

Outpatient clinic referrals and their outcome

F M SULLIVAN

T HOARE

H GILMOUR

SUMMARY. A cohort of 392 patients referred to six outpatient clinics by general practitioners during 1987 with diagnoses of rheumatoid arthritis, osteoarthritis, peripheral vascular disease, psoriasis or eczema, were studied from the time of their first attendance until up to two years later. Six consultant clinics were studied in the three specialties: rheumatology, vascular surgery and dermatology. For each specialty a clinic in both a teaching hospital and a district general hospital were included. The cohort members were predominantly middle-aged or elderly people, with a greater proportion of women, except at the vascular surgery clinic where 65% of patients were men.

The 392 patients made a total of 936 visits (median two, range one–eight) during the study period; 91 patients were still attending up to two years after the first visit. Patients referred by their general practitioner for therapy were less likely to be discharged than those referred for other reasons. The principal reason for continuing attendance as perceived by patients, general practitioners and hospital doctors was the necessity for consultant supervision, although agreement was far from complete in individual cases. Junior staff tended to see a higher proportion of patients at follow-up visits than did consultants, and were found to have lower discharge rates than consultants. Analyses of data showed that at the first visit, diagnosis, disease severity and the grade of doctor seeing the patient in the clinic was significantly associated with patient discharge at the $P < 0.05$ level of significance. Patients considered that their visits had produced improvement in their condition in 38% of cases.

Although in most outpatient clinics the ideal of consultant review of all cases at every visit cannot be met, it might still be possible for consultants to retain control over the clinic discharge policy. To help ensure that continued outpatient clinic attendances are appropriate; casenote review with junior staff at the end of a clinic could usefully be performed on patients making a third or subsequent visit.

Keywords: Referral to hospital for investigation; continuity of patient care; outpatient care; frequent attenders.

Introduction

GENERAL practitioners refer one in five of the patients they see each year¹ and each new outpatient referral generates a mean of 4.2 outpatient attendances for the acute specialties.² With approximately 40 million outpatient clinic attendances in the United Kingdom every year, costing £1200 million in 1990,³ the revenue and workload implications of continuing attenders are obvious. In the current debate about

efficiency in the National Health Service much has been written about the variability in general practitioner referral rates.⁴⁻⁷ Much of the blame for increasing delays within the outpatient sector has been placed upon the general practitioners who make a high number of referrals. However, there is another important factor to be considered: many clinics have long waiting lists because of the number of return visits being made; this figure may be between 60% and 90%.^{8,9} These include patients who have recently been referred, and who are still under investigation or having their treatment planned. It also includes those who are continuing attenders — patients who continue to attend the outpatient clinic for months or years after their original referral. This may be entirely appropriate for some patients, for example those whose 'clinical state demands resources only available in a hospital setting'.¹⁰ In other situations there may be good reasons for specific general practitioner¹ or patient requests¹² that continuing care be transferred to the hospital. The importance of the subject lies in the less acceptable reasons which other investigators have uncovered: consultants' lack of confidence in general practitioners,¹³ poor interprofessional communication,¹⁴ and the low discharge rate of junior hospital doctors.¹⁵

In some clinics, research or educational purposes¹⁶ have been cited as important reasons for long-term outpatient clinic attendance. In addition to the clinical aspects of the problem there are non-clinical factors which may have a powerful influence upon a patient's decision to continue attendance at clinics, such as the distance a patient has to travel, or his or her employment status.

Although the numbers of patients which general practitioners refer to hospital has been slowly increasing because the number of general practitioners is rising, the number of new referrals per general practitioner is in fact static. The rise in consultant numbers has been more rapid so more consultants are seeing fewer new referrals per consultant.¹⁷ The status of general practice has been slowly rising in recent years and it is now the most popular career choice for medical graduates.¹⁸ With the rise in standards more general practitioners wish to resume the long-term management of many of their patients' long-term health problems¹⁹ believing that they are in a unique position to do so when the need for specialist opinion has passed.

Until recently, studies in this area have been limited to single specialty areas, such as general surgery,²⁰ hypertension,²¹⁻²³ or orthopaedics.²⁴ Others have investigated only a few possible reasons for continuing attendance, such as the opinions of doctors and patients,²⁵ cost considerations,^{26,27} detection of complications²⁸ and the role of junior staff.¹⁵ There is obviously a great difficulty in deciding which of these attendances is appropriate, a difficulty shared by many investigators of clinical problems.²⁹ This cohort study describes the experience of new referrals to three specialties — rheumatology, vascular surgery and dermatology.

Method

The study cohort was chosen to represent a population of patients with conditions which general practitioners commonly refer to consultant outpatient clinics. In each of the diagnostic categories some patients are managed solely by either general practitioners or consultants and some have shared care. The study subjects were patients with the diagnoses of rheumatoid arthritis, osteoarthritis, peripheral vascular disease, psoriasis or

F M Sullivan, PhD, lecturer; and T Hoare, BSc, research assistant, Department of General Practice, University of Glasgow. H Gilmour, MSc, lecturer, Department of Public Health and Statistics, University of Glasgow.

Submitted: 17 August 1990; accepted: 8 May 1991.

© *British Journal of General Practice*, 1992, 42, 111-115.

eczema. All consultant clinics in the three specialty areas in Glasgow were stratified according to the Common Services Agency categories³⁰ and one clinic in each specialty was chosen using a random number table with one example in each of the two categories 'large general major teaching hospitals covering a full range of services' and 'general hospitals with some teaching units'.

During 1987 all new referrals by general practitioners to these clinics were screened by two research assistants. If the referral letter suggested the possibility of one of the study diagnoses the patient was asked to participate. These patients were asked to complete a questionnaire containing both demographic and attitudinal questions. In addition, the extent of the patient's disability was estimated using appropriate measures of disease severity — a health assessment questionnaire³¹ for patients at the rheumatology clinic, reported walking distance for patients for the vascular surgery clinic, or the psoriasis disability index³² for those at the dermatology clinic. The possible range of scores were 0–30 on the health assessment questionnaire; 0–70 on the psoriasis disability index; and a patient being unable to walk, to being able to walk 440 yards on the reported walking distance. Scores for each disability measure were ranked in quintiles, with one indicating mild disease and five indicating severe disease. The diagnosis given by the consultant to whom the patient had been referred confirmed whether the patient was suitable for the study. If the patient was seen by a junior doctor at the first visit, the consultant's diagnosis was sought. Those patients with a suitable study diagnosis as confirmed by the consultant, and who agreed to continue in the study were asked to complete further similar questionnaires at subsequent visits.

The reasons given for continuing attendance were selected from a partially closed question derived from earlier work in this area^{11,14,33} and modified by our own pilot study of 67 unselected outpatients in waiting areas. Costs to the patients were estimated in terms of distance travelled as reported by patients and the mode of transport used and time missed from work by the patient and/or a companion.³⁴ Subjects were sent a final postal questionnaire within two weeks of stopping attendance and they were asked whether they thought their condition had changed during their outpatient clinic attendance.

The clinicians who saw the patients were also asked to complete similar questionnaires about the assessment of the patients' clinical state and the reason (if any) for continuing attendance at each visit. The referring general practitioners also filled out an assessment after each visit and were asked whether they agreed with the decision to discharge or retain the patient. The outcome of each visit was noted at each attendance or broken appointment (up to two further appointments were sent to

defaulters). An estimate of hospital costs was made from Scottish Home and Health Department figures as were ambulance costs.³⁰ Rates of admission to hospital from the outpatient clinics were also studied.

The research assistants visited the six clinics every week during 1987 and 1988 to assist with the distribution of the self-administered questionnaires. At the end of the study period the medical notes of each patient entered into the cohort were reviewed for missing data and to confirm data found on the questionnaires. Reported deaths and otherwise unexplained study dropouts were sought in the Scottish register of births, deaths and marriages.

Continuing attenders were defined as those patients in the upper quintile of visits made (those attending for four or more visits). All data were coded prior to entry onto an Excel database on a microcomputer for later analysis using *SPSSX* (statistical package for the social sciences) and *BMDP*³⁵ on the Glasgow University ICL mainframe computer. The cost data were highly skewed positively and were therefore subjected to logarithmic transformation prior to analysis. Variables were statistically analysed in a progressively more complex fashion beginning with *t*-tests and chi square tests, progressing to life-table techniques, then finally onto multiple and logistic regression analyses. At each stage the earlier findings were incorporated into the analysis. Life-table analyses³⁶ were used to examine outcome related to single characteristics. Logistic regression was applied to the variables whose univariate analyses suggested an important influence upon discharge or continuing attendance.

Results

Of 1256 new referrals made to the six clinics during the year, 724 patients had diagnoses inappropriate for the study; a further 112 patients were seen by the hospital clinician before being interviewed by the research assistant thus invalidating their entry into the study, and 28 eligible patients (28/420, 7%) refused to participate. A total of 392 patients therefore entered the study cohort and they made a total of 936 visits (median two, range one–eight) during the study period. Response rates were high with 98% of hospital doctors, 94% of patients and 88% of general practitioners returning completed study questionnaires for all visits. The response to the postal questionnaire sent within two weeks of the patients stopping attending was 68%.

Patient characteristics

The characteristics of the patients referred to each clinic are shown in Table 1. The patients attending the rheumatology or vascular surgery clinics were middle-aged or elderly (mean age 56.6 years), while the patients referred to the dermatology clinics

Table 1. Characteristics of patients initially attending the six outpatient clinics.

| Patient characteristics | Rheumatology | | Vascular surgery | | Dermatology | |
|---|-------------------------------------|----------------------------|------------------------------------|----------------------------|------------------------------------|----------------------------|
| | District general hospital (n = 119) | Teaching hospital (n = 60) | District general hospital (n = 92) | Teaching hospital (n = 29) | District general hospital (n = 72) | Teaching hospital (n = 20) |
| Mean age in years (SD) | 55.6 (13.7) | 51.4 (14.4) | 63.0 (10.9) | 59.6 (9.6) | 34.8 (12.4) | 38.6 (14.2) |
| % of men | 30 | 18 | 62 | 72 | 40 | 35 |
| Mean disease severity scores (SD) | 12.5 (8.8) | 13.8 (8.5) ^a | 44.0 (1.5) | 45.0 (1.5) ^b | 26.0 (12.4) | 32.0 (16.2) ^c |
| % previously attending outpatients for same problem | 50 | 52 | 30 | 31 | 36 | 35 |
| % currently attending another outpatient clinic | 23 | 27 | 29 | 34 | 7 | 5 |
| % employed | 22 | 25 | 22 | 24 | 47 | 35 |

^a Health assessment questionnaire scores. ^b Reported walking distance scores. ^c Psoriasis disability index. n = number of patients in group. SD = standard deviation.

had a mean age of 35.6 years. There was a predominance of women attenders except at the vascular clinics where 65% of patients were men. At the rheumatology clinics in the district general hospital and the teaching hospital, the percentage of subjects with rheumatoid arthritis was 70% and 63% respectively, and those with osteoarthritis 30% and 37% respectively, while in the dermatology clinics the percentage of patients with psoriasis was 40% and 42% respectively and those with eczema 60% and 58% respectively. A high percentage of new referrals to each specialty had been referred for the same problem on a previous occasion, particularly in rheumatology (50%). A total of 22% of patients were attending more than one outpatient clinic simultaneously. Between 22% and 47% of patients were employed. Disease severity scores showed a wide spread of values around the mean.

Agreement on reason for referral, and reason for continuing attendance

At the first visit, there was only 49% agreement between the general practitioners and the clinicians who saw the patients as to the reason for referral (Table 2) (the 'combinations of reasons' category was not included in the calculation of agreement). Agreement between patients and both groups of doctors as to the reasons for referral was low, between 20% and 44%. Consultants emphasized diagnosis as the main reason for referral in 201/338 cases. General practitioners cited a greater spread of reasons, and gave more combinations of reasons for referral.

There was little agreement between the patients and both outpatient clinicians and general practitioners with regard to the reasons for continuing attendance. The main reasons for continuing attendance given by the 392 patients responding at the first visit were: consultant supervision 40%, combination of hospital staff expertise and equipment 23%, and general practitioner requests that care be transferred to hospital 21%. These reasons for continuing attendance remained constant throughout the period of attendance at the outpatient clinics. The main reasons for continuing attendance given by the hospital doctors and general practitioners at the patients' first visits were consultant supervision 49% and 19% respectively, hospital facilities 21% and 14% and a combination of hospital staff expertise and equipment 16% and 16%.

Outpatient clinic attendance

Ninety one patients (23%) were still attending at the end of the study period one to two years after their first visit. During the patients' period of attendance, rates of admission to hospital from the six clinics varied greatly (median 17%, range 2–83%). There was also variation in default rates by patients for follow-up visits (median 12%, range 9–17%). Patients lost during follow up owing to administrative reasons varied between 1% and 5%, median 3% — this varied between specialties at different hospitals and between the different specialties. Patients with rheumatoid arthritis and peripheral vascular disease attended

for significantly longer than the other diagnostic groups ($\chi^2 = 28.03$, 4 df; $P < 0.001$).

Outpatient costs for the duration of attendance were not distributed normally for either individual patients or for the NHS. There was a particularly noticeable positive skew for the costs to patients where the range was zero to £2279.50 (median £17.70, mean £44.81). For those in employment, loss of earnings was the main cost. For some individuals whose journey required two taxi rides and public transport, the costs could be very high, for example, more than £70 per visit. The cost per visit had no effect on the rate of default. The estimated clinic costs varied from £11.20 to £139.20 (median £28.50, mean £35.80). No effect of hospital costs on the discharge behaviour of doctors was observed; doctors at all grades rarely knew or believed the hospital costs.

At their first visit, before seeing the hospital clinician, patients were asked: 'If given a choice today, which would you prefer: to be referred back to your own general practitioner; to come back to the clinic for further visits; don't know'. Thirty per cent of the 392 patients hoped to be discharged back to general practitioner care, 46% wished to continue outpatient clinic attendance, and the other 24% were uncertain.

The opinions of 252 patients were obtained in the final questionnaires. While 8% of patients felt that their condition had been cured and 38% felt it had improved, 46% felt their condition remained unchanged. Nine per cent of patients felt their condition had either worsened or deteriorated severely. Vascular surgery patients expressed greatest improvement, with 59% considering that their condition had been cured or had improved and rheumatology patients reported the least improvement in their conditions, with 43% considering that their condition had been cured or had improved.

The overall discharge rate of consultants was 34% in the rheumatology clinics, 20% in the vascular surgery clinics and 48% in the dermatology clinics. This corresponds with senior house officer discharge rates of 18%, 0% and 0% respectively. It was observed, therefore, that more junior staff decided to retain seeing patients within the outpatient clinic setting more often than their consultants in each specialty. It is of interest that this observation holds true even for the senior registrar staff who had discharge rates of 18% in the rheumatology clinics and 4% in the vascular surgery clinics (there were no senior registrar staff in the dermatology clinics). Clinical assistants had a discharge rate of 11% in the rheumatology clinics and 29% in the dermatology clinics (clinical assistants did not work in the vascular surgery clinics). Junior staff tended to see a higher proportion of the patients at follow-up visits than did consultants (Figure 1). In particular, the numbers of patients seen by clinical assistants at follow-up visits increased to more than 50% in the rheumatology and dermatology clinics where they worked. The importance of grade of doctor was investigated further using the logistic regression analysis.

Table 2. Agreement between the general practitioners and the outpatient clinic doctors as to the reason for patient referral from 338 completed sets of data.

| Reasons given by outpatient clinic doctors | Reason given by general practitioner (number of referrals) | | | | | | Total |
|--|--|---------|-------------|---------------|-------|------------------------|-------|
| | Diagnosis | Therapy | Reassurance | Investigation | Other | Combination of reasons | |
| Diagnosis | 56 | 51 | 10 | 26 | 7 | 51 | 201 |
| Therapy | 9 | 55 | 4 | 2 | 5 | 23 | 98 |
| Reassurance | 0 | 0 | 1 | 0 | 0 | 2 | 3 |
| Investigation | 0 | 1 | 0 | 1 | 0 | 2 | 4 |
| Other | 0 | 4 | 0 | 0 | 0 | 1 | 5 |
| Combination of reasons | 4 | 9 | 2 | 3 | 0 | 9 | 27 |
| Total | 69 | 120 | 17 | 32 | 12 | 88 | 338 |

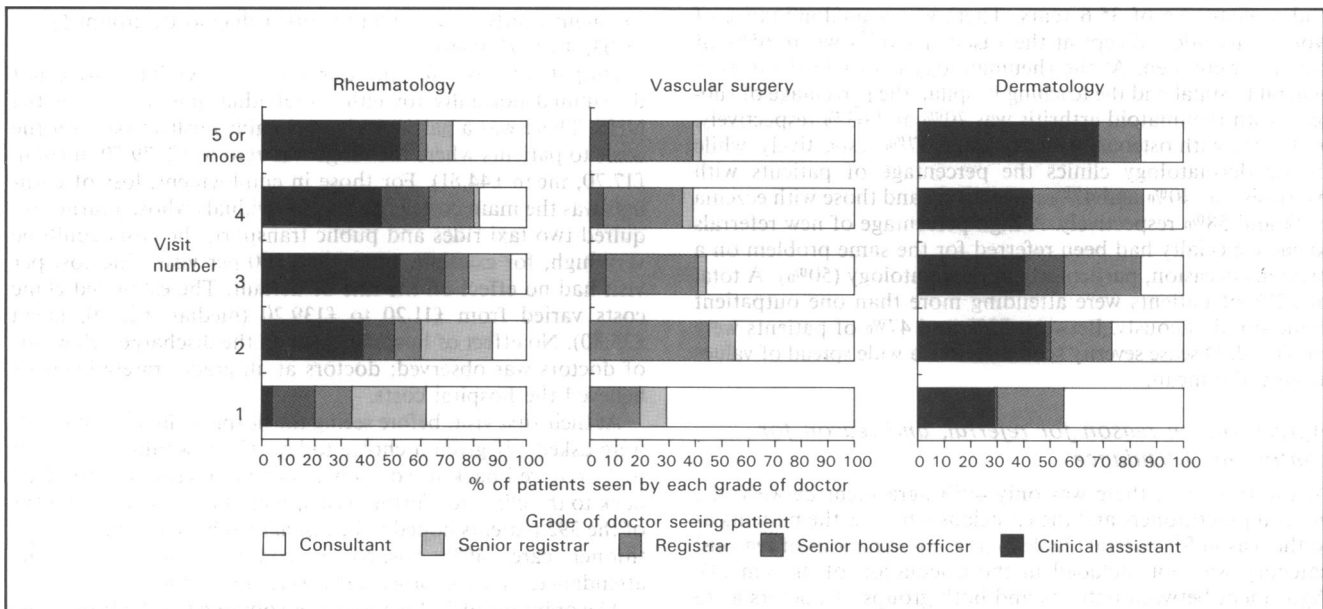


Figure 1. Percentage of patients seen by the different grades of hospital doctors at each visit in each specialty.

Factors associated with outpatient discharge

At the first visit, there were 92 discharges among the 392 patients. The following factors were significantly associated with the patient discharge at the $P < 0.05$ level of significance: clinic and diagnosis, patients with a diagnosis of osteoarthritis, psoriasis or eczema having higher discharge rates; disease severity, patients with scores in quintiles one and two having much higher discharge rates; grade of doctor, consultants having higher discharge rates than all other grades; age, older patients having lower discharge rates; work, employed patients having higher discharge rates; and reason for general practitioner referral, patients referred for therapy having lower discharge rates.

Stepwise logistic regression used three of these factors: diagnosis, disease severity and grade of doctor in discriminating between patients who were discharged at the first visit and those who were not. After adjusting for diagnosis and disease severity, the odds ratio for discharge by a consultant compared with any other grade of doctor was 4.4 (95% confidence interval (CI) 2.2 to 9.0). After adjusting for diagnosis and grade of doctor, the odds ratio for discharge of a patient in disease severity quintiles three, four or five relative to a patient in disease severity category one or two was 2.2 (95% CI 1.1 to 4.7).

At the second visit there were 45 discharges among 247 patients. No factors recorded at the first visit were significantly associated with discharge at the second visit. Only diagnosis and grade of doctor at the second visit were significantly associated with discharge at the second visit. After adjusting for diagnosis, the odds ratio for discharge by a consultant, relative to any other grade of doctor was 9.0 (95% CI 3.2 to 25.6). There were insufficient discharges at subsequent visits to allow the analysis to be considered further.

Discussion

The current referral process between general practice and hospital can be understood in historical terms. The system of patient referral that developed in the late nineteenth century was designed to eliminate competition between apothecaries (general practitioners) and hospital physicians (consultants).³⁷ As part of the charitable function of many hospitals the outpatient departments acted as a source of continuing care for those who were unable

to afford to pay general practitioners.³⁸ One result of this is that in many areas, the long-term management of chronic disease remains within the hospital sector even though the economic necessity for this form of charity no longer operates in the NHS where medical care is free at the point of contact.³⁹

While there was little agreement between patients and doctors in individual cases, patients as a group, their referring general practitioners and the hospital doctors who saw them all agreed that the most important reason for continuing attendance at outpatient clinics was consultant supervision. This may be achieved directly or indirectly through junior staff. In this study, as in others,⁴⁰ consultants saw approximately half of the new referrals but a diminishing proportion at subsequent visits. This makes effective supervision of junior staff a cornerstone of any policy to reduce the numbers of unnecessary continuing attenders. Of particular interest here is the role of the clinical assistant who saw an increasing proportion of patients attending the rheumatology and dermatology clinics. These assistants are often general practitioners working hospital sessions. It is possible to question whether the additional skills which clinical assistants have outweigh the knowledge and experience of the patient's own general practitioner.

The finding that certain factors are significantly associated with patient discharge — diagnosis, disease severity and grade of doctor — is of value to clinicians. Consultants who wish to audit the work of their clinic and use the opportunity to educate their junior staff could review the casenotes of patients being booked for the fourth or subsequent visits. This could help ensure that continued outpatient clinic attendances were appropriate. Further studies within clinical areas might lead to specific predictive tools for particular specialties or even individual consultant clinics.

One of the factors influencing the referral behaviour of general practitioners has been shown to be their different expectations of outcome.¹³ No review of the referral letters is presented here but the lack of communication about the reason for referral was evident. In particular the fact that hospital clinicians perceived most referrals to be made for diagnosis. Other studies have shown that communications from hospital to the general practitioner are often late or uninformative.^{41,42} As a result, general

practitioners have very little information on groups of patients upon which to base rational decisions about hospital referral. A few general practitioners have audited the outcome of their own referrals,^{43,44} and there have been some studies looking at the experience of newly referred patients within individual clinics,^{45,46} or health authority areas.⁸

Target 30 of the 'health for all' strategy⁴⁷ states that 'all member states should have mechanisms by which the services provided by all sectors relating to health are coordinated at the community level'. This has been accepted in many official pronouncements⁴⁸ but at present the necessary steps to allow such coordination have not been put in place. The arrival of clinician's work stations in hospitals and desk-top computers in general practice may change that. Outcome data from outpatient clinics could, and probably should, be made available to general practitioners as part of the information technology revolution which is occurring.^{49,50} Such data will help general practitioners, hospital clinicians and health service managers to make an informed choice on the most efficient referral and follow-up options.

References

- Royal College of General Practitioners, Office of Population Censuses and Surveys and Department of Health and Social Security. *Morbidity statistics from general practice 1980-81*. London: HMSO, 1986.
- Central Statistical Office. *Social Trends*. London: HMSO, 1990.
- National Audit Office. *Outpatient services in the NHS*. London: HMSO, 1991.
- Cummins RO, Jarman B, White PM. Do general practitioners have different referral thresholds? *BMJ* 1981; **282**: 1037-1039.
- Wilkin D, Smith AG. Variation in general practitioners' referral rates to consultants. *J R Coll Gen Pract* 1987; **37**: 350-353.
- Wilkin D, Smith A. Explaining variation in general practitioner referrals to hospital. *Fam Pract* 1987; **4**: 160-169.
- Moore AT, Roland MO. How much variation in referral rates among general practitioners is due to chance? *BMJ* 1989; **298**: 500-502.
- Trout K, Martindale A. *An experiment in outpatient information*. Nottingham: Trent Regional Health Authority, 1974.
- Hull FM, Westerman RF. Referral to medical outpatients departments at teaching hospitals in Birmingham and Amsterdam. *BMJ* 1986; **293**: 311-314.
- Black D. The paradox of medical care. *J R Coll Physicians Lond* 1979; **13**: 57-65.
- Glenn JK, Hofmeister RW, Neikirk H, Wright H. Continuity of care in the referral process: an analysis of family physicians' expectations of consultants. *J Fam Pract* 1983; **16**: 329-334.
- Dornan C, Fowler G, Mann JI, et al. A community study of diabetes in Oxfordshire. *J R Coll Gen Pract* 1983; **33**: 151-155.
- Dowie R. *General practitioners and consultants: a study of outpatient referrals*. London: King Edward's Hospital Fund for London, 1983.
- Grace JF, Armstrong D. Reasons for referral to hospital: extent of agreement between the perceptions of patients, general practitioners and consultants. *Fam Pract* 1986; **3**: 143-147.
- Olsen ND. *General medical outpatient clinics*. MSc thesis. University of London, 1978.
- Olsen ND. A question of numbers. *Lancet* 1976; **1**: 853-854.
- Metcalfe DHH. Health services in the United Kingdom: trends in provision and utilisation 1971-80. *Fam Pract* 1984; **1**: 140-146.
- Ellin DJ, Parkhouse HF, Parkhouse J. Career preference of doctors qualifying in the UK in 1986. *BMJ* 1976; **295**: 59-63.
- Schofield T, Hasler J. *The management of chronic diseases*. Oxford University Press, 1984.
- McCormack TT, Collier JA, Abel PD, et al. Attitudes to follow up after uncomplicated surgery — hospital outpatients or general practitioner? *Health Trends* 1984; **16**: 46-47.
- Bulpitt CJ, Daymond MJ, Dollery CT. Community care compared with hospital outpatient care for hypertensive patients. *BMJ* 1982; **284**: 554-556.
- Petrie JC, Robb OJ, Webster J, et al. Computer assisted shared care in hypertension. *BMJ* 1985; **2**: 1960-1962.
- Degoulet P, Menard J, Vu H-A, et al. Factors predictive of attendance at clinic and blood pressure control in hypertensive patients. *BMJ* 1983; **287**: 88-93.
- West RR, McKibbin B. Shortening waiting lists in orthopaedic surgery outpatient clinics. *BMJ* 1982; **284**: 728-730.
- Stewart IC, McHardy GJR. Audit in a chest clinic. *Health Bull (Edinb)* 1985; **42**: 45-50.
- Stamp EJ, Jones SJ, Rylie DR, Hedley AJ. Oral anticoagulants: a cost effectiveness approach. *J R Coll Physicians Lond* 1985; **19**: 105-108.
- Rees GJG. Cost effectiveness in oncology. *Lancet* 1985; **2**: 1405-1407.
- Cochrane JPS, Williams JT, Faber RG, Slack WW. Value of outpatient follow up after curative surgery for carcinoma of the large bowel. *BMJ* 1980; **280**: 593-595.
- Brook RH, Ware JE, Davies-Avery A. *Conceptualization and measurement of health for adults in the health insurance study. Volume 8. Overview*. Santa Monica (CA): RAND corporation, 1979.
- Common Services Agency of the Scottish Health Service. *Scottish health service costs for year ended 31.3.88*. Edinburgh: Scottish Home and Health Department, 1988.
- Fries JF, Spitz P, Kraines RG, Holman HR. Measurement of patient outcome in arthritis. *Arth Rheum* 1980; **23**: 137-145.
- Finlay AY, Kelly SE. Psoriasis: an index of disability. *Clin Exp Derm* 1987; **12**: 8-11.
- Grace JF, Armstrong D. Referral to hospital: perceptions of patients, general practitioners and consultants about necessity and suitability of referral. *Fam Pract* 1987; **4**: 170-175.
- Department of Employment. *New earnings survey*. London: HMSO, 1988.
- Hopkins A. Survival analysis with covariates-Cox models. In: Dixon WJ (ed). *BMDP statistical software*. Los Angeles (CA): University of California, 1985.
- Lee ET. *Statistical methods for survival data analysis*. Belmont (CA): Lifetime Learning Publications, 1980.
- Stevens R. *Medical practice in modern England*. Yale University Press, 1966.
- Honigsbaum F. *The division in British medicine, a history of separation of general practice from hospital care 1911-1968*. London: Kegan Paul, 1979.
- Forsyth G, Logan RFL. *Gateway or dividing line? A study of hospital outpatients in the 1960s*. Oxford University Press, 1968.
- Kiff RS, Sykes PA. Who undertakes the consultations in the outpatients department? *BMJ* 1988; **296**: 1511-1512.
- Mageean RJ. Study of 'discharge communications' from hospital. *BMJ* 1986; **293**: 1283-1284.
- Harding J. Study of discharge communications from hospital doctors to an inner London general practice. *J R Coll Gen Pract* 1987; **37**: 494-495.
- Marsh GN. Are follow-up consultations at medical outpatient departments futile? *BMJ* 1982; **284**: 1176-1177.
- Fraser RC, Paterson HR, Peacock E. Referrals to hospitals in an E. Midlands City — a medical audit. *J R Coll Gen Pract* 1974; **24**: 304-310.
- Stewart IC, McHardy GJR. Audit in a chest clinic. *Health Bull (Edinb)* 1985; **42**: 45-50.
- Shaw CD. The problems of outpatient visits. *Health Trends* 1982; **13**: 107-110.
- World Health Organization. *Health for all by the year 2000*. WHO: Alma-Ata, 1978.
- Healthy Cities Steering Group (Glasgow). *Position statement*. Glasgow: Healthy Cities Project, 1989.
- Scottish Health Management Efficiency Group/Clinical Resource Use Group. *Organization and management of outpatient clinics*. Edinburgh: Scottish Medical Journal, 1989.
- Secretaries of State for Health, Northern Ireland, Scotland and Wales. *Working for patients (Cm 555)*. London: HMSO, 1989.

Acknowledgements

Thanks to Professors Tony Hedley and Jim McEwen, Drs Robin Knill-Jones and Ray Jones at Glasgow University, to Dr John Forbes at Edinburgh University and to Drs Pitkeathly, Susskind, Pollock and Calvert and Professors Sturrock and McKie. The project was supported by a generous grant from the Scottish Home and Health Department.

Address for correspondence

Dr F M Sullivan, Department of General Practice, Woodside Health Centre, Barr Street, Glasgow G20 7LR.