

Management of joint and soft tissue injuries in three general practices: value of on-site physiotherapy

G I HACKETT

P BUNDRED

JANE L HUTTON

JANET O'BRIEN

I M STANLEY

SUMMARY. A prospective study was undertaken to determine the potential benefits in patient management and cost effectiveness of physiotherapists employed by general practitioners compared with direct hospital access and access via consultants. The study involved 401 patients from three rural general practices in south Cheshire and north Staffordshire and took place over six months. On-site physiotherapy in general practice premises resulted in higher referral rates to the physiotherapist compared with the practice using direct hospital access or the practice with access via consultants. Both on site and direct access physiotherapy were associated with fewer prescriptions and lower overall prescribing costs per patient than access to physiotherapy via consultants. There was less time lost from work and normal duties for patients attending the practice with on site physiotherapy compared with those attending the practice which required referral via hospital consultants. Access to physiotherapy via hospital specialists resulted in considerably longer delays than on site physiotherapy and greatly increased the financial costs for the patient.

Physiotherapy in general practice premises is a cost effective way of dealing with joint and soft tissue complaints. Direct access to the physiotherapy department within hospitals results in longer delays but provides a satisfactory service. There is little to recommend the utilization of hospital consultants as a means of access to physiotherapy.

Keywords: physiotherapy; GP services; consultation costs; waiting time.

Introduction

WORK by Hackett and colleagues demonstrated the acceptability of general practitioners employing physiotherapists under the 70% reimbursement scheme.¹ Analysis showed reduced waiting times for patients together with possible large savings to the National Health Service when compared with access to hospital physiotherapists via consultants.

Ellman and colleagues have shown that general practitioners

are at least as selective as hospital doctors in choosing patients for physiotherapy and in determining treatment duration.² However, Ross has demonstrated that up to 40% of orthopaedic referrals could be classified as inappropriate by the time the patient is actually seen by the orthopaedic surgeon.³

Ankhorn and colleagues have shown that, in a general practice in Birmingham which employed a physiotherapist, there were reduced waiting times, shorter treatment durations and large savings in prescribing, sufficient to cover the salary of the physiotherapist.⁴ In addition, a review of general practitioner referrals to orthopaedic consultants in Liverpool suggests that direct access to physiotherapy may reduce waiting times for consultant clinics (Merseyside Regional Health Authority, 1989, unpublished report). Official hospital costings¹ demonstrate that it can cost up to four times more to treat each patient in hospital compared with in general practice. In the light of the new contract for general practitioners⁵ such costings assume greater importance.

A study was therefore undertaken to compare patient management and cost effectiveness in three practices, one employing its own physiotherapist, one with direct hospital access to physiotherapy and one with access via consultants.

Method

An open prospective study of three rural practices each with five partners with similar list sizes (10 000–11 000) was set up in south Cheshire and north Staffordshire. The appropriate family practitioner committees were consulted to ensure accurate matching of the practices in terms of size, age distribution of patients and social class.

The aim was to assess the quality of care, waiting times for treatment and comparative costs in the management of joint and soft tissue problems within the three practices. Ethical approval was obtained from Cheshire local medical committee.

A pilot study was conducted during a four week period two months before the main study to confirm similar consultation rates for joint and soft tissue conditions. This involved the completion of log diaries by all doctors within the three practices and provided comparative statistics of new presentations and follow up along with diagnoses, treatments and referral rates.

Practice A had employed its own physiotherapist since 1982. Practice B used open access to physiotherapy at Leighton Hospital, Crewe, under a scheme set up in 1987. Practice C had no direct or open access to physiotherapy and patients had to be referred via orthopaedic consultants at North Staffordshire Infirmary.

At the time of the study, none of the three practices was computerized but all three underwent computerization within six months of the completion of the study.

Patients of any age and either sex attending their general practitioner for acute or chronic joint or soft tissue problems between October 1988 and March 1989 were invited to join the study provided they fulfilled the following criteria: the general practitioner felt that physiotherapy would be appropriate to the management of the patient's condition and there was no contra-indication to its use; the patient had not been seen or treated by hospital specialists for the condition within the last two years;

G I Hackett, MRCPI, MRCP, Stuart research associate; P Bundred, MD, senior lecturer; J L Hutton, PhD, statistician; and I M Stanley, MRCP, FRCP, professor, Department of General Practice, University of Liverpool. J O'Brien, MCSP, physiotherapist, Holmes Chapel, Cheshire. Submitted: 20 January 1992; accepted: 23 April 1992.

and the patient did not require treatment necessitating attendance at the accident and emergency department.

On admission to the study, a form was completed by the general practitioner with details of the consultation and the action taken. Patients were given two forms. On the first they recorded information related to treatments and appointments relevant to that condition and on the second, information about time lost from work or normal duties, transport costs, and acceptability of the management of their condition. Patients failing to return forms to their general practitioner's surgery by 1 June 1989 were initially reminded by telephone and then by letter.

Analysis

Differences in major outcome variables between groups were tested by two sample *t*, chi square, and Mann Whitney *U* tests. If there was no evidence of a difference between the two practices, their data were pooled for comparison with the remaining practice. As the significant differences were substantial, a major comparison correction was regarded as unnecessary. It must be noted that some variables are interrelated.

To facilitate analysis within diagnostic groups, the protocol of the *International classification of disease (seventh revision)*⁶ was modified to produce a 'quick code' for specific diagnostic problem areas within general practice.

Results

The pilot study revealed that the three practices had similar consultation rates for joint and soft tissue conditions. In practice A each doctor saw a mean of 16.0 cases each week (15.0% of all consultations), in practice B the figures were 15.0 cases each week (15.0%) and in practice C 14.4 cases (14.8%).

Response rates to the main study were high in all three practices. In practice A, 183 patients entered the study and for 160, all three forms were completed (87.4%). In practice B the figures were 85 and 79 (92.9%) and in practice C 133 and 110 (82.7%). The mean ages of the patients in the three practices were similar at 47.6 years, 48.0 years and 46.3 years, respectively. The distribution of diagnoses made at entry to the study is shown in Table 1. Soft tissue conditions were mostly sprains of the calf muscle, hamstring, abdominal muscle or intercostal muscle, usually the result of sports injuries or falls. The commonest conditions in the miscellaneous group were wrist, hand and foot injuries with three cases of shin pain related to jogging.

There was no significant difference in the prescribing rates of practices A and B during the six month study period but practice C had a significantly higher rate (Table 2). Practice C thus had correspondingly higher mean cost per patient. However, as practice C had the highest rate of generic prescribing, the mean cost per item was lower than for practices A and B. The types of drugs prescribed were similar in the three practices (Table 3).

There was no significant difference between the three practices in terms of general practitioner consultations, with a mean of 2.0 contacts for each patient in practice A, 2.0 in practice B and 2.1 in practice C.

No patients in practices A and B were referred to private physiotherapists during the study period. In practice C, 15 patients were referred by their general practitioner for private physiotherapy and a further four patients were referred to an NHS physiotherapist by a hospital consultant. The number of treatment sessions with a physiotherapist required overall was remarkably constant at approximately seven (mean of 7.0 for the 183 patients in practice A, 7.2 for the 85 patients in practice B and in practice C 7.2 for the four patients seen under the NHS and 7.0 for the 15 patients seen privately).

The mean delay before NHS treatment in practice A (nine days) was similar to that for private referrals in practice C

Table 1. Diagnoses made at entry to the study.

	% of patients		
	Practice A (n = 183)	Practice B (n = 85)	Practice C (n = 133)
Soft tissue injuries	12.0	8.2	11.3
Tennis/golfer's elbow	2.2	2.4	6.8
Knee injuries	9.8	8.2	12.0
Ankle ligament sprains	12.0	2.4	2.3
Shoulder injuries	18.0	15.3	31.6
Lumbosacral spinal injuries	24.0	36.5	24.1
Cervical spinal injuries	9.8	22.4	12.0
Miscellaneous	12.0	4.7	0

n = total number of patients entered in the study.

Table 2. Prescribing rates and costs for the six month study period.

	Practice A (n = 183)	Practice B (n = 85)	Practice C (n = 133)
Number (%) of patients receiving prescription	91 (49.7)	41 (48.2)	112 (84.2)***
% of prescriptions which were for generic medicines ^a	30	38	65
Mean cost per patient (£)	3.65	3.85	5.85
Mean cost of prescriptions issued (£)	7.58	7.27	6.50

n = total number of patients entered in the study. ^aFrom PACT (prescribing analyses and cost) data which are rounded to whole number percentages. *** *P* < 0.001 (95% confidence interval: A + B versus C = 26.1% to 44.0%).

Table 3. Types of drugs prescribed.

	% of prescriptions		
	Practice A (n = 91)	Practice B (n = 41)	Practice C (n = 112)
NSAIDs	79.1	68.3	73.2
Analgesics	11.0	24.4	7.1
NSAIDs and analgesics	3.3	0	0.9
Joint/soft tissue steroid injections	3.3	7.3	13.4
Other ^a	3.3	0	6.2

n = total number of prescriptions issued. NSAIDs = non-steroidal anti-inflammatory drugs. ^aTopical NSAIDs, muscle relaxants and so on.

(10 days). Patients in practice B had a longer mean delay (23 days) than those in practice A (*P* < 0.01). NHS patients in practice C had a much longer mean delay (74 days) than those referred privately (*P* < 0.01). Patients in practices A and B could be seen by an NHS physiotherapist within 24 hours — 9.8% and 14.1% of all the patients in these practices were, compared with none in practice C. In practice A, only 2.2% of patients had not been seen after three weeks compared with 40.0% in practice B and all the patients referred to an NHS physiotherapist in practice C.

Practice A referred nine patients to a specialist consultant (5.6% of the 160 patients completing the study) with a median delay of 28 days. Practice C referred nine patients (8.2%) with a median delay of 93 days, and practice B referred two (2.5%), with a median delay of 42 days. Practice A referred 11 patients

(6.9%) for an x-ray, with a median delay of 12 days, practice B referred four (5.1%), with a median delay of 32 days and practice C referred 15 (13.6%), with a median delay of 32 days.

Of the patients who completed the forms, a higher percentage incurred costs in obtaining treatment in practice B than in practices A and C (Table 4). Mean patient costs were lowest in practice A and highest in practice C. The 15 patients in practice C who received private treatment included the costs on their assessment form. As these were additional charges resulting from the system prevailing in that practice and were actual costs incurred by the patient, they are included for analysis.

A higher percentage of patients in practice B lost time from work or normal duties as a result of attending the general practice or hospital than in practices A and C — 26 (32.9%) versus 30 (18.8%) and 22 (20.0%), respectively. However, the median number of days lost was similar in practices A and B (four and three days, respectively) and much less than the median of 14 days lost in practice C. The mean number of days lost for patients who actually missed work in practices A, B and C was 13.8, 10.4 and 27.9 days, respectively.

More patients evaluated the management of their condition as being average or above, as opposed to below average in practices A and B (143/150, 95.3% and 68/73, 93.2%, respectively) than in practice C (58/69, 84.1%) ($\chi^2 = 9.2$, $P < 0.01$, 95% confidence interval for difference in percentage 3% to 25%).

Table 4. Patient costs incurred in obtaining treatment.

	Practice A (n = 160)	Practice B (n = 79)	Practice C (n = 110)
Number (%) of patients incurring costs	58 (36.3)	66 (83.5) ^a	37 (33.6)
Mean cost to all patients (£)	0.27	7.42	16.12
Mean cost to patients who incurred costs (£)	0.74	9.55 ^b	47.94 ^c

n = total number of patients completing study. ^a $P < 0.001$ (A + C versus B). ^b $P < 0.001$ (95% confidence interval: A versus B = £6.94 to £12.53). ^c $P < 0.01$ (95% confidence interval: B versus C = £12.41 to £63.65).

Discussion

Musculoskeletal conditions account for 10–15% of all time lost from work in the United Kingdom each year.¹ Lengthy waiting times for hospital treatment adversely affect these figures and the conditions studied in this study are amenable to management in the general practice setting.

The use of log diaries in the three practices for a month prior to the start of patient recruitment confirmed similar prevalence rates for the conditions studied. However, it was impossible to standardize the three practices for all other variables and it could be argued that the prior establishment of on site physiotherapy in practice A demonstrates a higher motivation among the partners of that practice compared with the doctors in practices B and C.

On site physiotherapy (practice A) resulted in a referral rate to physiotherapists of more than double that of a similar sized practice using direct access (practice B). This suggests that conditions of a more minor nature might be referred but, as there was no difference between the numbers of treatment sessions received by the three groups studied, this was probably not the case. A likely explanation is that working closely with a physiotherapist has increased the doctors' awareness of what the treatment has to offer. This is shown by the differences in con-

ditions referred to the physiotherapist within the three groups. In practice A, the physiotherapist had stressed previously to the doctors the importance of early referral for ankle ligament injuries, accounting for 12% of diagnoses in practice A compared with 2% in both B and C.

Drug prescribing was much higher in practice C than in the other two practices, with 84% of all patients receiving a prescription of which 73% were for non-steroidal anti-inflammatory drugs. Approximately half the patients in practices A and B received prescriptions; a similar proportion of these to practice C were non-steroidal anti-inflammatory drugs. Thus, ready access to physiotherapy may result in less drug prescribing. This finding is in agreement with that of Ankhorn and colleagues who also postulated that the saving in drug costs would more than pay the salaries of the physiotherapists concerned.⁴ This was not the case in this study, however, because practice C was able to offset some of these increased costs by a generic prescribing rate of 65% compared with 30% in practice A. The most disturbing aspect of the data presented here is the level of prescribing of non-steroidal anti-inflammatory drugs in a range of conditions where a true inflammatory component may be of little importance. The results for practice C may suggest that a group of drugs with a large number of side effects may be being prescribed because of difficulty in obtaining physiotherapy.

The median delay of 93 days following referral to a specialist and of 32 days for an x-ray in practice C were unlikely to aid the management of acute conditions. Practice C referred twice as many patients for x-ray than practices B and A. As patients referred for immediate casualty treatment or suspected fractures were excluded from this study, these results confirm the findings of an earlier study,¹ that readily available physiotherapy reduces the number of referrals for x-ray with resulting cost savings.

The mean cost to patients in practice A was £0.27 compared with £7.42 in practice B and £16.12 in practice C. The mean cost for patients in practice C who incurred costs was £47.94 largely because 15 out of 19 patients receiving physiotherapy had private treatment. There were no significant differences in the number of physiotherapy sessions per patient in the three practices. In particular, there was no suggestion that on-site physiotherapy resulted in excessive reattendance, or that delays in commencing therapy resulted in longer courses of treatment. The marked differences in the costs incurred by patients in practices A and B demonstrate that the costs to patients in getting to their local hospital for treatment are considerable.

Readily available physiotherapy (practices A and B) resulted in considerably less time lost from work for patients. Patients in practice C lost a mean of 28 days, more than double the time lost in practices A and B. Although it would be expected that patients needing to travel to and from hospital would lose more time from work than those treated in their local health centre, there was no difference between practices A and B. This suggests that the hospital physiotherapists were able to treat patients with minimal interruption to the patient's daily routine.

At present general practitioners who employ physiotherapists are eligible to receive 70% (in some cases only 50%) reimbursement on the salary but remain liable for the remainder. In addition, they must purchase and maintain equipment and purchase aids such as cervical collars and splints. Payne and colleagues have demonstrated that general practitioners are as efficient as hospital doctors in their utilization of such resources.⁷ In the light of the cost savings demonstrated in this study, it is difficult to justify why such practices should continue to be penalized financially. It is to be hoped that the current reorganization within general practice, particularly in relation to fundholding and health promotion will offer some incentive to general practitioners who provide improved services.

References

- Hackett GI, Hudson MF, Wulie JB, *et al.* Evaluation of the efficiency and acceptability to patients of a physiotherapist working in a health centre. *BMJ* 1987; **294**: 24-26.
- Ellman R, Adams S, Reardon JA, Curwen IHM. Making physiotherapy more accessible. *BMJ* 1982; **284**: 1173-1175.
- Ross AK. General practice orthopaedic referrals in north Staffordshire. *BMJ* 1983; **287**: 1439-1441.
- Ankhorn L, Pratt J, Nottingham S. Physiotherapy in general practice. *Therapy Weekly* 1989; 23 March: 4.
- Department of Health and the Welsh Office. *General practice in the National Health Service. A new contract.* London: HMSO, 1989.
- World Health Organization. *International classification of disease.* Seventh revision. Geneva, Switzerland: WHO, 1987.
- Payne S, Ramaiah RS, Jones DT. Open access to orthopaedic appliances for general practitioners. *BMJ* 1987; **294**: 485-486.

Acknowledgements

The authors would like to thank doctors and staff at the three health centres concerned, all the staff of the department of general practice, Liverpool University, Dr Susanna Graham-Jones for her help, and Jack Tweed for his constructive suggestions throughout. This project was conducted through funding from: Stuart Pharmaceuticals, Mersey Regional Health Authority (grant 582), BMA Board of Science, Charles Oliver Hawthorne Award 1986 and Pfizer Pharmaceuticals. Dr Hackett was the winner of the 1992 Duke of Edinburgh prize for his paper on general practice based physiotherapy for joint and soft tissue injuries.

Address for correspondence

Dr G I Hackett, The Health Centre, Holmes Chapel, Cheshire CW4 7BB.

College Publications BIOGRAPHY

Will Pickles of Wensleydale

The definitive biography of William Pickles — one of the most outstanding practitioners of our time — written by a friend and colleague. £12.50

Sir James Mackenzie MD

This biography of the greatest GP of his day, and perhaps of all time, is republished with a new chapter describing academic developments since his death. £12.50

Milestones — Diary of a Trainee GP

The diary of a young general practitioner in training for general practice during his practice year. Describes problems and experiences that are relevant for all trainees. £9.95

The Writings of John Hunt

A selection of the works of John Hunt with a biographical introduction by John Horder. Limited edition 250. £55.00

The above can be obtained from the Sales Office, Royal College of General Practitioners, 14 Princes Gate, London SW7 1PU. (Enquiries, Tel: 071-823 9698). Prices include postage. Payment should be made with order. Cheques should be made payable to RCGP Enterprises Ltd. Access and Visa welcome (Tel: 071-225 3048, 24 hours).



Nestor Medical Duty Services

GENERAL PRACTITIONER REFRESHER COURSES 1993

10 P.G.E.A. APPROVED FULL SESSIONS IN FIVE DAYS

1993 will be Nestor Medical's fourth year of organising highly acclaimed courses in Birmingham, Liverpool and Manchester. As usual the content of our programmes will pay the same attention to quality which, above all else, has been our measure of success in previous years.

The opportunity to complete ten full sessions on a wide variety of subjects in one week with a choice of three locations is unique. The calibre of the lecturers is unrivalled. Group work on topics chosen by participants is a significant component of each session.

COURSE DATES

Liverpool MARCH 22-26,
Birmingham MARCH 22-26,
Manchester APRIL 19-23,
Liverpool SEPTEMBER 13-17,
Manchester SEPTEMBER 20-24,
Birmingham OCTOBER 25-29

The courses are open to trainees at a reduced price.

PART ATTENDANCE CAN BE ARRANGED FOR ANY COURSE

Non-residential, all refreshments and lunch included.

Venues are Strathallan Thistle Hotel, Birmingham — Liverpool and Manchester Universities.
Accommodation is available at the Hotel in Birmingham and at the University Halls of Residence in Liverpool and Manchester.

Numbers may be limited so early booking is advised.

BIRMINGHAM — Dr. J.G. Fitzgerald 021 359 6421

LIVERPOOL — Dr. M.S. Cranney 051 263 2373

MANCHESTER — Dr. R. Parikh 061 273 5522