

## Muscle and joint pain: design and evaluation of courses for general practitioners

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**SUMMARY.** Existing deficiencies in general practice management of rheumatic disease are identified and the evolution of a three-day course designed to remedy these deficiencies is described. Evaluation of the courses showed changes in the performance of participants in diagnosing and treating rheumatic disorders. Knowledge was increased, referral to hospital was halved and treatments in general practice, such as injections of steroids and advice on self-care, were increased. These changes were measured and were maintained up to two years after the course.

### Introduction

AS a general practitioner and clinical assistant in rheumatology, one of us (G.A.G.) had long felt that many cases referred to hospital could be treated equally well by the general practitioner. The treatments required are simple and need no special equipment; they may be given without disruption of ordinary surgery timetables and they save patients from prolonged disability, anxiety and a lengthy wait for a hospital appointment. Patients are treated by the doctor who knows both them and their problems and hospital consultations are reserved for more appropriate purposes. However, current teaching does not equip the general practitioner with the knowledge needed for this simple management (Griffin and Million, 1979). Long-standing attitudes direct that special treatments for rheumatology should be given by specialists, and there are few attempts to define those areas of disorder for which the general practitioner should be responsible.

Ordinary refresher courses in general fail: they are poorly attended (Wood and Keele, 1977; Reedy *et al.*,

1979), they do not usually result in performance that is more self-reliant and, where performance is altered, this alteration is not maintained (Peterson *et al.*, 1956; McGuire *et al.*, 1964; Lewis and Hassanein, 1970; Wood and Keele, 1977). Such failures have been attributed by Miller (1967) to the educational model which offers what the expert knows, rather than teaching what the learner needs to know.

### Aims

The Experimental Courses Study Group of the RCGP recognized these management and learning factors and initiated a project designed to improve the care of rheumatic disease in general practice. It had four aims:

1. To identify, through research into hospital referrals, the commonest major deficiencies of management in rheumatic disease.
2. To develop a course designed to remedy these deficiencies.
3. To use evaluation, based on the measurement of changes in the performance of course participants and on their reactions, to modify the course as necessary.
4. To make a final version of the course available for use in other centres.

### Methods

#### *Preliminary research*

Research was designed to study the patterns of rheumatic disease and the remediable deficiencies in its management. This work was retrospective and was confined to one London suburb for one year. The management of all 254 patients referred to the rheumatology department of the local hospital was compared with that of 305 patients seen in G.A.G.'s general practice.

**Table 1.** Study patients, 1969-70.

	Patients referred to one hospital	Patients seen in one general practice
Total new patients	254	305
Inflammatory arthropathy (true arthritis)	30	7
Rehabilitation of strokes	26	—
Osteoporosis	6	1
Patients with simple localized lesions	192	297

**Table 2.** Hospital referrals, the spine, 1969-70. (Percentages are given in brackets.)

	Neck	Back	Low back
Incidence (n=110)	43	7	60
Diagnosis attempted	22 (51)	1 (14)	30 (50)
Acceptable diagnosis	14 (32)	1 (14)	18 (20)

The research revealed that a small number of common, localized disorders accounted for 72 per cent of the outpatients seen. Rheumatoid arthritis or other collagen disease occurred in 14 per cent of hospital referrals and in less than 3 per cent of patients seen in general practice (Table 1). Only 50 per cent of referrals had been given a diagnosis by their general practitioner (Tables 2 and 3) and in 40 per cent this did not accord with the hospital diagnosis. Failures of diagnosis and of treatment occurred most frequently in the back, the neck and the shoulder. The treatment of patients waiting for an outpatient appointment was often confined to prescribing successive anti-inflammatory drugs. Patients often waited a month for an outpatient appointment but, once they got one, a simple and appropriate treatment often led to an immediate cure. The preliminary research also revealed a collection of relatively well-diagnosed but poorly treated disorders such as tennis elbow, ligament strains and carpal tunnel lesions, which are grouped as non-articular rheumatism (NAR).

*The pilot course, 1976*

Guided by the research results, we designated the following as teaching areas: the neck, the shoulder, the back and non-articular rheumatism. One tutor was appointed for each area. Each tutor agreed the method and content of his teaching with the course organizer. Teaching goals and objectives were matched to the aim of the project, namely improving the care of rheumatic disease in general practice. A two-day course with evaluation was designed and was held at the Royal College of General Practitioners. Thirty-six participants were accepted. For group work they were divided into three or four groups. The four tutors rotated between the groups.

**Table 3.** Hospital referrals, limbs, 1969-70. (Percentages are given in brackets.)

	Shoulder	Hip	Limbs (all other areas)
Incidence (n=101)	35	12	54
Diagnosis attempted	21 (60)	4 (33)	40 (74)
Acceptable diagnosis	8 (22)	3 (25)	27 (50)

The course was opened by the course organizer (G.A.G.) who, referring to the research findings, suggested that, having made a careful diagnosis, the general practitioner could use a variety of simple techniques to cure the patient him- or herself.

The first day was devoted to diagnosis. The programme included a 20-minute lecture on diagnosis by each tutor. *Aide-mémoire* cards designed for the course were used and the lectures were followed by group discussion. Twelve patients were then examined. Participants watched injection of the shoulders of three of these patients.

The second day was devoted to treatment. The group work in the morning included demonstration and simulation of injection techniques. Complete management was described and discussed and included the following: rest and splintage of acute conditions; heat or ice to relieve pain; mobilization; simple home treatments. We advocated the use of simple analgesics as safer for simple sprains and strains. We emphasized the importance of explaining the disease to the patient and of rehabilitation.

In the afternoon there were small group discussions based on reports of drug trials. Participants were encouraged to describe their own experience of treatment.

*Evaluation*

Four methods were used:

1. Direct observations by the evaluator (S.M.K.B.) and the organizer. Throughout each course they shared the learning and the responses to it (Hamilton and Partlett, 1972).
2. Course evaluation grids (Davies, 1976).
3. Formal methods of measurement using attitude questionnaires, multiple choice questions (MCQs) and the modified essay questionnaire (MEQ) (Taylor, 1966; Scriven, 1967; Stake, 1967; Taylor, 1970; Steel and Hagen, 1971). The same tests were completed before and after the course. The MEQ was done at home.
4. Every participant was asked to complete a patient record card for each of 10 patients seen with muscle/joint pain:
  - a) in a stated week before the course (a further card recorded the progress of these patients).
  - b) in a stated week two months after the course.
  - c) in a stated week in 1978 when follow-up cards were

completed by members of both the 1976 and 1977 courses.

These patient record cards were designed to gather information on diagnosis, investigations, treatments prescribed and referral to hospital. All participants before the course and approximately 60 per cent of participants after the course returned full record cards.

#### *The second course, 1977*

Evaluation showed that the pilot course had worked but needed modification.

1. We had not defined clearly enough the aim of the course—to correct a limited number of management deficiencies. We devised a narrower aim, concentrating on careful diagnosis and knowledge of a range of treatments.
2. The programme was too hurried. For the second course there were six sessions spread over three days.
3. The lectures on diagnosis had not been successful. They resulted in poor learning and poor examination of patients. They were replaced by four lecture-demonstrations for each group. In this way course members spent a total of five hours practising on each other diagnostic methods for all the body areas before going on to a 2½-hour session of patient examination.
4. The reports on drug trials had failed to stimulate useful discussion of pain relief. They were replaced by lectures on the interpretation and treatment of pain, followed by small group discussion of practice experiences.
5. In the second course, in response to comments by participants on the pilot course, we paid greater attention to the knee and leg, even though our original research had not shown any major deficiencies in diagnosing and treating these areas.

#### *The third course, 1978*

Evaluation of the second course led only to minor changes:

1. Selection of participants: course members with special experience of rheumatology had upset the learning. The third course was restricted to learners without such experience.
2. Content: participants had again asked for greater emphasis on the knee. This request was supported by the pre-course evaluation record cards, which showed a high incidence of disorder in this joint. In the third course, we gave even more teaching time to the leg at the expense of the shoulder by altering 'Teaching Areas' to (i) shoulder and arm and (ii) leg.
3. Teaching methods: in the last course (36 participants) we always used four small groups. The groups then had an unchanging membership and were small enough for any failings of knowledge or of skill to seem less of an embarrassment. Having four groups also led

to more even study of treatment in the four teaching areas.

The lectures were still not popular, nor were they thought to be particularly useful. For the third course one lecture, on the mechanism of pain, was made available on video cassette in a side room. This was well received. We found from the third course that the subject of pain was understood best when presented for small group discussion.

4. Teaching staff: the stress on tutors was considerable. Each course needed six or seven planning meetings and three days' constant and repetitious group work. Evaluation showed that in the small groups there was consistently greater learning from general practitioner tutors.

## Results

In reading our results it must be remembered that in the first and second courses there were participants with special experience, that our educational methods improved and that evaluation became increasingly sensitive.

### *Attitudes*

The attitude questionnaires (further details available from the authors) showed that participants became more confident in their ability to diagnose the more common rheumatic diseases and more likely to accept that effective treatment was possible in general practice.

### *Knowledge*

Both MEQ and MCQ tests revealed an overall increase of knowledge on all courses. The MCQ showed increased mean scores and decreased standard deviations in each year. The greatest gain score was acquired in Year 3 when the selection policy was to admit only those members who had no previous experience in rheumatology. The MEQs demonstrated similar trends with greater improvement as the courses develop each year. Not all participants returned their post-course MEQ. Tables (available from G.A.G.) compare responders and non-responders and show that, in general, there was no difference between the two groups.

### *Diagnosis*

The MEQs, the MCQs and the completed patient record cards all showed improvements in diagnosis. The offer of a vague diagnosis or of no diagnosis on the cards was reduced by 50 per cent, referral to hospital for consultant opinion was halved, use of pathology and x-ray tests declined and, although there was little reduction in total prescribing, there were changes in the pattern of prescribing for analgesics and multiple prescriptions (Tables 4 to 8). The increased use of steroid injections (Table 6) was outstanding but was matched by other evidence of competence, such as the advice on self-administered exercises and by changes of prescribing. The reduction in post-course multiple prescribing (Table

**Table 4.** Patients for whom record cards were completed, before and after the courses.

	1976	1977	1978	Follow-up 1976 and 1977
Before	240	240	325	—
After	147	116	185	194

**Table 5.** Percentage of patients referred to hospital, before and after the courses.

	1976	1977	1978	Follow-up 1976 and 1977
<i>For x-ray, pathology and/or other tests</i>				
Before	42	51	35	—
After	20	31	26	28
<i>For consultant opinion and/or treatment</i>				
Before	21.7	20	20	—
After	9.5	15	11	16

7) conceals an even greater improvement, in that post-course multiple prescriptions were frequently for a single pain-relieving drug plus steroid injection and, possibly, a single sedative drug.

Reservation of anti-inflammatory drugs for inflammatory conditions would indicate confidence in diagnosis and prescribing and would be revealed in improvements in the prescribing ratio of analgesic to anti-inflammatory drugs. After the first course such an improvement occurred. On subsequent courses lectures on pain supported the use of either type of drug, so that the analgesic/anti-inflammatory ratio was not changed for participants on either of these courses (Table 8).

*Performance at follow-up*

A follow-up study was conducted in 1978. It was restricted to collecting data on patient management from course participants and was designed to find out whether changes in management were being maintained. Forty per cent of the doctors who attended the first two courses responded; their performance is included in Tables 4 to 8. They maintained their original changes in special management skills and prescribing. Some showed slight further improvement, but there was an increase in referrals for consultant opinion.

**Discussion**

*Identifying deficiencies in management and learning needs*

In identifying the deficiencies of management which lead to unnecessary referral of a patient to hospital, our research ignored successful treatment in general practice. However, we demonstrated that a relatively small number of simple conditions occurred commonly in joints or soft tissue, and we noted that standard educa-

**Table 6.** Percentage of patients to whom treatment was offered directly by the general practitioner before and after the courses.

	1976	1977	1978	Follow-up 1976 and 1977
<i>No treatment offered</i>				
Before	7.9	12	13.25	—
After	3.4	3	8.1	8.7
<i>Advice on self-administered exercises</i>				
Before	25	22	20	—
After	27.2	53	37	45
<i>Injection with steroids</i>				
Before	2	9	3	—
After	20.4	22.8	11	20

**Table 7.** Prescribing, before and after the courses.

	1976	1977	1978	Follow-up 1976 and 1977
<i>Percentage for whom oral drugs prescribed</i>				
Before	80.4	76	75	—
After	74.4	73	75	78
<i>Percentage for whom two or more drugs prescribed</i>				
Before	15	15	2	—
After	3	5	0.5	10.3

**Table 8.** Analgesic/anti-inflammatory ratio.

	1976	1977	1978	Follow-up 1976 and 1977
Before the course	0.92	1.19	0.92	—
After the course	1.36	1.13	0.8	1

tion is concentrated on the more serious, more dramatic but relatively infrequent inflammatory disorders such as rheumatoid arthritis. In setting up our courses we therefore concentrated on the diagnosis and treatment of the more common conditions.

The courses were designed to meet the deficiencies we had identified. Miller (1967) postulated that "doctors will learn only what they need to know". This may account for the demonstrated failure of the lectures and of the critical evaluations of drug trials. We discovered that our small group teaching was more responsive to the needs of participants than lectures and modified the courses accordingly. Difficulty occurred when participants' perceived needs did not match the needs identified by our research. On each course doctors recalling the frequency of disorders in the knee demanded greater learning about this joint. However, the shoulder had received special attention on the original course because our research had shown poor levels of diagnosis and special treatments of this joint, whereas diagnosis and treatment of the knee and all similar joints had been

satisfactory. We met this perceived need first by altering the emphasis of our teaching and then by altering the content, so that the time allocated to the shoulder was reduced. The MEQs relating to the shoulder were less well answered on the 1978 course as a result.

### Diagnosis

At first sight the original research figures on diagnosis (Tables 2 and 3) seem doubtful. General practitioners do not readily force diagnosis on consultants in referral letters. However, we made allowance for this by accepting any form of accurate description as a diagnosis. Talking to patients in the outpatient department about their knowledge of their disease and its consequences confirmed the failure of diagnosis; so did evaluation of the patient record cards.

A failure to attempt diagnosis in 50 per cent of referrals must be understood if it is to be altered. Our attitude questionnaire explained the failure to diagnose as a lack of confidence among general practitioners that they are able to exclude the more serious forms of arthritis. Yet a failure to diagnose will mean that symptoms are not explained and patients are not reassured. It may lead to inappropriate treatment and to delaying investigation and prescribing until after hospital referral. Non-diagnosis will result in non-treatment. It was for these reasons that we decided that the failure to diagnose was central to the failure of management in general practice.

The post-course reduction of referrals for x-ray and pathology tests was welcome, as it indicated greater confidence in diagnosis and would also have reduced the cost of care. Although standard teaching might favour full routine investigations before treatment, normal outpatient practice does not. The fuller knowledge of the patient generally available to the general practitioner may also make such investigations less necessary.

### Treatment

The overall rate of referral (20 per cent) for consultant opinion or treatment in pre-course records was lower than the 38 per cent reported in the West of Scotland (Partridge and Knox, 1969), and reduction after the courses was satisfying, but possibly artificially low (Table 5). The increase to 16 per cent in the 1978 follow-up accords with the 15.9 per cent of a specialist practice reported by Billings and Mole (1977). Such improvement was balanced by increases in treatment (Table 6). Physiotherapy and the supply of many appliances are not widely available to general practitioners and are responsible for many referrals. Earlier treatment makes these less essential, while advice on self-treatment (Table 6) and provision of supports create greater confidence and self-reliance in both doctor and patient. Increased use of steroid injections (Table 6) may seem to be an uncontrolled use of such powerful drugs, but the post-course and follow-up figures of 20 per cent again

approximate to those in specialist practices: 24 per cent, Billings and Mole (1977); 27 per cent, G.A.G. (preliminary research).

The British League Against Rheumatism (1977) proposed that one quarter of patients referred to hospital could have been treated in general practice. Table 6 shows that after learning on the courses, general practitioners treated approximately one third more of their patients than previously. The third course was the most highly developed. Follow-up of this course was not carried out, but it may be accepted that it was at least as satisfactory in influencing treatment as the first and second courses.

### Evaluation

We evaluated the effectiveness of the course by assessing changes in performance and attitude among the participants. Attitudes were examined, as well as performance, on the assumption that affective change was as important as cognitive change if behaviour was to be modified (Bloom, 1956, 1964). The shifts revealed by the attitude questionnaires indicated that affective change had taken place. Participants questioned the fact that only one third of the MCQs used in evaluation were related to course teaching. This was deliberate, as successful learning must stimulate recall of previous knowledge. The MEQ, however, measured practical management and was a more sensitive test of course teaching. The overall improvements in knowledge shown by these tests were a prerequisite if there was to be any change in management of rheumatic disease.

In the first two courses participants resented the demands made by the evaluation process. In the third course we gave a fuller explanation and members' attitudes became more favourable. For no course, however, did more than 60 per cent of participants return their post-course MEQ or record cards. Evaluation highlighted two areas where there is need for further investigation:

#### 1. Preference for general practitioner tutors

The courses were built increasingly around small group learning. Evaluation of every course reported that in such an environment general practice tutors were more popular and that participants learned more from them. These differences may be because consultants are not familiar with the surgery consultation. However, some surveys show preference for consultant teaching on rheumatism and higher ratings for lectures and seminars than were found by us (Thompson, 1979).

#### 2. A desire for a more content-directed teaching

There were requests for anatomy, examination, diagnosis and treatment to be unified and applied together to each area of the body in turn. Such teaching would approach the 'categorical content' teaching rejected by Miller (1967). It would suffer the danger of appearing to

offer total knowledge and it would deny the kind of emphasis considered necessary for diagnosis. However, it could well be tested using similar methods to our own.

### *A reproducible course*

We have prepared a detailed description of the course which is available for interested course organizers elsewhere. The description includes the aims and objectives of the course and an account of the methods of evaluation. We recognize that while some course organizers may choose to use our teaching methods, others may wish to incorporate only part of our ideas or opt for more traditional teaching methods. If any subsequent courses were to be evaluated, a comparative analysis of their results may show a correlation between teaching methods and the attainment of objectives.

### Conclusion

Failure to diagnose in rheumatic disease leads to deficiencies in general practice care. Identifying these deficiencies and providing a remedy which led to the acquisition of certain simple skills resulted in a change of behaviour. This change led in turn to safe and successful management of a large area of rheumatic disease. The change of behaviour was maintained. We believe that a three-day course similar to the ones reported here (or its equivalent in an extended course) is necessary to produce these changes and that shorter courses will add only isolated items of treatment to those already offered.

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### Address for reprints and for further details of the three-day course

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## Epilepsy

Anticonvulsant therapy was discontinued in 68 children with epilepsy who had had no seizures for four years in an attempt to find the risk of relapse and the factors predictive of recurrence. In this population the probability of remaining free of seizures for four years after discontinuation of medication was 69 per cent. Children were more likely to have recurrent seizures if they were mentally retarded, if their seizures had begun before two years of age, if they had had many generalized seizures before control, or if they had a definitely abnormal electroencephalogram before medication was discontinued. Multivariate analysis showed that the best predictors of outcome were the electroencephalogram taken at cessation of medication and the number of seizures before control. The authors conclude that, in the normal child who has not had many seizures and whose EEG is normal or mildly abnormal, the risks of discontinuing medication after four seizure-free years are acceptable.

Source: Emerson, R., D'Souza, B., Vining, E. et al. (1981). Stopping medication in children with epilepsy. *New England Journal of Medicine*, **304**, 1125-1129.