



A team approach to musculo-skeletal disorders

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ABSTRACT

INTRODUCTION The majority of patients with musculo-skeletal problems referred to hospitals in the UK have to wait for months, if not over a year, before finally seeing an orthopaedic surgeon. In Stobhill Hospital, Glasgow, the waiting time for an out-patient appointment was 182 days in 1995, with only 20% of the referrals requiring surgery. The aim of this paper was to reduce the out-patient waiting times based on a co-ordinated team approach.

METHODS An outpatient musculo-skeletal service was developed over a 7-year period at Stobhill Hospital. The traditional consultant-based model, in which the consultant and a trainee saw all new patients referred to the hospital, was gradually replaced with a team approach, based on continuous reconfiguration of the roles of the orthopaedic surgeon and rheumatologist and extending the roles of nurses, physiotherapists and podiatrists. This was achieved by: (i) protocol-based daily triage for all referrals to the most appropriate health professional in the team, by the senior out-patient nursing staff; (ii) allocation of appointments based on clinical priority, with a fast-track for urgent cases; and (iii) improvement of inter-disciplinary communication, facilitating the retraction as well as the extension of traditional roles.

RESULTS Despite the number of GP referrals to the orthopaedic out-patient department at Stobhill nearly doubling in a period of 5 years, the out-patient waiting time decreased by about 50% (90 days from 182 days). This reduction in waiting times improved patient and GP satisfaction levels. We also noticed an improved morale and personal development of the health professionals as they saw patients appropriate to their skills and expertise.

CONCLUSION The team's experience demonstrates the effectiveness of a team approach in tackling what is often seen as the insoluble problem of orthopaedic waiting times. This is based on excellent communication and collaboration, with a clear aim of improving patient care that is evidence based.

KEYWORDS

Team approach – Musculo-skeletal disorders – Shorter out-patient waiting times

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In the UK's National Health Service, patients with musculo-skeletal problems form one of the largest groups waiting for a hospital out-patient appointment and the time before being seen is amongst the longest.^{1–5} The majority of patients will be initially assessed by an orthopaedic surgeon, and then either discharged after advice, referred to other doctors or sent for physiotherapy or podiatry (Fig. 1). A minority will join a lengthy waiting list for surgery.

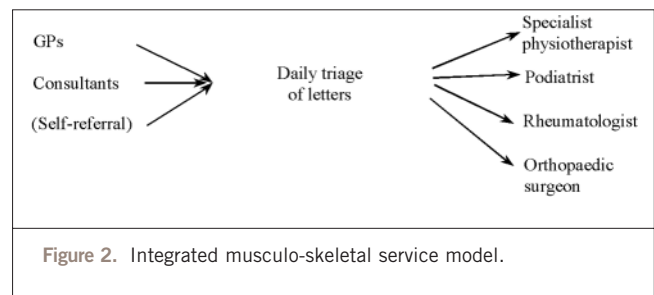
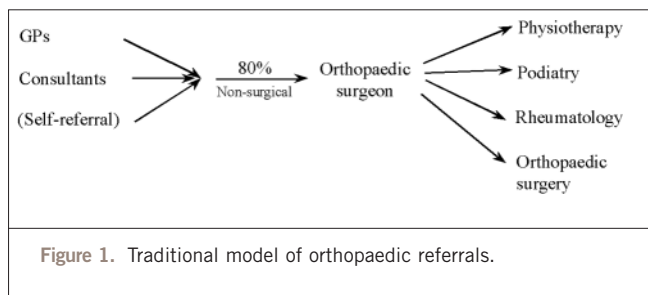
Traditionally, orthopaedic surgeons spend considerably more time in the out-patient clinic than the operating theatre. A study found that orthopaedic surgeons in two English regions spent on average just over 7.0 h actually operating per week.⁴ Delays in assessment and management are linked to poorer outcomes compromising patient care;⁵ therefore, the traditional model manifestly fails to address the needs of the patient.

The main strategy to achieve shorter waiting times has been to increase the number of orthopaedic surgeons, or recurrently fund waiting list initiatives. However, without a

major reconfiguration of traditional orthopaedic activity, the growing demand for hospital consultation and surgery cannot be adequately met. In England over the last decade (1988/9–1998/9), GP written referrals increased by 45%. The number of out-patients seen increased by only 38%, despite a 51% increase in the number of consultants (678 to 1023) and 84% increase in the number of doctors above SHO level. The reasons for this are multifactorial but include changing work patterns and the reduction in junior doctors' hours.

In 1989, Byles and Ling reported that 40–60% of new orthopaedic referrals could be managed satisfactorily by a specially trained physiotherapist.⁶ Since then, there has been increasing use of allied health professionals such as nurses, physiotherapists, occupational therapists and podiatrists in many hospitals to undertake the initial review of patients with back pain⁷ and other generalised orthopaedic and rheumatological disorders⁸ with encouraging results.

The NHS plan (2000) found that the public's top concern is waiting for treatment and that they wanted to see reduced



waiting times, new ways of working and high-quality care of patients. It specifically mentions the problem of long orthopaedic waiting lists, noting: 'unnecessary boundaries exist between professions which hold back staff from achieving their true potential'. Up to 40% of patients seeing an orthopaedic consultant in out-patients would be better off being treated by a trained physiotherapist in the first instance.

However, extension of the traditional role of one group can only improve overall efficiency if the other health professionals are prepared to support the change and reconfigure their own pattern of work. All too often, innovative practice has been introduced without obvious benefit as it still works in parallel with a traditional system.

Stobhill Hospital, Glasgow, is a district and general hospital, with a catchment population of approximately 170,000 people. The orthopaedic/rheumatology departments provide musculo-skeletal out-patient care, with the trauma and in-patient service at Glasgow Royal Infirmary. The unit had 4 orthopaedic consultants and 1 rheumatology consultant who between them had 8 out-patient clinics per week. Analysis of our data revealed that the waiting time for an out-patient appointment was 26 weeks. In addition, we found that only 556 (20%) of 2779 referrals needed surgery.

We present our experience of an integrated team of health professionals providing a musculo-skeletal service, which has been developed over a 7-year period with the objective of reducing out-patient waiting times. Continual internal reconfiguration was based on the premise that best practice is achieved when the most appropriate person, who may not be a doctor let alone an orthopaedic surgeon, sees the patient.

Materials and Methods

Following a discussion between the consultants from orthopaedics and rheumatology and allied health professionals (AHPs) who were all involved in the planning and change process, a decision was taken to integrate the activities of orthopaedics, rheumatology, specialist physiotherapy and podiatry. The local general practitioners (GPs) and hospital consultants were notified of this intention. Each element of the

service was introduced in a phased fashion starting in 1993 with specialist physiotherapy, rheumatology in 1995, and podiatry in 1997.

In practice, each weekday morning, a specialist nurse screens all the referrals to the unit in the previous 24 h and, according to evidence-based protocols, allocates every patient to one of the following areas: orthopaedics, rheumatology, specialist physiotherapy and podiatry (Fig. 2). The specialist nurse was given training in triaging referral letters. Triage was initially done under the supervision of a consultant. After a month, this process was carried out without any supervision. The consultant, however, is always available to help with any queries. Referral letters that do not fit into the triage protocols are discussed with the consultant who decides who should see these patients. Systematic review of the database of referrals and review of the literature allowed continuous modification of the protocols (Table 1), clinical practice and strategy by the multidisciplinary team. Patients are informed of this decision and if the patient/GP requests review by a hospital consultant instead of an allied health professional, this is arranged. If at any stage the patient requires assessment by another member of the musculo-skeletal team, this is easily organised. A fast-track service is provided for urgent problems, *e.g.* suspected infection, pain relief for severe sciatica and rapid assessment of inflammatory joint disease initially by a nurse specialist and then rheumatologist.

Design

SPECIALIST PHYSIOTHERAPY

In July 1993, a specialist physiotherapist was trained in an innovative role to assess and initiate treatment for low back, neck, knee and shoulder problems. Patients with appropriate conditions, referred to the orthopaedic unit by GPs/hospital consultants, were selected and seen instead by this service. Standard protocols are used to assess each individual problem and, if necessary, this is followed by discussion with the orthopaedic surgeon/rheumatologist who work alongside the physiotherapist in the same clinic. Initially, two sessions per week were allocated for assessment and extended to four in 1995.

Table 1 List of protocols used for triaging referral letters

Problem	Symptoms/diagnosis	Referral
Neck/back	Osteoporotic wedge compression fractures	Rheumatology/physiotherapist
	Mechanical symptoms	
	Under 20 and over 55 years of age	Inform orthopaedic consultant immediately
	Non-mechanical pain	
	Thoracic pain	
	Past history – cancer, steroid, HIV	
	Unwell, weight loss	
	Wide-spread neurology Structural deformity	
(Cauda equina syndrome)	Sphincter/gait disturbance	
	Saddle anaesthesia	
	Torticollis	
	Scoliosis	
Hand	Tingling weak fingers	Rheumatology
	Muscle wasting/clawing/neck pain	
	Pain/stiffness hands/feet	
	?Rheumatoid arthritis	
	Ganglion	
	Carpal tunnel syndrome Dupuytren contracture	Orthopaedic consultant
Elbow	Olecranon bursitis, RA	Rheumatology
	Nerve entrapments	
	Tennis elbow/golfers' elbow	Physiotherapist
	Post-traumatic stiffness	Orthopaedic consultant (elbow specialist)
	Loose bodies	
	Arthritis	
	Ulnar nerve problems Instability/dislocation	
Shoulder	Acute/chronic pain and stiffness	Rheumatology
	Impingement syndrome	Physiotherapy
	Rotator cuff tears	
	Frozen shoulder	
	Recurrent dislocation of shoulder	Orthopaedic consultant
	Acute weakness of shoulder	
	Rotator cuff tears/cuff arthropathy	
	Arthritis of gleno-humeral and AC joint Avascular necrosis	
Hip	Pain/stiffness due to arthritis/trauma	Orthopaedic consultant
	Avascular necrosis	
	Perthes' disease	
	Slipped femoral epiphysis	

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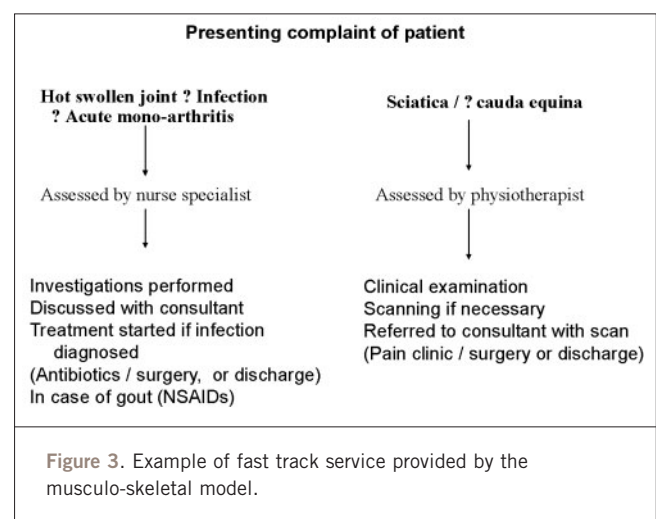
Table 1 List of protocols used for triaging referral letters (continued from previous page)

Problem	Symptoms/diagnosis	Referral
Knee	Pain/stiffness due to osteoarthritis	Physiotherapist
	Anterior knee pain	
	Popliteal cyst	Orthopaedic consultant
	Jumpers' knee	
	Osgood-Schlatter disease	
	Patellar instability	
	Ligament instability	
Locking/giving away		
Ankle	Instability	Orthopaedic consultant
	Osteoarthritis	Physiotherapist
Foot	Hallux valgus	Podiatry
	Claw toes	
	Metatarsalgia	
	Plantar fasciitis	Orthopaedic consultant
	Hallux rigidus	
	Post-traumatic problems/surgical complications	
Others	Polymyalgia rheumatica	Rheumatology
	Fibromyalgia	
	Ankylosing spondylitis	
	Rheumatoid arthritis	

RHEUMATOLOGY

In 1995, reconfiguration of acute general medical receiving allowed the single-handed consultant physician/rheumatologist, who had always provided a core service for patients with inflammatory joint disease and conditions such as polymyalgia rheumatica, fibromyalgia and ankylosing spondylitis, to devote more time to the diagnosis and treatment of soft tissue and difficult diagnostic musculo-skeletal problems. This led to triage of all patients with upper limb disorders likely to require a steroid injection such as tennis elbow or shoulder impingement, as well as those with a possible carpal or cubital tunnel syndrome. In addition, an open access bone densitometry service with clinical backup was established during this period.

A G-grade medical ward sister was trained as a rheumatology nurse specialist in 1997. Her contributions include interviewing, examining and investigating patients with the above presentations under the supervision of the consultant. For example, she assesses all patients referred with hot, swollen joints straightaway, or those with symptoms of nerve compression at a special clinic including conduction tests (Fig. 3).



PODIATRY

From April 1997, the majority of foot referrals were initially assessed and treated by the podiatry service, as most patients do not require surgery and are effectively treated

with advice and modification/supplying of footwear, insoles and orthoses.

ORTHOPAEDICS

Increasingly, the orthopaedic surgeons (3.5 full-time equivalents) see appropriate patients, *i.e.* those who still have significant symptoms despite conservative measures and require assessment with regard to surgery.

LEADERSHIP

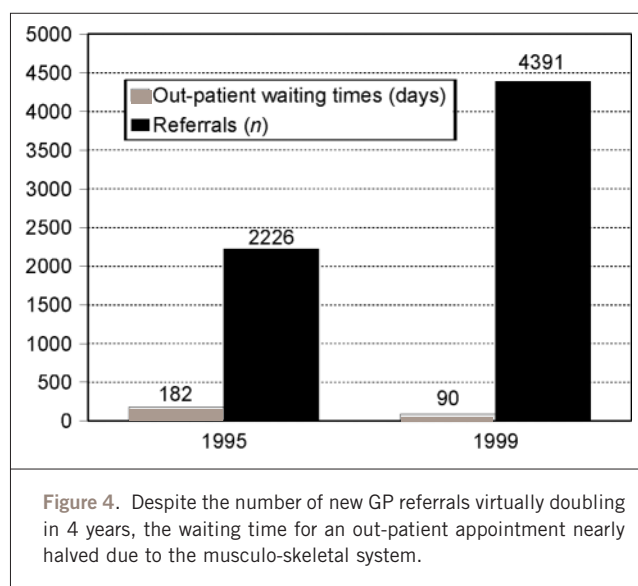
Low profile leadership (LR and PMcG) has been an integral part of the development of the musculo-skeletal unit. Throughout the period of integration, the team of consultants and allied health professionals met every week to discuss and address any issues that mitigated a smooth transition to this integrated approach. Junior doctors working in the orthopaedic and rheumatology firms worked along with the allied health professionals in triaging and seeing patients under close supervision of the consultant. They were also encouraged to participate in the weekly meetings. This reflects the underlying philosophy of a team approach, whereby the staff share a vision of regular reconfiguration based on evidence to improve the quality of patient care. The unit, therefore, benefits greatly from the input of confident, experienced staff who are valued and supported. This ensures that enthusiasm and commitment are maintained with considerable professional pride in the achievements of the unit and level of service provided.

Quality of patient care provided by the musculo-skeletal model was assessed through audit. GP and patient satisfaction levels were surveyed.

Results

Patients not fitting into the triage protocols were referred to an orthopaedic consultant; however, this accounted for less than 10% of all referrals. The increase in the number of patients referred and the decrease in waiting time to be seen from 1995 to 1999 are shown in Figure 4. Patient and GP satisfaction with the service was high as assessed by surveys as the waiting time was greatly reduced. We believe the quality of patient care also improved as delays in assessment and management were reduced. The number of patients referred rose partly due to GPs from other areas of Glasgow sending their patients to the department with the shortest waiting time.

In 1998/99, a total of 4568 new patients from all sources were seen by the musculo-skeletal team as follows: orthopaedic surgeons, 2477 (2779 in 1995); rheumatology, 618; specialist physiotherapy, 851; and podiatry, 642. Prior to reconfiguration, about 20% (556 out of 2779) of new patients seen by the orthopaedic surgeons were added to



the waiting list for surgery and this increased to 38% (1740 out of 4568 referrals) in 1998/99.

Of the patients, 40% (244 patients out of 618) referred to rheumatology were assessed for joint/soft tissue steroid injections and 40% (242 patients out of 618) for nerve conduction studies. Over a 2-year period, 64% of patients referred with the diagnosis of a carpal tunnel syndrome had the diagnosis confirmed clinically and neurophysiologically and only 27% of all the referred patients underwent carpal tunnel decompression.

The following conditions were assessed and treated by:

- Specialist physiotherapy** – 44% (365 out of 831 patients) back pain/sciatica, 32% (265 out of 831 patients) knee pain, and 24% (201 out of 831 patients) neck and shoulder pain. Overall, 45% (357 out of 831) were taken on for physiotherapy, 28% (252 out of 831) re-assured and discharged, and 29% (242 out of 831) were referred to the orthopaedic surgeon or rheumatologist. These included patients requiring surgery or patients who were returning following investigations ordered by the physiotherapist at their first consultation.
- Podiatry** – 29% (186 out of 642) had metatarsalgia, 21% (136 out of 642) hallux valgus, 12% (77 out of 642) heel pain and 9% (58 out of 642) toe deformity. The majority were treated with advice and modification of footwear or supplying insoles, shoes and orthoses. Some 7% (44 out of 642) were referred for a consultant opinion.

The team approach also improved the morale and personal development of the health professionals, as assessed by a survey, because they saw patients appropriate to their skills and expertise.

Discussion

The main outcome of our reconfiguration was a reduction of 50% (182 days in 1995 to 90 days in 1999) in the waiting time for a routine out-patient appointment. The increased number of new patients seen is largely due to the contribution of allied health professionals (AHPs). We calculate that the increased activity was achieved with approximately 10 sessions of AHP time. In the traditional model, at least two consultant orthopaedic surgeons would be required to deal with this number of new out-patients.

Orthopaedic surgeons do not possess unique diagnostic and therapeutic skills in the out-patient setting. Our strategy from the outset has been based on this premise and hence our commitment to the extended role of the specialist physiotherapist, rheumatology nurse specialist and podiatrist. What seems inescapable is that using orthopaedic surgeons to tackle a waiting list of out-patients, most of whom will not require an operation, is not the answer to the waiting time problem.

Our model ensures a more effective use of resources allowing direct access to the most appropriate specialist in the team. Removal of the unnecessary 'middle man', usually the orthopaedic surgeon, from the traditional pathway frees up more time for discussion with the patient and other members of the team as required. In retrospect, we should have actively engaged with the GPs before embarking on this initiative. Initial GP scepticism was a barrier to the introduction and maintenance of the musculo-skeletal service. This barrier was overcome by good communication with the GPs and patients. Patients were informed about our service and if the patient/GP requested review by a hospital consultant instead of an allied health professional, this was arranged. If, at any stage, the patient required assessment by another member of the musculo-skeletal team, this was easily organised. The other attraction of this service for the GPs was the provision of fast-track service for urgent problems. As a consequence, the initial scepticism vanished, as the service provided was based on patients' needs, with more time available for explanation and discussion. Patient satisfaction levels was surveyed and found to be high. A key factor in developing the unit is our multidisciplinary approach based on evidence from the literature as well as internal audit to establish appropriate protocols for assessment and management to ensure that quality of service is maintained.

The contribution from the rheumatology nurse specialist, whose activity in the management of inflammatory joint disease confirms the experience of others,¹⁰ released additional consultant rheumatology time for the musculo-skeletal initiative. The extended role of physiotherapists is increasingly being seen as a solution to long orthopaedic clinic waiting times.^{7,8,11} However, in a recent review of 43 centres,⁹ professional isolation and excessive stress were reported by 73% of physiotherapists to be major drawbacks.

We agree with the authors' conclusion that back-up by a consultant is essential and, in addition, that a co-ordinated team approach significantly reduces these problems.

While we are confident that the quality of service was not compromised at the expense of numbers seen, we were aware that current resources were inadequate to sustain further development. For example, one effect of the reconfiguration has been to increase the number of patients with surgically remediable disorders being seen by our orthopaedic surgeons, leading to an increase in the surgical waiting times. Our proposed strategy is, therefore, to continue to devolve the traditional out-patient work of our orthopaedic surgeons to allow a reduction of time spent in the out-patient clinic and an increase in operating time. This includes patients after orthopaedic procedures being reviewed by an outcomes assessment team (physiotherapist/nurse) instead of the consultant/registrar.

The debate concerning who manages the bulk of musculo-skeletal disorders in the health service, and where, is not new but in the absence of regional/national guidelines a variety of local strategies have been implemented. Referral rates generally rise when waiting times are shortened. One approach is to tackle the problem in the community through GPs and allied health professionals at the primary care level. The referral guidelines approved by NICE for osteoarthritis of the hip and knee can be used for appropriate management of some conditions in primary care and can be used as a model for agreed referral pathways for other conditions. We strongly support closer integration with community services, but believe that hospital-based specialist nurses and/or physiotherapists working closely with orthopaedic surgeons and/or rheumatologists are best placed to achieve the required level of expertise/experience to allow adoption of the 'extended role'.

Conclusions

The team's experience demonstrates the effectiveness of a team approach in tackling what is often seen as the insoluble problem of orthopaedic waiting times. The musculo-skeletal service was developed by a team of experienced staff who share a vision of improving patient care, based not only on extension of traditional roles, but also retraction, if this improves clinical standards. It is important to stress that the above system is not a recipe to be applied rigidly to other units but rather a flexible approach, which is patient-focused and evidence-based.

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Appendix

Staffing the musculo-skeletal service

CONSULTANT ORTHOPAEDIC SURGEONS (3.5)

Provide a range of sub-specialty interests in conjunction with colleagues at Glasgow Royal Infirmary. Primarily responsible for the diagnosis and management of patients with orthopaedic conditions suitable for surgery.

CONSULTANT RHEUMATOLOGIST

Responsible for diagnosis and management of patients with inflammatory joint diseases and non-surgical musculo-skeletal disorders including osteoporosis.

SPECIALIST PHYSIOTHERAPISTS

Two experienced physiotherapists assess and manage selected referrals that would traditionally be seen by a consultant orthopaedic surgeon.

SPECIALIST RHEUMATOLOGY NURSE

Runs nurse-led clinics for the management of patients with rheumatoid arthritis, including screening new referrals from general and hospital practice.

PODIATRY

Three podiatrists assess and treat referrals providing a comprehensive range of services including biomechanical assessment, insoles, orthotics, footwear advice and prescription.

OUTCOMES ASSESSMENT NURSES/PHYSIOTHERAPISTS

The outcomes team follows up all total hip and knee replacements. In addition, prospective audit projects are started and co-ordinated by the outcomes team to establish appropriate protocols for assessment and management to ensure that quality of service is maintained.

CLINIC NURSES

Three nurses with extensive experience in out-patient orthopaedics, including casting and nurse-led rheumatology drugs monitoring clinics, now responsible for triage of all out-patient referrals.

CLINIC SECRETARIES

Extensive experience of orthopaedic/rheumatology clinics. A comprehensive database generated directly from clinic letters allows flexible and accurate data collection for future audit/research.

CLINIC CO-ORDINATOR

Together with the nurses and secretaries arranges and co-ordinates out-patient appointments for 21 clinics per week, based on the degree of urgency.

PAIN SERVICE

A consultant anaesthetist provides a specialised service for patients with severe low back pain.

OCCUPATIONAL THERAPY

A therapist supplies splints and functional aids, especially for patients attending rheumatology clinics.

RADIOGRAPHY

As the X-ray/CT department adjoins the clinic, a consultant radiologist who specialises in musculo-skeletal imaging is frequently consulted during out-patient sessions, and the radiographers provide a flexible and efficient service.