

Patient Profile, Referral Sources, and Consultant Utilization in a Primary Care Sports Medicine Clinic

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BACKGROUND. Sports medicine has matured as a focused discipline within primary care with the number of primary care sports medicine physicians growing annually. The practices of these physicians range from "part-time" sports medicine as a part of a broader practice in their primary specialty, to functioning as a full-time team physician for a university or college. Managed care organizations are increasingly incorporating primary care sports medicine providers into their organizations. The optimal role of these providers in a managed care system has not been described.

METHODS. A descriptive analysis was made of patient contacts in a referral-based, free-standing primary care sports medicine clinic associated with a large managed care system. This study describes patient information including demographic data, referral source, primary diagnosis, specialized diagnostic testing, and subsequent specialty consultation.

RESULTS. A total of 1857 patient contacts were analyzed. New patients were referred from a full range of physicians both primary care (family practice, internal medicine, pediatrics, and emergency physicians) and other specialists, with family practice clinic providers (physicians, physician assistants, and nurse practitioners) accounting for the largest percentage of new referrals. The majority of patient visits were for orthopedic injuries (95.4%); the most frequently involved injury sites were: knee (26.5%), shoulder (18.2%), back (14.3%), and ankle (10%). The most common types of injury were: tendinitis (21.3%), chronic anterior knee pain (10.6%), and ligament sprains (9.9%). Specialized testing was requested for 8% of all patients. The majority of patients were treated at the Ft Belvoir Sports Medicine Clinic by primary care sports medicine physicians without further specialty referral.

CONCLUSIONS. Primary care sports medicine physicians offer an intermediate level of care for patients while maintaining a practice in their primary care specialty. This dual practice is ideal in the managed care setting. This study demonstrates the complementary nature of primary care sports medicine and orthopedics, with the primary care sports medicine physician reducing the demand on orthopedists for nonsurgical treatment. This study also demonstrates the need for revision in the orthopedic curriculum for primary care physicians.

KEY WORDS. Sports medicine; primary health care; referral and consultation; repetition strain injury; sprains and strains. (*J Fam Pract* 1996; 43:556-560)

The tenets of managed care have rapidly become a major force for change in medicine. The search for low cost, yet comprehensive medical care is now the banner objective in most medical care delivery systems. One strategy employed by health care

management organizations is the use of primary care physicians and physician extenders as gatekeepers and alternatives to high-priced subspecialty care. At the same time, sports medicine has matured as a focused discipline within primary care. The number of primary care sports medicine (PCSM) physicians has continued to grow, with more than 65 primary care physicians (family practice physicians, internists, pediatricians, and emergency physicians) graduating annually from approximately 50 sports medicine fellowship programs.¹ The practices of these physicians are diverse, ranging from "part-time" sports medicine as a part of a broader practice in their primary specialty, to functioning as a full-time team physician for a university or college. Alternatively, many PCSM physicians

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have joined in practice with orthopedic surgeons. The types of patient problems handled by PCSM physicians are quite varied, although orthopedic injuries appear to dominate their sports medicine practices. Many managed care organizations have incorporated PCSM physicians into their ambulatory care sections, although the ideal role for primary care sports medicine in these systems has not been defined.

Several previous reports have profiled the types of problems managed in a primary care sports medicine practice.²⁻⁶ Most of these have dealt with college training rooms or student health clinics. No clear database has been established to define the practice of primary care sports medicine in a managed care setting. Our study was designed to specifically profile patient referrals to a sports medicine clinic within a primary care based, managed care system. In addition to the presenting diagnoses, we evaluated the referral sources, special diagnostic test utilization patterns, and subsequent specialty referrals by a group of PCSM physicians. While the circumstances under which the Ft Belvoir Sports Medicine Clinic operates are somewhat unusual because of the military population, the information gained may be applicable to other large managed care organizations. In addition, this information may be useful for developing meaningful guidelines for training primary care providers in the management of orthopedic injuries.

METHODS

The Ft Belvoir Sports Medicine Clinic (FBSMC) is a free-standing primary care sports medicine clinic that is affiliated with a multispecialty community hospital. The clinic is associated with both a sports medicine fellowship and a family practice residency program. Three part-time fellowship-trained primary care sports medicine physicians and two sports medicine fellows provide a combined clinic coverage of 1.3 full-time equivalents. All patients are military beneficiaries (active duty, dependents, and retirees) and all gain access to this clinic by referral from another health care provider. A part-time physical therapy section is co-located with the FBSMC to provide limited evaluation and on-site patient education.

Information including demographic data (age and sex), referral source, primary diagnosis, specialized

diagnostic testing (excluding plain radiographs and routine laboratory work), and subsequent specialty consultation or referral was recorded on a clinic encounter summary form developed for this study. The patient's diagnosis was entered by both injury site (eg, shoulder, neck, knee) and clinical entity (eg, tendinitis, ligament sprain). For common diagnoses not covered by the general categories, such as retropatellar pain syndrome, a separate specific diagnosis was entered. For overall rank order, these were combined under the general diagnostic headings (eg, tendinitis, ligament sprain) to reduce inter-examiner bias. Special diagnostic tests that were recorded include: magnetic resonance imaging (MRI), computed tomography (CT), scintigraphy (phased bone scan), exercise stress testing, electromyography, and arthrography. A referral or consultation was recorded anytime a patient was sent to a physician outside the FBSMC for evaluation or treatment.

RESULTS

A total of 1857 patients were seen in the 10 months from September 1994 to June 1995. The gender distribution was 46% female and 54% male, and the age range from 7 to 92 years (mean age, 34). Just over half of these visits were made by patients returning for follow-up for a previous problem or for evaluation of a new injury. New patients were referred from both primary care (family practice, internal medicine, pediatrics, and emergency physicians) and subspecialty physicians with family practice clinic providers (physicians, physician's assistants, and nurse practitioners) accounting for the largest percentage of new referrals (61.4%). Overall, primary care providers were responsible for 94.7% of new referrals.

Most patient visits (95.4%) were for orthopedic injuries. The most frequently involved injury site was the knee (26.5%), followed by the shoulder (18.2%), back (14.3%), and ankle (10%). Nonmusculoskeletal (medical) complaints accounted for just 4.6% of all visits, with general health counseling (exercise prescription, weight loss counseling, and fitness testing) and cardiac and neurologic problems representing the majority of these.

The rank order of the most common diagnoses is shown in the Table. The most common types of injury were tendinitis (21.3%), chronic anterior knee

pain (10.6%), and ligament sprains (9.9%). When categorized by specific diagnostic entity, the most common diagnoses were subacromial pain syndrome/impingement (11.2%), patello-femoral pain syndrome (10.6%), ankle sprains (6.4%), and mechanical low back pain (6%).

Specialized testing was requested for 8% of all patients, and MRI was the most commonly used test (3.1%). The knee was imaged by this technique most frequently, accounting for over 60% of all MRIs ordered. In this study, meniscus tear was the most common diagnosis made by MRI scan. The frequency of other testing is shown in the Figure.

The majority of patients were treated at the FBSMC by primary care sports medicine physicians without further specialty referral. Orthopedic surgery accounted for the greatest number of consultation/referrals (4.4%). Other specialties consulted included: osteopathic physicians (1.6%), general surgeons (1.1%), physiatrists (0.6%), and podiatrists (0.4%). Physical therapy was requested for 22% (408) of all patients. The therapist's involvement ranged from a single visit for education to establishing long-term supervised rehabilitation programs with the patient.

DISCUSSION

The Ft Belvoir Sports Medicine Clinic provided a unique opportunity to profile a sports medicine clinic because it is a referral-based patient entry system. This allowed tracking of referring provider, presenting diagnoses, and the subsequent resource utilization patterns of the PCSM physicians. The structure of this managed care system relies heavily on family medicine clinics, which resulted in a high proportion of referrals from primary care providers. As a result, the referral flow was generally unidirectional (we received very few referrals from specialty clinics), with each referral to the FBSMC representing one less patient sent to a specialty clinic and a decreased workload for these clinics.

The majority of patients seen at the FBSMC were referred for musculoskeletal complaints. This finding is consistent with previous reports of PCSM clin-

TABLE

Rank Order of Diagnoses for 1857 Patients Presenting at Sports Medicine Clinic, September 1994 to June 1995

Order	Diagnosis	Frequency (%)
1	Tendinitis	395 (21.3)
	Shoulder	217 (11.7)
	Ankle	38 (2.0)
	Hand	23 (1.2)
2	Retropatellar knee pain (chondromalacia)	196 (10.6)
3	Ligament sprain	183 (9.9)
	Ankle	119 (6.4)
	Foot	18 (1.0)
	Wrist	18 (1.0)
	Knee	17 (0.9)
4	Mechanical low back pain	112 (6.0)
5	Muscle strain	93 (5.0)
6	Meniscus tear	86 (4.6)
7	Subluxation/dislocation//separation	86 (4.6)
8	Lumbar disc disease	70 (3.8)
9	Degenerative joint disease	56 (3.0)
10	Plantar fasciitis	50 (2.7)
11	Exercise prescription	44 (2.4)
12	Spondylolysis	43 (2.3)
13	Iliotibial band syndrome	42 (2.3)
14	Bursitis	41 (2.2)
15	Stress fracture	41 (2.2)
16	Anterior cruciate ligament tear	40 (2.2)
17	Shin splints (MTSS)	32 (1.7)
18	Peripheral nerve injury	30 (1.6)
19	Fracture	27 (1.5)
20	Unspecified minor medical problems	27 (1.5)
21	Piriformis syndrome	18 (1.0)
22	Other	150 (8.1)

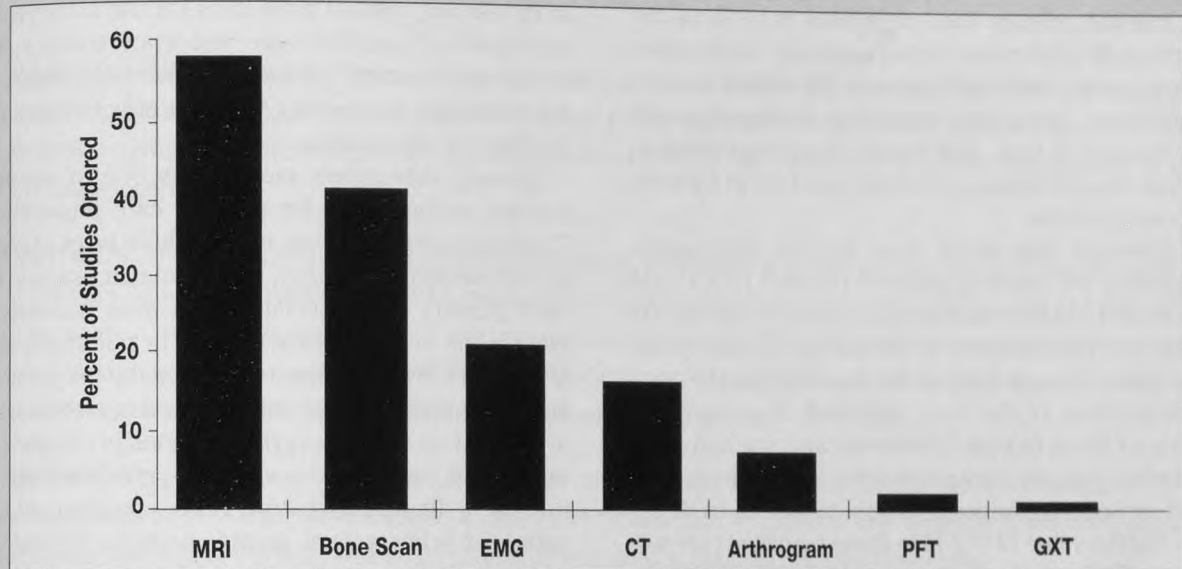
MTSS denotes medial tibial stress syndrome.

ics where orthopedic injuries account for 75% to 100% of their patients.^{2,6} In the case of the FBSMC, the low referral rate for medical problems probably reflects the comfort of the primary care physicians with the management of medical problems typically encountered in an active population. An alternative explanation is in the relative inaccessibility of non-urgent orthopedic care in our military community due to the high demand for these services. In addition, our identification as a sports "injury" clinic may have led referring providers to assume that we dealt primarily with musculoskeletal injuries rather than medical illnesses.

Although the majority of presenting problems were managed by the FBSMC staff of primary care physicians, the referral rate from this clinic was higher than would be expected in a general family prac-

FIGURE

The frequency and type of tests ordered in a sports medicine clinic. MRI denotes magnetic resonance imaging; EMG, electromyography; CT, computed tomography; PFT, pulmonary function testing; and GXT, graded exercise testing.



tice setting. Typically, primary care physicians refer from 2% to 5% of their patients for evaluation by another specialist.⁷⁻⁹ A recent study evaluating the family physician referral rate for orthopedic complaints revealed, however, a much higher referral rate of nearly 12%.¹⁰ While the referral rate at the FBSMC was relatively high, the 8% reported here was consistent with previous reports from sports medicine clinics.^{4,10} Most subsequent referrals from the FBSMC were for severe soft tissue injuries such as knee meniscus tears.

There are several possible explanations for the relatively high referral rate seen in our clinic. These patients had already been referred from a primary care clinic and so were preselected for increased complexity or severity of injury. Another possibility is increased recognition by the PCSM physicians of injuries requiring surgical treatment. This is supported by previous studies evaluating referral practices of primary care physicians, which revealed a higher rate of referral in areas where the physician felt the most knowledgeable.⁷

Another remarkable finding in this study is the degree to which physical therapy was used in the treatment of our patients (22%). No previous reports of physical therapy utilization by primary care physicians were found for comparison. This generous use of physical therapy is consistent with the general

philosophy of primary care sports medicine, which encourages a team approach to the functional rehabilitation of the active patient. Physical therapy is crucial for the expeditious return of patients to their preinjury level of activity.

The utilization of diagnostic imaging and specialized testing represents a major expenditure in most managed care settings.¹¹ The use of new imaging technologies, especially MRI, has increased greatly in the past 10 years. One recent study reported that over 20% of MRI scans are ordered by primary care physicians,¹² although the actual rate of ordering these studies within a given clinic is difficult to assess. Orthopedic surgeons order the greatest number of MRI scans, accounting for approximately 40% of all studies ordered.^{12,13} While there are no data regarding utilization rates among primary care physicians, the 3.4% in our clinic appears to be appropriate given the nature of our patients' complaints.

From the findings of this profile, it may be surmised that additional training in orthopedics for primary care providers could result in lower specialty referral rates. The majority of the referrals to the FBSMC could have been (and were) managed by primary care physicians given the appropriate training. Approximately one half of the referrals to the FBSMC were for the five most common diagnoses listed in the Table. Many of these referrals could

have been avoided if the referring providers were comfortable with evaluation and treatment strategies for these common injuries. A practical approach to training primary care physicians is to focus the orthopedic experience during residency on shoulder, knee, ankle, and back injuries. Residency review committee guidelines regarding orthopedics are ambiguous at best, and should be re-engineered to stress those entities commonly cared for in a primary care practice.

Although this study does provide information regarding the types of patients referred to a PCSM clinic and resource utilization by primary care sports medicine practitioners, it did not specifically evaluate either the outcome of the treatment or the cost-effectiveness of the care delivered. A comparison study of these factors (treatment outcome and cost) between primary care physicians, PCSM physicians, and orthopedic surgeons would be useful in determining the value of PCSM in these managed care settings. While cost of care is a critical indicator in today's medical climate, another factor in determining the worth of PCSM clinics in a large organization is the patient's perception of care and satisfaction that access to a specific sports medicine provider or clinic may elicit. This is another variable that should be assessed in future studies.

A potential criticism of this study is that the referral rate may have been influenced by the clinic's role as a teaching program. Although this may have resulted in additional referrals to our clinic, the consensus among the FBSMC staff is that the number of purely "educational" referrals were very limited. Several factors diluted this potential effect. First, there were a large number of referring providers from throughout the service area, most of whom were not directly involved with either training program. In addition, for several months preceding this study, the clinic had functioned without a fellowship, and referral patterns had probably been established in the absence of the fellowship. Finally, there was substantial similarity between our patient profile and those reported from other primary care sports medicine clinics.^{2,6}

CONCLUSIONS

This study provides a database of patient problems managed by a PCSM clinic. The injury profiles pre-

sented may be useful in defining the scope of practice for newly evolving PCSM clinics in managed care networks. This information may also be helpful in developing optimal guidelines for the orthopedic experience of primary care residency training. In addition, this study provides a starting point for future studies to evaluate the cost-effectiveness of this type of organization.

Primary care sports medicine is one of several training opportunities for primary care physicians. These physicians offer an intermediate level of care in orthopedics while often maintaining a practice in their primary care specialty. This dual training is ideal in the managed care setting. In our study, the ability of PCSM providers to manage the preponderance of referrals to the clinic resulted in a reduction in demand on the orthopedic surgeons in a high-volume health care network and more efficient utilization of a limited resource. The complementary nature of primary care sports medicine providers and orthopedic surgeons should be emphasized as PCSM providers are incorporated into managed care systems. These disciplines should be coordinated to work synergistically and not in competition.

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