Published in final edited form as:

Spine (Phila Pa 1976). 2009 April 1; 34(7): 718–724. doi:10.1097/BRS.0b013e31819792b0.

A long way to go: Practice patterns and evidence in chronic low back pain care

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Abstract

Study Design & Setting—A cross-sectional, telephone survey of a representative sample of North Carolina households in 2006.

Objective—The primary objectives of these analyses were to: describe health care use (providers, medications, treatments, diagnostic tests) for chronic LBP and relate current patterns of use to current best evidence for care of the condition.

Summary of Background Data—Chronic low back pain (LBP) is common and expensive. Prior research on care utilization often was derived from medical claims databases, reflecting reimbursed health care use, often by one payer.

Methods—5,357 households were contacted in 2006 to identify 732 noninstitutionalized adults 21 years and older with chronic LBP. 590 individuals sought care. Patient reported health care utilization, comparison with efficacy as demonstrated by current systematic reviews.

Results—Individuals with chronic back pain were middle-aged (mean age 53 yrs), and the majority were female (62%). Provider and treatment use was common and varied. 60% used narcotics in the previous month. The mean number of provider visits was 21, and over-one third had an advanced imaging procedure in the past year. Physical treatments were common, and often not supported by evidence. Only 3% had engaged in a formal spine rehabilitation program. Half of patients not taking antidepressants were positive on a two-item depression screen.

Limitations—Although this study was population-based, it was conducted in only one state.

Conclusions—Provider and treatment use for chronic LBP are both very common and varied. Current treatment patterns are consistent with over-utilization of some medications and treatments, and under-utilization of exercise and depression treatment.

Introduction

Chronic low back pain (LBP) is disabling, expensive and becoming increasingly common.¹

² Recent work by our group in North Carolina has indicated that the prevalence of chronic LBP has increased over the past 10–15 years, increasing in our recent study from 3.9% to 10.2% of the adult population³. We also found that the proportion of those who seek care has also modestly increased.

Over the past 15 years the evidence base guiding the choice of effective treatments for amelioration of symptoms and improvement in functioning has grown substantially. The clinical trials literature in back pain has markedly increased; providers and patients now have access to a substantial database from which to guide choices among tests and treatments. Ideally, providers make test and treatment choices based on their experience, the best available evidence, and the clinical characteristics of the patient. Provider choices of care may also be influenced by other factors such as scope of practice. For example, care provided by a physical therapist will differ, in some ways, from care provided by a physician. Even within the same

profession, providers' choices of care may vary depending upon the degree to which they are aware of current evidence on treatment effectiveness and the degree to which they choose to incorporate the evidence into their practice. Treatment choices may also be influenced by patients, first by the types of providers they choose to see, which will influence the types of treatments received; and second by their interactions with providers.

The focus of our study is to begin to understand whether we are choosing tests and treatments for chronic LBP wisely. We examine population-based survey data from patients with chronic LBP and recent systematic reviews on the efficacy and effectiveness of tests and treatments for patients with chronic LBP to achieve the following objectives: 1) describe health care use (providers, medications, treatments, diagnostic tests) for chronic LBP and 2) to relate current patterns of use to current best evidence for care of the condition. We were specifically interested in identifying areas where ineffective or minimally effective treatments may appear to be over-utilized, and conversely, areas where effective options may be under-used, since these represent opportunities for care improvement. Examining the concordance or lack of concordance between available best evidence and current treatment patterns can hopefully influence guideline dissemination as well as other interventions, such as payment reform, to improve the effectiveness of current care for back pain. Greater use of treatments that relied more on marginally effective technology and were of greater cost would be examples of evidence non-concordant care.

Methods

We conducted a population-based survey of patients with chronic, impairing low back and neck pain in North Carolina. Since this survey was not based on insurance claims, we were able to query patients regarding all types of care, regardless of their insurance status or payment source. The study was conducted in North Carolina as a continuation of work in the state for over 15 years. North Carolina is characterized by a racially diverse population with a mixture of urban and rural populations. Survey data has the advantage over analysis of claims data or chart-based information since we can sample individuals with back pain regardless of their type of insurance or where or whether they sought care, yielding highly generalizable information. Although some information on back pain care can be gleaned from national surveys such as the Medical Expenditure Panel Survey (MEPS), the functional status of those individuals is unclear since the back pain questions are a small part of a general health status questionnaire.⁴

Sampling

The sampling for the 2006 back and neck pain survey in North Carolina has been described in detail elsewhere³. We used standard telephone survey methods, randomly selecting residential households. At each contacted household, an adult completed the household roster. If one or more adults in the household had a history of back or neck problems in the past few years, one individual was randomly selected to be interviewed in more detail to determine whether s/he had chronic pain. We defined chronic pain as symptoms lasting greater than 3 months or over 24 separate episodes of back or neck pain in the previous year. Back and neck pain had to be sufficiently impairing so as to interfere with the respondents usual daily activities. Individuals who reported both chronic back and neck pain completed the questions on back pain.

A stratified probability sample of North Carolina telephone numbers was obtained from GENESYS Sampling Systems,⁵ the sampling vendor for this study. Numbers were chosen from six sampling strata, defined by the cross-classification of two stratification variables: 1) region of the state (mountains, piedmont, coastal) and 2) concentration of African-Americans in the population. The latter variable was chosen to ensure adequate representation of African-Americans.

5,357 households with one or more adults 21 years or older were contacted and 9,924 adults were rostered. The household response rate was 66 percent and was computed as the sum of households interviewed divided by the sum of eligible households plus an estimate of the proportion of households with unknown eligibility.⁶ The latter variable accounts for households with unknown eligibility that, if called an indeterminate number of times, would more than likely have been eligible.

Of the 5,357 households contacted, 3,276 households had one or more adults with a history of back and/or neck pain. Of the adults randomly selected from each household (n=3,276), 2,809 were interviewed for an individual response rate of 86 percent and an overall response rate of 57 percent. The overall response rate is the product of the household response rate (66%) and the individual response rate (86%). Non-responders were similar in age and race, relative to responders, but non-responders were more likely to be male (chi square test, $p<.001$).

Interview—Over the course of the 35 minute survey, respondents with chronic back or neck pain were queried regarding health care provider visits, treatments, and tests during the previous year (survey instrument available from researchers on request). Respondents were specifically queried about whether they saw each of the following provider types: primary care physician, orthopedic surgeon, neurologic surgeon, doctor of chiropractic, physical medicine and rehabilitation physician, anesthesiologist, neurologist, rheumatologist, psychiatrist, physical therapist, acupuncturist, and other. Respondents also told us how many visits they conducted with each type of provider. Respondents who indicated seeing one or more provider were specifically queried regarding named diagnostic tests (CT, MRI, nerve conduction, etc.) and physical treatments (ultrasound, spinal manipulation, massage, physical therapy, etc.) used. The window of recall for providers, treatments, and tests was the previous year.

All respondents were also queried regarding medications they took in the previous month, since the accuracy of recall of medication use drops sharply as the ‘window’ of recall extends.⁷ Respondents were specifically asked about over the counter and prescription drug use including narcotics, muscle relaxants, and depression medication. Common names for drugs in each category were specifically listed by the interviewer. Respondents who indicated taking narcotics were asked about frequency of use (every day, as needed, occasionally). The window of recall for medications was restricted to the previous month due to limited recall regarding medications taken in the remote past. Pilot work by our group indicated that recall on number of provider visits in the past year, when compared with chart abstraction, was good, with a correlation between the two measures of visit number of 0.83.

Data Analysis—All analyses were conducted using SAS or Stata (ver 9.2). We primarily conducted descriptive analyses to describe health care utilization. Comparisons between groups used standard parametric and non-parametric statistical tests. All results are weighted to reflect the complex sampling design, 95% confidence intervals were generated for all point estimates. The results therefore reflect the population of the state.

We utilized the systematic review conducted by the American College of Physicians (ACP) and the American Pain Society, in addition to active Cochrane Collaboration systematic reviews to represent the current “best evidence” available to patients and providers. The ACP review is methodologically rigorous and recent.^{8,9} Cochrane reviews are characterized by extensive peer review and methods consistency; recent reviews were available for many of the treatments surveyed. Although multiple other systematic reviews for ‘back pain’ are available, we chose these two sources for the above reasons. In our tables we summarized the review conclusions as positive (+), negative (–) or “unable to estimate” for each modality or medication. The ACP review also used terms such as “small” or “moderate” to describe the magnitude of the effect of the treatment, if effective. We did not use formal statistical tests

when comparing current health care utilization patterns with ‘best evidence’ as described in formal reviews.

Results

Of the 2,809 individuals interviewed, 732 indicated that they had chronic LBP and 141 indicated they had chronic neck pain. This analysis focuses on the 706 individuals with chronic LBP who completed the sections on provider, treatment, and test use. We chose to focus our analysis on back rather than neck pain due to the much more complete data base regarding treatment effectiveness for back compared with neck pain. Of the 706 patients with chronic LBP, 84% (590) had at least one visit to a provider. Those who did not seek care had somewhat better functional status and were of lower socioeconomic status than those who did seek care.

The demographics of the individuals who sought care are presented in Table 1. These individuals are middle-aged, slightly more likely to be female than male, and very disabled. They have high pain scores with a mean of 7 on a 0–10 pain scale, and have poor functional status, similar to that of patients seeking consultation for consideration of spine surgery in other studies.¹⁰ Their mean Roland back-specific disability score is 15 (0–23 scale) with a SF-12 physical component subscale of 31.

Medication Use

Medication use by those who did and did not see a provider in the previous year is presented in Table 2. These patients, therefore, utilized self care as their primary treatment. They reported no provider contact, making it unlikely that physicians would phone in prescription refills for patients who they had not seen. Medication use was common among the 116 patients who did not see a provider. Utilization of over-the-counter (OTC) medications such as non-steroidal anti-inflammatory agents (53%) and use of acetaminophen (65%) was common. These rates of use of OTC medications were similar to the OTC use of patients who saw health care providers in the previous year. Surprisingly, 15% of non-care seeking individuals took weak narcotics such as codeine or tramadol and 6% took strong narcotics such as oxycodone in the month prior to the interview. Six percent of patients took tricyclic anti-depressants or anti-convulsants, and 9% took anti-depressants. We did not ask these patients how they obtained these medications. While its possible they have been called in through phone prescriptions by a provider whom they had not seen in the past year, the medications may also have been obtained through relatives or other “gray market” means.

Poly-pharmacy was extremely common for those who saw a provider. Forty-seven percent of patients took strong narcotics such as oxycodone, morphine or fentanyl, and 33% a weak narcotic. A total of sixty-one percent of patients were taking some sort of narcotic medication in the previous month. Thirty-one percent of patients took a muscle relaxant. Patients taking narcotic medications were more likely to have taken muscle relaxants in the past 30 days relative to patients who did not take narcotics (41.3% vs 9.2% $p<.001$).

Table 2 also indicates whether each medication has been assessed as efficacious by recent systematic reviews. Recent guidelines by the American College of Physicians (ACP) have discouraged the long-term use of muscle relaxant medications. Twenty-six percent of patients were taking both a narcotic and muscle relaxant in spite of little evidence of the efficacy of the muscle relaxants in chronic back pain⁷. Only 18% of patients were taking a tricyclic anti-depressant or anti-epileptic agent to serve as a pain-modulating agent. Tricyclic anti-depressants have a fairly good evidence base of partially ameliorating chronic back pain; the evidence base for anti-epileptic medications such as gabapentin is somewhat weaker.

Patients taking narcotic medications in the past 30 days were more disabled than patients not taking narcotics, with higher Roland scores (mean 17.4 vs 11.9, $p<.001$) and lower SF-12 physical function scores (mean 28.2 vs.35.0, $p<.001$). Their pain ratings over the past 3 months were also higher (mean 7.2 vs 6.3, $p<.001$), they were more likely to have a positive depression screen (64.0% vs 44.6%, $p<.001$), and they had lower SF-12 mental health scores (mean 45.1 vs 50.3).

Provider Use and Visits

Table 3 presents descriptive data on provider use and visits. Seventy-six percent of subjects saw a primary care provider and almost half saw an orthopedic or neurologic surgeon. Physical therapists and chiropractors were the next most frequent types of providers seen. Overall provider use and visits were extremely common, averaging 2.7 provider types per year (range of 1 – 11) and 21.2 visits (across all providers) per patient per year. The number of visits ranged from one visit (9% of patients) to over 40 total visits per year (13% of patients). Chiropractors and physical therapists saw patients most frequently with a mean number of visits of 21 and 16 respectively. Mean number of visits to physician types ranged from 3–6 visits.

Use of Diagnostic Tests

Although these patients had chronic back pain for a long period of time (average of 10 years of continuous pain), utilization of diagnostic tests remained common (Table 4). Forty-six percent received plain radiographs in the previous year and 36% received CT or MRI scans. Of those patients who received a CT or MRI scan, 52% received a second advanced imaging test within the year of reporting. Although the evidence base is limited, multiple imaging tests in the absence of indications for surgery are discouraged by ACP guidelines⁶. In our sample, for each patient who received surgery in the previous year, 5 patients had advanced imaging studies.

Use of Physical Treatments

We found that utilization of physical treatments was both common and varied. Table 5 illustrates the proportion of respondents using the treatment and whether the treatment was assessed effective by the recent ACP review or Cochrane reviews. Use of treatments demonstrated to be moderately effective in recent systematic reviews (NSAIDs or structured exercise) were more than balanced by common use of treatments characterized by evidence of only marginal efficacy or even, in some cases, with either no evidence of efficacy or significant evidence of lack of efficacy. For example, one third of individuals received one of the following treatments which have minimal to no evidence of efficacy: traction (6%) corset or brace (19%), or a TENS unit (19%). In addition, marginally effective treatments such as electro-stimulation (21%, average of 20 treatments per patient) and ultrasound (16%, average of 8 treatments per course) are concerning examples of potential over-use. At the same time, less than half of the patients were prescribed exercise, only 30% of patients saw a physical therapist in the previous year (Table 3), and only a small number (3%) were in a structured rehabilitation program, one of the few treatments for which there is moderate evidence of efficacy.

Depressive symptoms were very common among patients with chronic back pain who sought care (Table 6). We utilized a two-item depression screen. If a patient answered “yes” to either of the questions: “Over the past year, have you had 2 weeks or more during which you felt sad, blue or depressed, or when you lost all interest or pleasure in things you usually cared about or enjoyed?” or “Have you felt depressed or sad much of the time in the past year?”, s/he was considered to have a positive depression screen. Previous research has demonstrated that these patients have a high likelihood of having serious depression.¹¹

Fifty-four percent of patients with chronic back pain had a positive depression screen. Of those with a positive depression screen only 38% were taking anti-depressant medications. Even among those taking antidepressants, substantial numbers of patients were simultaneously taking muscle relaxant medications, which can be sedating. In contrast, among patients with a negative depression screen 16% took anti-depressant medication. Only 12% of those with a positive depression screen saw a psychiatrist or psychologist in the previous year.

Discussion

A large majority of individuals with chronic low back pain seek care from more than one provider and receive a number of tests and treatments. These tests and treatments often do not reflect the best evidence for effective treatment of this chronic and disabling condition. Some treatments, such as use of therapeutic exercise, appear to be under-utilized, while other treatments, such as utilization of muscle relaxants, advanced imaging studies, and physical modalities such as traction, TENS units, and corsets, appear to be substantially over-utilized. Consistent with other literature we found very high utilization of narcotics.⁴ Utilization of narcotics has increased substantially in recent years, possibly in response to efforts to make pain the “fifth vital sign” and concern regarding under-treatment of pain.¹² However, consistent with systematic reviews, we found that patients on narcotics had poor physical functioning and there was significant evidence of depression with poor SF-12 mental functioning scores.¹³ Patients on narcotics were also more likely to have a positive depression screen, relative to those not on narcotics. While some of the findings from our respondents could be due to confounding by indication (worse functioning patients are more likely to be placed on narcotics by their providers), our findings reinforce the need for appropriately sized placebo-controlled trials of narcotics for chronic pain. Certainly these chronically ill patients do not seem to be substantially benefiting from their medications, and they are at risk for significant side effects.

The burden of un- or under-treated depression in this population is substantial. Depression rates are known to be increased in chronic pain patients and treatment with medication or cognitive-behavioral therapy can lead to substantial improvement in depressive symptoms, although not necessarily in level of physical functioning.^{14,15} We recommend greater efforts towards case-finding and treatment of depression in the chronic back pain population.

The strengths of this study are the ability to generalize the sample to a defined population with demographics similar to the rest of the US, and the lack of restrictions by payment source or type of care sought. The second strength is the specific definition of back pain: respondents had to identify the problem as sufficiently severe that they could not perform their usual activities of daily living and lasting greater than 3 months in duration- providing information on the clinical syndrome associated with the majority of spine disability and social cost.¹⁶ Our measures of functional status, care utilization and depressive symptoms were based on standard measures. Our study does have several limitations. We could not link care received with the identity of the provider who recommended that care; we found in pretesting that patients could not reliably identify which of their often multiple care providers prescribed specific tests, medications or treatments. As a cross sectional survey we cannot track the individuals over time to determine the course of their impairment, although other literature has demonstrated that chronic back pain, once established, is persistent.¹⁷ The measures of effect in the systematic reviews we examined were almost always assessed as an average effect; evidence is generally lacking in the constituent studies in subset analyses by age, gender, comorbidity, or other clinical criteria. Even when there is no overall benefit from a treatment, some individual patients may benefit, but current evidence generally cannot guide us toward what those patient subsets are.

The reasons for the marked disparities between care provided and best evidence care are likely multiple. Under use of treatments such as exercise instruction may serve as a marker for care that is poorly reimbursed and/or provided by individuals other than physicians. Exercise may also have relatively low acceptance among patients with high expectations that use of advanced technology will be an answer to their chronic back pain. However, in recent years exercise programs such as cardiac rehabilitation have gained somewhat greater acceptance through more structured programs and improved insurance reimbursement, with now 30% of eligible patients participating.¹⁸ Less than half of back pain patients received any exercise prescription and only a small number were in a formal program. Detailed examination of the reasons for lack of dissemination of such structured programs for chronic back pain is needed. Reasons could include poor reimbursement, lack of trained providers, provider and patient knowledge, and acceptability.

Other over-utilized tests and treatments may be subject to the allure of technology (MRIs, CT scanning), and treatments that address short term symptom relief without a sufficient focus on long-term functioning (narcotics, muscle relaxants and electro-stimulation, among others). Treatment for depression may be under-utilized due to lack of recognition by health care providers. Published guidelines are now available but past experience has demonstrated that simply publishing guidelines will not substantially change care patterns, and adherence to guidelines is often poor.^{19,20} Untreated depression makes other components of treatment of chronic back pain more difficult; depression and back pain are risk factors for each other.²¹

High rates of utilization of CT and MR, narcotics, muscle relaxants and under-use of more effective test and treatments remain. Concerted efforts by professional groups, insurers and health policy makers are needed to substantially change treatment patterns, which currently result in poor distribution of health care resources for this common and disabling illness. Reallocation of resources and reimbursement away from ineffective or potentially harmful treatments to more effective treatments has the potential to substantially ameliorate this public health crisis.

Key Points

1. Care utilization for chronic low back remains very high, including high rates of use of advanced imaging, narcotics, and physical treatments.
2. Use of evidence-based treatments such as treatment of depression and use of exercise was low when compared with current best evidence.
3. Multiple treatments appeared to be over-utilized, including use of muscle relaxants, traction, and braces.

Acknowledgments

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) R01 AR051970

National Research Service Award (NRSA) Institutional Training Grant from the Agency for Healthcare Research and Quality (T32 HS000032)

Thanks to Stefanie Knauer for assistance in manuscript preparation and review.

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Table 1
Demographic and Clinical Characteristics of Individuals who Sought Care for
Chronic, Disabling Low Back Pain (N=590)

	Estimate	(95% CI)
Demographic Characteristics		
Age, mean	53.0	(51.8 – 54.3)
Female, %	62.3	(58.3 – 66.5)
Race, %		
White	71.6	(68.2 – 75.0)
Black	18.3	(15.7 – 20.8)
Latino	4.9	(3.0 – 6.7)
Employed past 3 mos, %	35.9	(31.7 – 40.1)
Clinical Characteristics		
Years with chronic back pain, mean	9.8	(8.8 – 10.7)
Roland disability score, ^a mean	14.9	(14.3 – 15.5)
Pain severity ^b past 3 mos, mean	6.8	(6.6 – 7.0)
SF-12 PCS, mean	31.4	(30.5 – 32.3)
SF 12 MCS, mean	47.7	(46.7 – 48.7)
Previous spine surgery, %	25.1	(21.5 – 28.7)

^aOn a 0–23 scale

^bOn a 0–10 scale

Table 2
Medication Use in Previous 30 Days

Variable	No Provider Visits in Past Year (n=116) Estimate (95%CI)	Provider Visits in Past Year (n=590) Estimate (95%CI)	ACP	Cochrane
OTC^a Medication, %				
Acetaminophen	64.7 (54.8 – 74.5)	68.3 (64.0 – 72.5)	Small	
NSAIDs	53.4 (43.2– 63.7)	53.9 (49.3 – 58.5)	Moderate	+ ¹⁹
Aspirin	49.3 (38.6– 59.9)	42.0 (37.4 – 46.4)		
Prescription Medication, %				
Weak narcotics	14.7 (7.3– 22.3)	32.8 (28.4–37.1)	Moderate	
Strong narcotics	5.9 (2.0–9.80)	47 (42.5–51.7)	Moderate	+ ¹
Prescription NSAIDs	15.3 (8.4–22.3)	42.1 (37.6– 46.6)	Moderate	+ ²
Muscle relaxants	5.5 (1.2–9.8)	30.6 (26.3 – 34.8)	Unable to est.	+ ³
TCA/anticonvulsants	5.6(1.3–9.9)	17.8 (14.2– 21.4)	Small-Mod	
Antidepressants	8.7 (3.3–14.1)	27.5 (23.5–31.6)	Small-Mod	+ ¹⁴
Steroids	3.4 (0 – 7.6)	14.5 (11.3–17.7)	Unable to est.	
Combinations, %				
Strong or weak narcs.		60.5 (56.0– 65.0)		
Strong & weak narcs		19.5 (15.9– 23.1)		
NSAIDs & narcs		41.6 (37.2–46.1)		
Muscle relaxants & narcs		25.7 (21.7–29.7)		
TCA/AED & narcs		14.2 (10.9–17.6)		
Clinical Characteristics, mean				
Pain severity ^b past 3 mos	6.7 (6.2 – 7.2)	6.8 (6.6 – 7.0)		
Pain severity ^b today	5.0 (4.4 – 5.5)	5.6 (5.3 – 5.8)		
Roland disability score ^c	12.3 (10.8 – 13.8)	15.4 (14.8 – 16.0)		
SF-12 PCS	36.2 (33.7 – 38.6)	30.4 (29.5 – 31.4)		
SF-12 MCS	49.3 (47.1 – 51.5)	47.4 (46.2 – 48.5)		

^aOver-the-counter medication

^bOn a 0–10 scale

^cOn a 0–23 scale

Table 3
Health Care Provider Use in Past Year Among Careseekers (n=590)

	Percent Use (95% CI)	Mean number of visits ^a , (95% CI)
Primary care provider	76.0 (72.0 – 80.0)	5.4 (4.7 – 6.1)
Orthopedic/neurologic surgeon	42.0 (37.4 – 46.5)	5.1 (4.3 – 5.9)
Neurologist	14.0 (10.9 – 17.1)	3.1 (2.2 – 3.9)
Physical medicine and rehabilitation (PM&R)	18.2 (14.6 – 21.7)	5.9 (4.6 – 7.2)
Doctor of chiropractic	26.9 (22.8 – 31.0)	20.8 (16.4 – 25.2)
Anesthesiologist	15.8 (12.5 – 19.1)	4.2 (3.3 – 5.2)
Rheumatologist	14.1 (10.8 – 17.4)	4.0 (2.9 – 5.1)
Psychiatrist/psychologist	7.1 (5.7 – 9.5)	10.5 (4.3 – 16.8)
Physical therapist	29.7 (25.7 – 33.8)	15.6 (11.9 – 19.3)

^a among those who saw the provider

Table 4

Utilization of Diagnostic Tests in the Previous Year Among Careseekers (n=590)

Test	Percent Receiving (95% CI)	Number of tests ^a , mean (95% CI)
CT	17.8 (14.3 – 21.3)	1.5 (1.3 – 1.7)
MRI	33.2 (28.8 – 37.6)	1.3 (1.2 – 1.4)
CT and/or MRI	36.2 (31.7 – 40.7)	1.9 (1.7 – 2.1)
Spine radiographs	45.8 (41.2 – 50.4)	2.2 (1.9 – 2.5)
Spine radiographs and CT and/or MRI	30.4 (26.1 – 34.7)	4.6 (4.0 – 5.2)
Myelogram/discogram	4.8 (2.9 – 6.7)	1.2 (1.0 – 1.3)
Nerve conduction	7.2 (4.9 – 9.5)	1.1 (1.0 – 1.3)

^a among those who received a test

Table 5
Utilization of Treatments in the Previous Year Among Careseekers (n=590)

Treatment	Use, percent (95% CI)	Number of treatments ^a Mean (95% CI)	ACP	Cochrane
Traction	5.9 (3.7 – 8.2)	not asked	Not effective	– ⁴
Corset or brace	19.0 (15.3 – 22.7)	not asked	Unable to estimate	– ⁵
Used TENS unit	18.9 (15.2 – 22.6)	not asked	Unable to estimate	Unclear ⁶
Traction or corset or TENS	33.5 (29.1 – 37.9)	N/A		
Spinal manipulation	21.5 (17.7 – 25.4)	21.0 (15.4 – 26.6)	Moderate	+ ⁷
Injection	24.3 (20.3 – 28.3)	3.9 (1.6 – 6.2)		
In spine rehabilitation/work hardening prog.	3.4 (1.9 – 4.9)	not asked	Moderate	+ ⁸ ⁹
Prescribed exercise by a provider	45.9 (41.3 – 50.6)	N/A	Small-moderate	+ ¹⁰
Electro-stimulation during visit	21.2 (17.5 – 24.8)	19.6 (11.4 – 27.8)	Unable to estimate	– ¹¹
Heat	39.4 (34.8 – 43.9)	38.0 (29.0 – 46.9)	Unable to estimate	– ²⁸
Cold packs	43.6 (39.0 – 48.2)	30.7 (24.1 – 37.3)		– ¹²
Received/used shoe inserts	14.6 (11.3 – 17.8)	not asked		
Ultrasound	16.3 (12.9 – 19.7)	7.6 (4.3 – 10.9)	Unable to estimate	
Received dietary instruction	18.7 (15.1 – 22.3)	not asked		
Acupuncture	5.8 (3.6 – 7.9)	9.2 (5.5 – 13.0)	Moderate	+ ¹³
Therapeutic massage	16.1 (12.7 – 19.5)	14.0 (7.9 – 20.0)	Moderate	+ ¹⁴

^a conditional on receiving one treatment

Table 6

Characteristics of Patients Who Did and Did not Use Antidepressant Medications in Past 30 days

Characteristic	Antidepressant use (n=166) Estimate (95% CI)	No antidepressants (n=420) Estimate (95% CI)
Depression screen positive, %	73.6 (65.7 – 81.4)	46.9 (41.2 – 52.5)
Saw mental health professional, %	15.4 (9.2 – 21.7)	4.0 (1.8 – 6.2)
SF-12 MCS, mean	42.0 (39.9 – 44.2)	49.4 (48.2 – 50.7)
SF-12 PCS, mean	29.0 (27.7 – 30.4)	31.0 (29.8 – 32.1)
Roland disability scale ^a , mean	16.6 (15.5 – 17.6)	14.9 (14.2 – 15.7)
Pain severity ^b past 3 months, mean	7.1 (6.7 – 7.4)	6.7 (6.5 – 6.9)
Pain severity today ^c , mean	6.1 (5.6 – 6.5)	5.4 (5.1 – 5.7)
Strong or weak narcotics, %	70.4 (62.3 – 78.5)	56.8 (51.4 – 62.2)
Muscle relaxants, %	37.1 (29.0 – 45.2)	28.2 (23.2 – 33.2)
Narcotics and muscle relaxants, %	30.7 (23.2 – 38.1)	24.0 (19.2 – 28.7)

^aOn a 0–23 scale^bOn a 0–10 scale^cOn a 0–10 scale¹ Deshpande A, Furlan A, Mailis-Gagnon A, Atlas S, Turk D. Opioids for chronic low back pain. Cochrane database of systematic reviews. 2007; CD004959.² Roelofs PDDM, Deyo RA, Does BW et al. Non-steroidal anti-inflammatory drugs for low back pain. Cochrane database of systematic reviews. 2008; CD000396.³ van Tulder MW, Touray T, Furlan AD et al. Muscle relaxants for non-specific low back pain. Cochrane database of systematic reviews. 2003; CD004252.⁴ Clarke JA, van tudler MW, Blomberg SEI et al. Traction for low back pain with or without sciatica. Cochrane database of systematic reviews 2007; CD003010⁵ Van Duijvenbode ICD, Jellema P, van Poppel MNM, van Tudler MW. Lumbar supports for prevention and treatment of low back pain. Cochrane database of systematic reviews. 2008; CD001823.⁶ Khadilkar A, Milne S, Brosseau L et al. Transcutaneous electrical nerve stimulation (TENS) for chronic low back pain. Cochrane database of systematic reviews 2005; CD003008.⁷ Assendelft WJJ, Morton SC, Yu EI et al. Spinal manipulative therapy for low back pain. Cochrane database of systematic reviews. 2004; CD000447.⁸ Schonstein E, Kenny DT, Keating J, Does BW. Work conditioning, work hardening and functional restoration for workers with back and neck pain. Cochrane database of systematic reviews. 2003; CD001822.⁹ Karjalainen K, Malmivaara A, van Tulder M, et al. Multidisciplinary biopsychosocial rehabilitation for subacute low back pain among working age adults. Cochrane database of systematic reviews. 2003; CD 002193.¹⁰ Hayden JA, van Tudler MW, Malmivaara A, Koes BW. Exercise therapy for treatment of non-specific low back pain. Cochrane database of systematic reviews. 2005; CD000335.¹¹ French SD, Cameron M, Walker BF, et al. Superficial heat or cold for low back pain. Cochrane database of systematic reviews. 2006; CD004750.¹² Sahar T, Cohen MJ, Ne'eman V et al. Insoles for prevention and treatment of back pain. Cochrane database of systematic reviews. 2007; CD005275.¹³ Furlan AD, van Tudler MW, Cherkin DC et al. Acupuncture and dry-needling for low back pain. Cochrane database of systematic reviews. 2005; CD001351.¹⁴ Furlan AD, Brosseau L, Imamura M, Irvin E. Massage for low back pain. Cochrane database of systematic reviews. 2002; CD001929