gives the registration rates according to age for both sexes separately. The highest registration rate was for women aged 60-69 and lowest for men aged 40-49.

The untreated blood pressures leading to registration were of interest, and these results are broken down in table 4 according to whether the systolic pressure was less than 160 mm Hg, more than or equal to 180 mm Hg, or between these limits. Similarly, the results are presented for diastolic pressures <90, 90-94, 95-99, 100-104, and ≥ 105 mm Hg. As expected very few older patients were registered as having a systolic pressure of less than 160 mm Hg and only 8% of men and 6% of women aged 40-49 had this level of pressure. Similarly, only 2% of patients were registered with diastolic pressures less than 90 mm Hg, although 8% of men and 9% of women had untreated diastolic pressures less than 100 mm Hg.

The figure gives the overall number of registrations for the general practitioners taking part in the project. Registrations have increased gradually and by the end of April 1982, 1080 patients had been registered. Seventy four registered patients had died or left the district, leaving 1006 currently registered, that is 4.3% of the project population.

Table 2 Details of the 28 practices who have been registering patients. All data refer to patients aged over 40

Practice No	No of patients	No of registered	Registration (1/100 rate)	Percentage of registered patients by age group				Percentage		Average blood pressure before treatment	
				40-49	50-59	60-69	>70	Women	Negro		
1	578	26	4.5	19	31	27	23	62	15	190/115	
2	799	71	8.9	23	30	35	13	54	13	195/111	
3	167	6	3.6	0	50	50	0	100	17	180/110	
4	852	14	1.6	21	21	50	7	57	14	192/114	
5	398	10	2.5	20	30	50	0	60	20	200/115	
6	1154	64	5.6	14	36	34	16	58	32	188/112	
7	1066	72	6.8	22	33	26	18	49	32	192/107	
8	797	63	7.9	19	22	38	21	68	26	192/113	
9	1294	103	8.0	9	33	32	25	74	8	190/113	
10	508	37	7.3	11	30	38	22	75	14	191/112	
11	1449	35	2.4	6	34	46	14	54	3	194/112	
12	936	85	9.1	11	38	25	27	54	5	204/117	
13	1048	19	1.8	11	21	58	11	26	6	184/108	
14	1251	40	3.2	15	43	33	10	65	58	184/116	
15	1071	21	2.0	5	38	33	24	71	0	188/111	
16	1056	52	4.9	14	25	33	27	53	10	172/101	
17	846	48	5.7	4	29	38	29	77	6	186/109	
18	1183	19	1.6	16	26	26	32	72	6	192/110	
19	135	2	1.5	0	0	0	100	100	0	-	
20	1498	35	2.4	3	22	44	31	53	6	186/112	
21	98	3	3.1	33	33	33	0	33	33	193/123	
22	622	10	1.6	20	30	20	30	90	0	206/114	
23	239	10	4.2	10	60	20	10	60	20	193/113	
24	1519	53	3.5	4	25	47	25	65	2	190/107	
25	705	16	2.3	6	25	50	19	69	7	184/111	
26	1169	58	5.0	17	29	43	10	55	29	189/111	
27	763	32	4.2	13	25	22	41	50	3	196/113	
28	179	2	1.1	0	50	0	50	100	0	195/108	
Average result		835	36	4.2	12%	31%	34%	23%	65%	14%	190/111

DEFAULT FROM ANTI-HYPERTENSIVE TREATMENT

Thirteen general practitioners chose the method of follow up whereby the research team wrote to the registered patients. The remaining 15 practitioners were each supplied with a list of their registered patients for their own use. Follow up was not started until the end of the first year of the project—that is, May 1980. During the next two years 659 letters were sent to the patients on the anniversary of their

Table 3 Patients registered with hypertension by age and sex, expressed as a percentage of the project population

	Age of patient							
	40-49		50-59		60-69		>70	
Sex	M	F	M	F	M	F	M	F
No regd	58	60	115	173	130	206	54	152
Total No	3417	3157	3116	3221	2307	2775	1677	2997
%	1.7	1.9	3.7	5.4	5.6	7.4	3.2	5.1

Cumulative number of patients registered with hypertension during the first three and a half years of the project.

Table 4 Percentage of untreated systolic blood pressures in three ranges and percentage of diastolic pressures in five ranges for men and women aged 40-49, 50-59, 60-69, and both over 70 and over 40 years

Age (years)	Blood pressure (mm Hg)							
	Systolic			Diastolic				
	<160	160-179	≥180	<90	90-94	95-99	100-104	≥105
Men								
40-49	8	42	50	2	-	4	6	88
50-59	4	20	76	3	2	1	21	72
60-69	8	18	74	1	1	5	21	71
≥70	3	10	87	3	3	7	17	70
≥40	6	22	72	2	2	4	17	74
Women								
40-49	6	39	56	-	2	4	30	65
50-59	4	27	70	3	4	4	14	75
60-69	2	15	83	2	4	2	14	78
≥70	1	16	83	1	6	2	15	75
≥40	3	22	75	2	4	3	17	75

registrations. Patients registered before April 1980 were contacted twice and those registered between April 1980 and April 1981, once. We received 548 replies (83% response rate); of these, 41 (7%) said that they were no longer taking their tablets. The general practitioners who checked their own patients were asked to report on 145 patients in 1981 and 170 patients in 1982; 233 replies were received (74%), 28 (12%) patients has defaulted from treatment.

Discussion

There was a good response by the general practitioners to the project with only 10% of the general practitioners refusing to take part. A further 14% withdrew, however, in the first six months. Registrations have increased steadily over the first three years of the project and now stand at 4.3% of the over 40s. About 3% of patients over this age have diastolic pressure sustained at or above 105 mm Hg and 5% over 100 mm Hg. There is good evidence that patients with a sustained diastolic pressure over 105 mm Hg should be treated⁵ and some evidence that all those under age 69 and with diastolic pressures more than 99 mm Hg should be treated.⁶ The overall registration rate of 4% superficially suggests that most patients have been registered. Eleven out of 28 practices, however, registered less than 3% of cases and cannot be considered to have registered all their hypertensive patients. Moreover, the low rates were balanced by practices with high registration rates who were presumably treating more patients than necessary. Registration rates were particularly high in women aged 60-69 (7.4/100), where the evidence for a beneficial effect

of treatment is only suggestive and not conclusive. Elderly women, however, are responsible for most deaths from stroke. The changes in death rate in the North Hammersmith district and the other London health districts will be the subject of a separate report when the final figures are available.

Default from antihypertensive treatment often poses a problem in the effective management of hypertension. In our follow up only 7% of 548 replies stated that they no longer took their drugs, and an unknown number of these would have stopped taking drugs with the agreement of their general practitioners. The low rate of default may have been to our providing a stimulus to go back to the general practitioner. Certainly, our postal inquiry sometimes led to a prompt visit to the surgery. When a list of registered patients was sent to the doctor, however, the default rate also appeared low—in the region of 12% over two years.

If the North Hammersmith stroke prevention project should succeed in reducing deaths from stroke it may prove to be very cost effective. There was no screening and the costs were about £10 000 a year. Although this research exercise was heavily subsidised in terms of the free time expended by two of us, the supervision of the project should be well within the capability of every district community physician or other specialist in public health. If such an exercise was accepted as the proper duty of such a person then the costs would consist mainly of computing expenses which, in the case of the present project, were subsidised by the University of London. In the future, however, computing costs may fall and not prove too great a burden on the health service. Moreover, the age-sex registers have

uses other than the registration of hypertensive patients.

We await the final 1981 stroke death rates for North Hammersmith before making a definite proposal that this project should be extended to other districts. The recent industrial action by registrars has delayed the publication of these figures but a preliminary analysis suggests that, in women, the age-standardised stroke mortality for ages 45–74 has fallen more in the North Hammersmith district than in any other west London district.

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