Clin Orthop Relat Res (2008) 466:1987–1995
DOI 10.1007/s11999-008-0277-5

ORIGINAL ARTICLE

Low-severity Musculoskeletal Complaints Evaluated in the Emergency Department

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Received: 21 September 2007 / Accepted: 15 April 2008 / Published online: 22 May 2008

Abstract Patients with musculoskeletal disorders represent a considerable percentage of emergency department volume. Although patients with acute or high-severity conditions are encouraged to seek care in the emergency department, patients with nonacute, low-severity conditions may be better served elsewhere. This study prospectively assessed patients presenting to the emergency department with nonacute, low-severity musculoskeletal conditions to test the hypothesis that these patients have access to care outside the emergency department. One thousand ten adult patients with a musculoskeletal complaint were identified, and a detailed questionnaire was completed by 862 (85.3%) during their emergency department stay. Three hundred fifty (40.6%) patients presented with nonacute, low-severity conditions. Patients with nonacute, low-severity problems were less likely to have a primary care physician (62.5% versus 72.3%) or to have medical insurance (82.5% versus 87.7%), but a majority had both (59.3%). Only 14.3% had neither. Forty-four percent of all patients with primary care physicians believed their primary care physician was incapable of managing musculoskeletal problems. Appropriate use of the emergency department by patients with musculoskeletal disorders may require not only increased access to insurance and primary care, but also improved public understanding of the scope of care offered by primary care physicians and the conflicting demands placed on emergency department providers.
Level of Evidence: Level I, prognostic study. See the Guidelines for Authors for a complete description of levels of evidence.

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Each author certifies that his or her institution has approved the human protocol for this investigation, that all investigations were conducted in conformity with ethical principles of research, and that informed consent was obtained.

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Introduction

Questions of emergency department (ED) overcrowding have waxed and waned in perceived importance for more than a decade [10, 11], but renewed focus has ensued since the Institute of Medicine released its 2006 report, "Hospital-Based Emergency Care: At the Breaking Point," which cited ED overcrowding as a core problem [16]. Emergency department overcrowding is a multifactorial problem and includes patient-level (aging population, increasing disease complexity), hospital-level (capacity, patient flow, ratio of ED to inpatient beds), and systems-level (lack of health insurance, access to primary care physicians [PCPs]) components. Proposed solutions to ED overcrowding are directed at each of these components and include increased access to PCPs [24], universal health insurance, and triage of patients with low-severity conditions from the ED to alternative primary care settings

[2, 29]. Because musculoskeletal disorders are the most common class of complaints among patients presenting for care in EDs [28], they constitute an obvious area of interest for researchers investigating ED overcrowding and appropriateness of visits. The solution is not clearcut, however, because musculoskeletal disorders can range from acute, high-severity, limb-threatening fracture-dislocations to acute, low-severity problems like the majority of contusions, strains, and sprains to chronic, low-severity musculoskeletal pain syndromes of many years' duration. Acuity refers to the time course of a disease or condition. Severity describes the urgency of the disease or condition and its potential to become life- or limb-threatening or to cause unnecessary pain and suffering. Although patients with acute problems of sufficient severity are encouraged to seek timely emergency care, patients with nonacute (subacute or chronic) musculoskeletal conditions of low severity may be better served in other care settings. Despite its inherent importance to the debate on ED overcrowding, the precise magnitude of this phenomenon is unknown.

Prior studies of ED use and impediments to healthcare access have outlined aspects of the magnitude of the problem. For example, in the 2004 National Hospital Ambulatory Medical Care Survey report, 13.8% of 110 million ED visits during 2004 were attributable to primary musculoskeletal disorders [22]. More than one-third of these visits were categorized as either semiurgent or nonurgent (the two least critical triage categories), but there was no assessment of the chronicity of the conditions. In 1994, the Medicaid Access Study Group suggested it is difficult for Medicaid recipients to gain access to care outside the ED [23]. However, they did not specifically address the evaluation and treatment of, or impediments to followup for, musculoskeletal disorders. Research analyzing the National Medical Expenditure Survey [8] to determine the characteristics of patients with an increased likelihood of a nonurgent ED visit showed patients with Medicare or Medicaid had higher rates of nonurgent ED use than the uninsured. The absence of a relationship with a PCP has been found to be an independent correlate with nonurgent ED use [24]. Overutilization of emergency services for evaluation and treatment of an array of conditions, including chest pain [3] and asthma [27], has been documented. There is a large body of research regarding who provides musculoskeletal care in general for a host of conditions [6, 17, 25]. However, none of these studies, alone or in combination, describes the extent to which patients with nonacute, low-severity musculoskeletal conditions are seen in the ED or establish the fraction of these patients who present to the ED because of lack of a PCP, lack of medical insurance coverage, or both. Also, none of these studies describes other potential reasons, including perceived expertise of PCPs in the management of musculoskeletal disorders; desire for pain control; and perceived need for radiologic imaging studies, which may contribute to the presentation of this patient population to the ED.

The hypothesis of our study is that many patients with nonacute, low-severity musculoskeletal disorders have access to medical care outside the ED and could have sought care in that alternative venue but choose the ED as the default venue for medical care of their musculoskeletal disorders. To address this hypothesis, we posed the following questions: (1) What is the distribution of acuity and severity in musculoskeletal ED presentations in the survey population?; (2) Is there a lower rate of having insurance or a PCP or a higher rate of having neither in the nonacute, low-severity group when compared with the acute, high-severity group?; (3) Is there variability in the time of day or day of the week when patients are more likely to present with nonacute, low-severity problems compared with those with acute, high-severity problems?; and (4) Is there insufficient confidence among patients regarding their PCP's ability to evaluate and treat musculoskeletal conditions?

Materials and Methods

After receiving approval from our Institutional Review Board, we conducted a prospective observational study. For a 3-month period, trained research assistants, who are part of an established academic associates program in the ED of an urban, university-based hospital, surveyed eligible patients between 8:00 AM and 12:00 PM 7 days a week. This methodology has consistently identified more than 85% of patients eligible for enrollment in studies as diverse as acute coronary syndromes, abdominal pain, domestic violence, and wound management [15]. There was no statistical difference in triage levels of patients with musculoskeletal disorders triaged between 12:00 PM and 8:00 AM compared with other times of day at our institution. Also, we could not accurately determine their acuity because they were not enrolled in the study and this variable could not be accurately extracted retrospectively in all cases.

The research assistants prospectively reviewed the triage notes of all patients and approached eligible patients to request participation in an interview-based survey. Inclusion criteria included: a chief complaint involving the musculoskeletal system excluding the chest or abdominal wall; 18 years of age or older; English-speaking; and capable of giving informed consent. Exclusion criteria included being immobilized by the emergency medical services personnel, and being transported to the ED as a trauma alert with initial evaluation and management by the dedicated trauma team. Written informed consent was obtained. No inducements were offered for participation in the study.

The research assistants administered a customized 52-point data collection instrument, which included questions regarding demographics, details about the presenting musculoskeletal condition and its acuity, questions addressing barriers to access to healthcare outside the ED including questions about insurance and whether the patient has a PCP, questions about their perception of their PCP's ability to deal with musculoskeletal problems, details regarding prior evaluation and treatment of the presenting complaint including specialty care, and the primary and secondary reasons the patients came to the ED that day. The questions were presented in an open-response format, although the research assistants recorded the answers in categorical form (eg, the patient's answer "I fell 4 hours ago" would be recorded by the research assistant as "Fall, 0 to 6 hours ago"; or, if the patient stated, "I see my cardiologist for all my medical problems," this would be classified as "Has PCP").

For this study, acuity was defined as a function of the elapsed time from injury or onset of symptoms (eg, pain, swelling, decreased range of motion) to presentation to the ED for evaluation and treatment. We characterized as acute conditions less than 24 hours old; as subacute those between 24 hours and 7 days old; and as chronic those greater than 7 days old. For data analysis, we considered any presentation 24 hours old or older as nonacute. Our ED uses a four-level triage scale [28] for severity: Level 1, or emergent, patients with true emergencies who must be seen immediately for stabilization; Level 2, or urgent, patients need to be seen as soon as possible and have a high potential for deterioration or present in considerable pain; Level 3, semiurgent, patients require evaluation in a timely manner but can wait a reasonable time for pain control and management; and Level 4, nonurgent, patients are considered capable of waiting an extended time for evaluation and treatment without becoming unstable or uncomfortable. For analysis, triage Levels 1 and 2 were combined into a high-severity category and Levels 3 and 4 were combined into a low-severity category. Taking into account acuity and severity, patients can be assigned to one of four categories: acute, high-severity (less than 24-hour-old condition; emergent or urgent triage category); acute, low-severity (less than 24-hour-old condition; semiurgent or nonurgent triage category); nonacute, high-severity (greater than 24-hour-old condition; emergent or urgent triage category); or nonacute, low-severity (greater than 24-hour-old condition; semiurgent or nonurgent triage category).

We analyzed continuous data in terms of means and standard deviations; categorical data were analyzed in terms of frequencies and percents. We used chi square and t-tests for comparison. Logistic regression analyses were performed.

Results

Of the 1010 patients who were identified in the screening process as eligible to participate in the study, 862 consented and completed the survey (85.3% enrollment rate); seven patients (0.7%) were excluded because they were nonEnglish-speaking. Basic demographic data for the surveyed patients included mean age of 41.3 years (± 17 years) with a range of 18 to 96 years, 54% were female, 65% were black, 85.6% had insurance, and 69.4% had a PCP (the most common areas of chief complaint and mechanisms of injury are shown in Tables 1 and 2; percentages of injury to broad anatomic areas grouped by major mechanisms of injury are shown in Table 3).

Table 1. Anatomic distribution of chief musculoskeletal complaint

Area of chief complaint	Percentage of patients
Back	19.8
Knee	13.5
Ankle	10.3
Shoulder	7.3
Neck	6.5
Hip	6.2
Foot	5.4
Other (less than 5% each)	Total: 32

Table 2. Mechanism of injury

Mechanism of injury	Percentage of patients
None	27.2
Fall	20.6
Direct trauma (includes motor vehicle crash)	14.1
Sprained	11.3
Strained	6.9
Exercising	2.8
Automobile-pedestrian	1.7
Assault	0.8
Other	1.1

Table 3. Areas of body by mechanism of injury

Body area	Trauma*	Sprain/Strain†	None‡
Back/neck	48.3%	15.1%	36.6%
Head/face	75.0%	12.5%	12.5%
Upper extremity	67.4%	14.0%	18.6%
Lower extremity	41.1%	31.6%	27.3%

* Trauma includes fall, direct trauma, automobile-pedestrian, assault; †sprain/strain includes sprained, strained, exercising, other; ‡none is used when there was no obvious mechanism of injury.

Seventeen percent of the patients already had been evaluated for the problem with which they presented to the ED. During their ED evaluation, 55% of the patients had imaging studies; 11% of the patients, at the discretion of the emergency medicine attending physician, were seen by musculoskeletal specialty consultants; and 5% of the patients were admitted to the hospital, half to the orthopaedic service and half to internal medicine. A similar percentage of patients from the nonacute, low-severity group was admitted to the hospital as from the acute, high-severity group (6.9% versus 4.5%; $p = 0.4$). Forty-one percent of the discharged patients were referred for musculoskeletal followup and 69% of them were referred to either orthopaedic or hand surgery, most commonly for fractures, dislocations, high-grade sprains, and ongoing orthopaedic care (Table 4). When patients prioritized their reasons for coming to the ED and the first and second reasons were combined, the top three reasons for seeking ED care were pain relief (75.8%), diagnosis (35.4%), and radiographic evaluation (32.4%) (Table 5).

Table 4. Prior evaluation, diagnostics, consultation, admission, and followup

Prior evaluation	Percentage
None	81.6%
PCP only	3.9%
Specialist only	10.6%
PCP and specialist	3.8%
Orthopaedic surgeon	3.5%

Diagnostics	Percentage
Radiographs	55%
Plain films	98%
Normal	62%
Abnormal	38%
Fracture, acute	19%
DJD	2.4%
Dislocation	2%
STS	1%
Cannot rule out fracture	1%
Effusion	1%
Separation	1%

Consultation	Percentage
Any	11.1%
Orthopaedics or hand	91%
Neurosurgery	3%
Rheumatology	4%
Ear, nose, and throat	1%
Oral surgery	1%

Factors influencing consultation	p Value
Any comorbidity	< 0.05
Preexisting musculoskeletal	0.004
Radiographic abnormality	0.001

Admissions	Percentage	
Total admissions	5%	
Nonacute, low-severity admissions	6.9%	
Acute, high-severity admissions	4.5%	$p = 0.4$
Orthopaedic admissions	50%	
Femoral neck fractures	23.5%	
Tibial plateau fractures	23.5%	
Sciatica	23.5%	
Septic arthritis	10.8%	
Wrist fractures	5.9%	
Severe pain	5.9%	
Internal medicine admission	50%	
Rheumatology	17.7%	
General medicine	82.3%	
Low-severity musculoskeletal injury	79%	

Factors influencing admission	p Value
Any comorbidity	< 0.0001
Cardiac comorbidity	< 0.0001
Peripheral vascular disease comorbidity	0.004
Preexisting musculoskeletal	0.02
Rheumatologic comorbidity	0.004

Musculoskeletal followup	Percentage
Any followup	41%
Orthopaedic or hand surgery	69%
Orthopaedic surgery	53%
Hand surgery	16%
Occupational health service	12%
Student health services–sports medicine	6%
Rheumatology	4%
Neurosurgery	2%

PCP = primary care physician; DJD = degenerative joint disease; STS = soft tissue swelling.

Table 5. Reasons for coming to the emergency department

Reason	Reason 1 (%)	Reason 2 (%)	Combined (%)
Diagnosis	21.5	13.9	35.4
Radiograph	17.1	15.3	32.4
Pain relief	51.8	23.8	75.6
Second opinion	5.6	4.7	10.3
Frustration	3.2	2.7	5.9
Sent to emergency department by primary care physician	1	1.4	2.4
Only one reason*	—	38	38

* "Only one reason" was a Reason 2 choice only.

Regarding severity and acuity of their musculoskeletal conditions, 350 patients (40.6%) presented to the ED with nonacute, low-severity problems, and 44.8% of the patients had at least one comorbidity. Patients with diabetes mellitus, rheumatologic conditions, and preexisting orthopaedic problems were more likely to use the ED for nonacute, low-severity problems than patients with other comorbidities ($p = 0.03$, $p < 0.0001$, and $p = 0.006$, respectively). Logistic regression analysis of variables, including age, race, PCP status, insurance status, and whether the problem was nonacute, low-severity, only revealed patients with nonacute, low-severity presentations were less likely to have had radiographs or consultations than those with acute, high-severity presentations (Table 6).

Seventy percent of the patients surveyed had a PCP and 89% of these knew the name of their PCP. Almost one-fourth of patients (22.4%) with a PCP said their PCP's office was closed and only 50% of them said they would have gone to their PCP if the office was open; 9.5% of patients said their PCP's office was open but they could not get an appointment. Patients who presented with acute conditions more often had PCPs than those presenting with nonacute problems (80.8% versus 69.7%; $p = 0.008$). Among the 350 patients with musculoskeletal conditions classified as nonacute, low-severity presentations, fewer had a PCP than patients presenting with acute, high-severity complaints (64.6% versus 72.3%; $p = 0.04$). A majority (83.5%) of the patients surveyed had health insurance. Patients who presented with acute, high-severity problems more often had health insurance than patients who presented with nonacute, low-severity problems (87.7% versus 82.5%; $p = 0.04$). Patients presenting to the ED for evaluation of nonacute, low-severity musculoskeletal disorders were more likely to not have either a PCP or health insurance than those who presented for evaluation of an acute, high-severity problem (14.3% versus 9.0%; $p < 0.05$) (Table 7).

Patients with nonacute, low-severity musculoskeletal problems were more likely to use the ED during PCP hours (Monday through Friday, 8:00 AM to 5:00 PM) than were people with acute, high-severity problems (74.7% versus 59.7%; $p < 0.0001$). Also, patients with nonacute, low-severity musculoskeletal problems were less likely to use

Table 6. Severity versus acuity, comorbidities, and variables influencing nonacute, low-severity presentations

Severity versus acuity	High-severity patients, number (%)	Low-severity patients, number (%)	Comorbidities	Percentage
Acute (less than 24 hours)	67 (7.7%)	401 (45.9%)	Any	44.8%
Nonacute (greater than 24 hours)	41 (4.7%)	364 (41.7%)	Cardiac*	17.7%
			Preexisting musculoskeletal†	17.5%
Variables Influencing Presentation with NALSP			Preexisting rheumatologic‡	7.8%
			Diabetes mellitus	6.5%
Race	NALSP** (%)	p Value	Peripheral vascular disease	2%
Black	49.3%			
White	25.2%			
Asian	25.6%	< 0.0001		
Comorbidities				
Diabetes mellitus		0.03		
Rheumatologic		< 0.0001		
Musculoskeletal		0.006		

* Cardiac = congestive heart failure, hypertension, coronary artery disease, arrhythmias; † preexisting musculoskeletal = prior surgery, joint replacement, prior dislocation; ‡ preexisting rheumatologic = rheumatoid arthritis, osteoarthritis, gout, collagen-vascular diseases; ** NALSP = nonacute, low-severity problem.

Table 7. PCP and insurance status for different acuity and severity combinations

PCP and insurance status	Percentage
Total study population	
Have PCP	70%
Have insurance	83.5%
PCP and insurance	66.5%
PCP only	3%
Insurance only	18.9%
Neither	12.5%

Nonacute, low-severity	Percentage	Acute, high-severity	Percentage	p Value
Have PCP	64.6%	Have PCP	72.3%	0.04
Have insurance	82.5%	Have insurance	87.7%	0.04
PCP and insurance	61.3%	PCP and insurance	70.9%	
PCP only	3.2%	PCP only	3.3%	
Insurance only	21.2%	Insurance only	16.8%	
Neither	14.3%	Neither	9%	<0.05

the ED on weekends than those with acute, high-severity problems (22.6% versus 30.0%; $p = 0.02$).

Only 36% of patients had confidence that their PCP was capable of managing musculoskeletal conditions, 20% were unsure, and 44% believed their PCP was not capable.

Discussion

Not every patient with a nonacute, low-severity condition is, by definition, an inappropriate user of ED services. The American College of Emergency Physicians (ACEP) states the ED should be used for "an unforeseen condition...which a prudent lay person, possessing an average knowledge of health and medicine, would judge to require urgent and unscheduled medical attention most likely available, after consideration of possible alternatives, in a hospital emergency department" [4]. An unforeseen condition is unplanned and acute; after passage of sufficient time, the condition no longer is unforeseen. During that transition period, the patient could have considered their options and sought alternative venues of care. It is reasonable and logical to say that after 24 hours, a condition is no longer unforeseen. Using a four-tiered triage system, Level I, emergent, and Level 2, urgent, conditions can be viewed as ones requiring "unscheduled medical attention...in a hospital emergency department." This interpretation of the ACEP guidelines yields a similar classification as our study format. In this framework, acute conditions of low severity (an ankle sprain, which could have been a fracture) and nonacute conditions of sufficient severity (gout, which can flare) are reasonably addressed in the ED. Still, the fraction of patients with nonacute, low-severity conditions gives a reasonable starting point to investigate the percentage of patients who may be best served outside the ED. In this study, we applied this simple, first-pass algorithm to a cohort of patients presenting to the ED with musculoskeletal disorders and investigated characteristics of patients with nonacute, low-severity disorders that might explain why they sought care for their problem in the ED instead of a different venue.

Unique features and limitations of this study must be acknowledged. This study was conducted at an urban, tertiary care, teaching hospital. The distribution of patients seen here may not be representative of those seen at all EDs. The labor-intensive method of data collection we used necessitated leaving some hours of the day without trained researchers stationed in the ED. Based on use patterns and typical waiting times, we estimate at least 85% of eligible subjects were identified during the study period. An internal departmental audit at the time of our study showed the 8 hours between 12:00 PM and 8:00 AM generated approximately 12% of the total volume of the ED. Pilot sampling for this study showed the percentage of patients with musculoskeletal disorders presenting between 12:00 PM and 8:00 AM was similar to percentages during other hours of the day. Also, many patients presenting during those hours remained in the ED when the researchers arrived at 8:00 AM, and thus were screened for the study. We could not identify any systemic bias that would affect the rate of having insurance or a PCP between our sample and the patients missed in these late hours, but the possibility exists. It is possible the rates for nonacute, low-severity musculoskeletal presentations in our ED

reflect the background rate of nonacute, low-severity presentations for other problems such as fever, abdominal pain, and respiratory symptoms in the population we serve. It is possible a percentage of patients with nonacute, low-severity musculoskeletal problems have not considered a different venue for evaluation and treatment because, in an important sense, the problem remains unforeseen; they did not expect it to last this long and the fact that it has, not how severe it is, brings them to the ED instead of to another venue. Finally, we were not able to determine whether the ED was the "medical home" for a percentage of our patients and did not collect data on the frequency of ED visits in the study population.

In our sample of 862 patients, 350 (40%) had nonacute complaints (greater than 24 hours old) associated with a low-severity (semiurgent or nonurgent) triage level. Why do patients with nonacute, low-severity musculoskeletal problems choose to come to the ED? Does this simply represent poor utilization of ED resources? Do these visits epitomize inappropriate ED use? Does this contribute to ED overcrowding? Our data suggest the answers are not simple affirmatives and the real answers are complex and multifactorial.

We discovered that although a majority (64.6%) of the patients presenting to the ED with nonacute, low-severity conditions had medical insurance and a PCP, a considerable minority did not. The lack of either health insurance or a PCP is an impediment to receiving timely medical care; it follows that the lack of both (14.3%) is an even greater impediment to access to healthcare. The 35.4% of patients lacking medical insurance, a PCP, or both have few, or no, alternatives to the ED for evaluation and treatment of a musculoskeletal problem. The 14.3% of the nonacute, low-severity group without either health insurance or a PCP can be viewed as having no other healthcare option. Thus, their visits to the ED for musculoskeletal evaluation clearly meet the ACEP definition for appropriate ED visits. Although their visits obviously contribute to ED overcrowding, they have no alternative but to further crowd the ED if they need care. Many opportunities exist to increase access to care, including national health insurance, more affordable insurance options, streamlining access to PCPs for patients who have insurance, patient and physician education, and increasing other safety net options, including health clinics.

However, because 64.6% of patients with nonacute, low-severity musculoskeletal problems seen in the ED had medical insurance and a PCP, it can be argued that overutilization of the ED for these conditions and related ED overcrowding cannot be blamed solely on access to insurance and PCPs. Why did these insured patients who have PCPs not seek care someplace other than the ED? This is an important question because this is the group of patients for which it is easiest to argue that they did not meet the ACEP definition of when an ED should be used for evaluation and treatment of a medical condition. Patients using the ED for nonacute, low-severity problems were more likely to be black, to have diabetes, rheumatologic disease, and preexisting musculoskeletal problems. Patients in this group were less likely to have radiologic imaging studies performed or musculoskeletal specialty consultation obtained. However, after an ED evaluation, a minority (6.9%) of patients triaged as nonacute, low-severity can require expedited care and get admitted to the hospital. However, none of these findings alone or in combination explain the ED use patterns we observed.

The reasons patients seek ED care are protean; our data suggest a large percentage of patients (75.8%) came to the ED for pain relief; 35.4% came to obtain a diagnosis; 32.4% came to have access to radiography; and only a small percentage, 4.3%, stated they believed the ED was the appropriate place to go for their condition. When patients weigh the value of each of these influences—desire for pain relief, diagnosis, ability to get radiographs, and appropriateness—they make the decision to come to the ED for evaluation and treatment. This is supported by the ED usage patterns related to time of the day and day of the week seen in patients presenting to the ED with nonacute, low-severity musculoskeletal problems. The fact that these patients were more likely to come to the ED during regular office hours and less likely to come during evenings and on weekends suggests strongly that the ED is used as a place of convenience and that these patients are being seen when it is easiest for them to allot the time in the priorities of their daily lives. These findings support the fact that after the passage of sufficient time (24 hours in our study), the problem is no longer unforeseen and the patient has had other evaluation options. When the problem is of a nonacute, low-severity nature, the patients are more likely to wait for a more convenient time to come to the ED (Monday through Friday, 8:00 AM to 5:00 PM) and not be sufficiently worried by the delay to evaluation and treatment to alter these presentation patterns.

Another reasonable and parallel explanation is many patients lack confidence in their PCP's ability to manage musculoskeletal conditions. Because only 19% of patients had been evaluated for their presenting problem and only 3.5% of the patients were receiving the care of an orthopaedic surgeon for this problem at the time of ED presentation, our survey results in this regard are primarily an evaluation of perceptions of PCP care. In our study, only 36% of patients had confidence their PCP could manage their musculoskeletal disorder. Nearly half (44%) of the sample stated their PCPs were not capable of managing musculoskeletal conditions; an additional 20% were unsure of their PCP's ability. In addition, 18.5% of the patients listed as either their first or second reason for coming to the

ED answers directly reflecting lack of confidence in their PCP's ability to manage the problem; they were sent to the ED by the PCP ("He/She doesn't treat this kind of problem"); they wanted a second opinion; or they were frustrated with the care they were receiving for the problem. In an important sense, even if you have insurance and a PCP, if you do not have confidence in your PCP's ability to manage a specific problem, you do not have access to healthcare for that problem. The fact that patients with nonacute, low-severity musculoskeletal problems most often present to the ED during the hours that their PCPs' offices are open supports their lack of confidence in their PCPs' musculoskeletal knowledge. This argument was expressed in answers patients gave to the question, "Why didn't you go to your PCP today?" These included: "He's an illness doctor, not an injury doctor"; "He's not a bone doctor. He's a heart and guts doctor"; and "He doesn't know how to deal with orthopaedic problems."

Many ways of decompressing EDs have been suggested, including triage of patients with nonacute, low-severity presentations from the ED to other venues of care. For example, The University of California, Davis (UC, Davis) developed triage rules to reroute patients with low-severity presentations to other venues in their health system and in the greater Davis metropolitan area [9]. Researchers there identified 50 minor chief complaints, 16% of which were musculoskeletal, and used these chief complaints to reroute 19% of their triage volume to alternative venues. During the trial period of this project, they found "99% of these patients cooperated with this system, and they appeared not to be harmed by this system" [9]. This triage strategy produced passionate debate and pointed disagreement focusing around the ACEP definition of an appropriate ED visit [1]. Furthermore, the safety of the UC, Davis triage strategy was difficult to reproduce in subsequent studies [18]. This has direct implications for musculoskeletal care because 28.4% of the patients in the UC, Davis study [9] who were rerouted from the ED had a musculoskeletal chief complaint. Our study was not designed to assess whether patients with nonacute, low-severity presentations could be safely triaged from the ED to other venues of care. Caution must be taken given the fact that 6.9% of this group was admitted to the hospital. However, the fact that a much larger percentage of this group chooses the time they come to the ED, coming at a time of convenience and not at the time of occurrence of an unforeseen event, suggests this group may contain a large percentage of patients who could be prospectively identified for care in a different venue. This group includes some of the patients admitted to the hospital because a number of these admissions could have been arranged on an elective basis. This hypothesis would have to be tested prospectively.

Our study shows a considerable percentage of ED visits by patients for musculoskeletal problems are nonacute, low-severity visits, and these patients are more likely to choose to come to the ED for evaluation at a time that is convenient for them. A minority (14.3%) of these patients did not have either health insurance or a PCP and can best be viewed as having no alternative to ED care. An additional 21.1% either did not have health insurance or did not have a PCP and may have used the ED because of these barriers to obtaining care. Using the 2004 numbers provided by the NHAMC report [22], 13.8% of 110 million ED visits, or more than 15 million ED visits, were for musculoskeletal problems and more than 33% of these were categorized as low severity, identifying a potential five million ED visits per year that could be managed in alternative settings. Shifting patients from the ED to outpatient PCP offices, urgent care centers, subspecialty offices, and health clinics will require large-scale changes in attitude and restructuring in the currently used models of healthcare delivery. Additional observational studies are needed to see if our findings hold true at various EDs. Prospective studies are needed to determine if patients with nonacute, low-severity musculoskeletal problems can be safely routed to other venues of care. This could provide a short-term solution while potential long-term solutions are formulated, researched, and implemented. These include but are not limited to: increased patient access to insurance and primary care physicians; improvements in musculoskeletal education in medical schools and residencies; changes in public perception of the scope of care offered by primary care physicians; and a better understanding of the conflicting demands placed on providers in the emergency department.

Acknowledgments We thank the academic associates who conducted the interviews.

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