Chiropractic and Geriatrics: Care for the aging

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With the population aged 65 and older expected to double between 2011 and 2030, the health care needs that will be created by this rapid population increase will place great demands on the country's already-challenged health care system.[1] The elderly tend to suffer from chronic conditions, and often have many health problems that increase the complexity of their medical. Much of the elder population suffer from musculoskeletal conditions, such as nonspecific back and joint pain and osteoarthritis, all of which are common causes of disability and decreased function in the elderly.[2]

CHIROPRACTIC, A PROFESSION APART

Chiropractic is a profession apart. After acquiring three or more years of undergraduate education, doctors of chiropractic are trained in private professional institutions, most having little interaction with other health professionals. Therefore, among health professionals, little is known of the depth and breadth of chiropractic training, role and scope of practice.

The term "chiropractic", coined by the profession's founder D.D. Palmer, means "hands on healing". Chiropractic is known for its hands-on approach to health care, with the chiropractic adjustment (sometimes referred to as spinal manipulative treatment) at its core (1, 2, 3). Chiropractic is a health care discipline that emphasizes the inherent recuperative powers of the body to heal itself without the use of drugs or surgery. The practice of chiropractic focuses on the relationship between structure (primarily the spine) and function (as coordinated by the nervous system) and how that relationship affects the preservation and restoration of health. In addition, doctors of chiropractic recognize the value and responsibility of working in cooperation with other health care practitioners when in the best interest of the patient (4).

All accredited chiropractic college curricula must include at least one course with a focus on the health care needs of the geriatric population (5). The typical course in geriatrics or gerontology at a chiropractic college involves an estimated 30 hours of classroom time (6, 7).

USE OF CHIROPRACTIC HEALTH SERVICES

Over the past decade, interest in complementary and alternative medicine (CAM) in healthcare has increased with significant increases in public demand for CAM services (8). Americans' out-of-pocket expenditures on CAM health services were an estimated $22 billion in 1997 (8). Chiropractic is, by far, the largest "alternative" health care profession, and in a recent comprehensive government survey two-thirds of all patients who sought care from a licensed CAM provider visited a doctor of chiropractic (8-12).

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1. U.S. Census Bureau 2004.
2. AGS Panel. The management of chronic pain in older persons. J Am Geriatric Soc 1998; 46(5): 635-51.

Even though most chiropractic patients *initially* seek care with a complaint of back pain, many *established* chiropractic patients continue to see their chiropractor for wellness or preventive-type care (13, 14). Patients of chiropractic usually see both a doctor of chiropractic and another health care provider concurrently, but for different conditions (14). The 1994 Agency for Health Care Policy and Research guidelines for acute low back pain recommended chiropractic manipulative treatment as one of the most useful, evidence-based interventions for adults with low back pain (15). Since musculoskeletal complaints are extremely common later in life, the numbers of geriatric chiropractic visits are destined to rise in congruence with recent trends in population demographics and CAM use.

DOCTORS OF CHIROPRACTIC AND INTERDISCIPLINARY TEAMS

Multidisciplinary teams have become a hallmark of many elder health programs, reflecting the growing consensus that no single discipline has all of the resources or expertise needed to appropriately care for the elderly and their health needs.

In 1994, the US government funded a study of the role of doctors of chiropractic in interdisciplinary healthcare, particularly in rural, underserved areas (16, 17). Before this time, little was known of the chiropractor's role in interdisciplinary healthcare, and even less was published on this topic. Since that time, the chiropractic presence on interdisciplinary teams appears to be increasing. Through US Health Resources and Services Administration funding, several projects have been undertaken to increase awareness among doctors of chiropractic regarding interdisciplinary issues and incorporate interdisciplinary elements into chiropractic educational models (17-25).

Chiropractic care is an active care model that is multi-factorial, in that it may incorporate prevention, exercise, health and wellness promotion along with the alleviation of pain (condition-based care). But, chiropractic is not the entire picture in geriatric health care. For some time now, the health care needs of the elderly have been looked after, in parallel, by a variety of practitioners. Older patients instinctively seek the care of multiple health care providers. They may see a medical doctor for periodic check-ups and for medications, a pharmacist to dispense their medications, a dentist for their teeth, a podiatrist for their feet, a chiropractor for their back, and a nurse for general assistance at home.

Much of the development of frailty can be delayed with an integrated approach to health care, with a focus on prevention. Exercises and healthful activities of daily living, as recommended by doctors of chiropractic and other health professionals, have been shown to improve functional status, decrease depression, prevent heart disease, decrease arthritic pain and improve function in persons with osteoarthritis. Maintenance of good nutrition in older persons is also a key element of a healthy lifespan and is typically recommended by doctors of chiropractic. The use of certain nutritional supplements may decrease coronary artery disease and numerous other health concerns. Chiropractic treatments, as we have observed in practice, can provide dramatic positive results as well in our older patients. All members of geriatric health care teams have an important role to play. However, if providers all independently contribute a piece to geriatric healthcare, without communicating across disciplinary lines, a great opportunity for the enhancement and efficiency of that care is lost. (26)

Older patients are often our most complex patients, possessing multiple musculoskeletal and systemic complaints, and they frequently rely on numerous medications. Given such complexity, providers should, ideally, be open to collaboration for the overall good of the patient. As our society ages, increased use of complementary and alternative healthcare services (including chiropractic), and an increase in the inclusion of doctors of chiropractic on interdisciplinary geriatric healthcare teams is almost certain. (26)

PAIN: A CLOSER LOOK

It is estimated that one-third of the population in economically developed countries suffers from chronic pain, and that spinal pain affects up to 80% of the U.S. population at some point in their lifetime (27). It has been reported that chronic pain may be more prevalent in the elderly population (28, 29, 30). About 20-50% of the elderly population living within the community suffers from pain. Statistics indicate that chronic pain in the elderly is an area of growing clinical need (28). Unfortunately, the high prevalence of chronic conditions and chronic pain in the elderly does not correspond with the proportion of elderly receiving treatment (31). Chronic pain in the elderly also may lead to depression, social isolation, functional decline and disability. In older pain patients, there is also associated morbidity and mortality from urinary and fecal incontinence, falls and pressure ulcers (32).

MAKING THE CASE FOR INTEGRATED CARE

Chronic pain is a multidimensional experience with sensory, affective and cognitive-evaluative components, each of which interacts with and contributes to the final pain response. The assessment and treatment of pain in the elderly, therefore, requires a holistic approach with sensitivity to the special concerns of this population (31).

Up to 50% of the community dwelling elderly and 80% of institutionalized elderly suffer from chronic pain and a large proportion of these individuals do not receive any form of pain treatment (31,32). This problem has only been exacerbated by the fact that the elderly have been systematically excluded from multidisciplinary pain rehabilitation programs that are known to be clinically effective (33).

The main reasons for the increased use of CAM are for chronic conditions and pain management. Chiropractic care was classified as one type of CAM (34). According to Astin in his 1998 JAMA article, anxiety, back problems and chronic pain were the most common health problems for which alternative care was sought (35).

The goals of multi-faceted (integrated) approaches to chronic pain programs are to:

1. Minimize pain;
2. Increase physical function;
3. Improve psychological well-being;
4. Reduce reliance on health care providers; and
5. Reduce reliance on pain-related medications. (33)

Such multidisciplinary chronic pain programs have a documented history of clinical efficacy (33). A meta-analysis of the efficacy of multidisciplinary pain treatment centers revealed that sample groups receiving multimodal treatment for chronic pain are superior to no-treatment, waiting list, and single-discipline treatments such as medical treatment or physical therapy. The geriatric population benefits from multidisciplinary chronic pain rehabilitation programs comparably or greater than younger chronic pain patients, even with initially greater clinical impairment (36, 37).

ROLE FOR CHIROPRACTIC CARE IN THE AGING AND RURAL POPULATIONS

Chiropractic is the most commonly used form of provider-delivered complementary health care, with 11% of American adults seeking care annually (8). Currently, more than 30% of patients with low back pain seek chiropractic care and 17% of chiropractic patients are over age 65 (11,12,38). At this rate, based on 2004 US Census figures, nearly half of all chiropractic patients will be over age 65 with the approach of the baby boomers reaching old age. Although, use of chiropractic varies by region, some studies have found it to be more frequently used in rural medically underserved areas, where there is often a shortage of health care professionals to care elderly needs.

Most often, especially among the elderly, patients will utilize chiropractic care for health conditions that other medical providers do not address (14, 39). Well over 90% of chiropractic patients' chief complaints are musculoskeletal, usually spine-related back pain, neck pain and headache, with osteoarthritis one of the more common conditions seen by doctors of chiropractic (40,41,42). Since chronic pain (usually musculoskeletal in nature) is one of the most common factors affecting function in older people, chiropractic care is highly relevant to any investigation of health status of the elderly. In fact, the 1998 guidelines on the management of chronic pain in older persons, developed by the American Geriatrics Society (AGS) panel, listed chiropractic care among the non-pharmacologic strategies for pain management, which carries few adverse effects (43). However, it should be noted that the AGS panel listed only one citation to support its recommendation pertaining to chiropractic, an Iowa study of the rural elderly published in 1985 (43). Today there are other studies that support the panel's findings.

CHIROPRACTIC RESEARCH ON AGING AND GERIATRIC CARE

While few chiropractic research efforts have focused on the care of aging patients, the practice-based studies summarize a few key points about chiropractic and geriatrics: 1. The vast majority of geriatric patients under chiropractic care are receiving health promotion and prevention recommendations about physical activities, nutrition and injury prevention (13,14); and 2. The patients who received chiropractic care in addition to traditional medical services in the long-term care setting had fewer hospitalizations and used fewer medications than patients receiving medical care only (44).

CHIROPRACTIC CARE FOR AGING PATIENTS

In clinical decision-making regarding the chiropractic care of aging patients, health status is more important than chronological age. Since geriatric patients come into chiropractic and medical practices with widely ranging levels of bone density, frailty and overall health status, it would be inappropriate to adopt a "one size fits all" care protocol for geriatric care. Fortunately, there is a wide range of chiropractic approaches, and some could be perceived as more suitable for certain patients and specific scenarios (45-48). While chiropractic is sometimes associated with the 'popping' or 'cavitation' of the spinal joints, numerous conservative management procedures including low force and soft tissue techniques have been developed within chiropractic as gentler alternatives. Many of these procedures offer potentially suitable options for older or frailer patients in need of chiropractic care (46, 48, 49).

CONCLUSIONS: CLINICAL CHIROPRACTIC GERIATRIC PRACTICE

Doctors of chiropractic are well positioned to play an important role in health promotion, injury/disease prevention, and on geriatric care teams due to their conservative patient centered practice style and holistic philosophy. The bottom line in aging care is that *someone* in the health care area *must* provide health promotion/preventive services to older patients before the baby-boom generation profoundly overwhelms our health care system. Chiropractic services are safe, effective, low cost and receive high rates of patient satisfaction (1, 10, 11, 50-52). In the managed care environment, time pressures on allopathic providers may preclude them from spending sufficient time discussing health promotion and prevention with their patients. Chiropractic care is based on an active care model. Along with the hands-on nature of chiropractic care, a strong doctor-patient relationship is forged in which health and lifestyle recommendations may be comfortably and effectively discussed.

Relative to musculoskeletal care in elderly patients, chiropractic adjustments (spinal manipulative treatment) are recommended by the Agency for Health Care Policy and Research (15) for the care of acute low back pain, and the American Geriatric Society Panel Guidelines for the Management of Chronic Pain state that non-pharmaceutical interventions such as chiropractic may be appropriate (43). Most geriatric health care providers have a limited number of options to offer patients with these complaints. Various chiropractic procedures are available as safe alternatives to drugs and surgery for musculoskeletal complaints in the older patient. Due to the prevalence of these conditions in older patients, and the success of chiropractic in caring for these patients, interdisciplinary geriatric health care teams should include a doctor of chiropractic to better facilitate a more active, healthy, aging society.

Doctors of chiropractic, who are heavily trained in health assessments, diagnosis, radiographic studies, health promotion and prevention, are excellent candidates to provide many primary health care services to aging patients. This is particularly important to a nation that is straining to provide adequate geriatric healthcare in rural areas and those areas with medical provider shortages. (53-54).

Continued improvements in geriatric education, and an increase in research and publication on chiropractic care of the aging patient are essential. As stated by Montes and Johnston in the Journal of Health Education,

> "Training, as well as continual upgrading of the competencies for health educators, must include ways of dealing with the great disparities in health among populations, especially those most vulnerable and underserved. Faculty too must be prepared in …this ever-changing health care delivery system." (55)

In a rapidly aging society, doctors of chiropractic, (along with other health professionals) are well suited to provide optimal health care to this important segment of our society and assist them in maintaining active, quality-based lifestyles.

References

1. Cherkin DC, Mootz RD. Chiropractic in the United States: Training, practice, and research. Agency for Health Care Policy & Research; U.S. Dept. of Health & Human Services, Rockville, MD.1997.
2. Coulter I.D. Chiropractic approaches to wellness and healing. Advances in Chiropractic, 1996; Vol. 3, Mosby-Year Book, Inc.
3. Mootz R.D., Haldeman S. The evolving role of chiropractic within mainstream health care. Top Clin Chiropr 1995; 2(2): 11-21.
4. Association of Chiropractic Colleges. Position paper #1: Issues in Chiropractic. Section 2.0: ACC Position on chiropractic 1996.
5. Council on Chiropractic Education Commission on Accreditation. Standards for chiropractic programs and institutions. Council on Chiropractic Education: Scottsdale, AZ.1997.
6. Coulter I.D., A comparative study of chiropractic and medical education. Alternative Therapies.1998; 4(5): 64-75.
7. Hawk CK, Killinger LZ, Zapotocky B, Azad A: Chiropractic Training in Care of the Geriatric Patient: An Assessment. J Neuromusculoskeltal System 1996; 5(1): 15-25.
8. Eisenberg DM, Davis RB, Ettner SL, Appel S, Wilkey S, Van Rompay M, Kessler RC. Trends in alternative medicine use in the United States, 1990-1997: Results of a follow-up national survey. JAMA 1998; 280:1569-1575.
9. Hawk C, Byrd L, Jansen R, Long CR. Use of complementary health care practices among chiropractors in the United States: A survey. Alternative Therapy Health Med 1999; 5(1):56-62.
10. Deyo RA, Tsui-Wei Y. Descriptive epidemiology of low back pain and its related medical care in the United States. Spine 1987; 12: 264-268.
11. Carey T.S., Garrett J, Jackman A. The outcomes and costs of care for acute low back pain among patients seen by their primary care practioners, chiropractors and orthopedic surgeons. New England Journal of Medicine 1995; 333 (14): 913-317.
12. Hawk CK, Long CR. Factors affecting use of chiropractic services in seven Midwestern states of the U.S. Journal of Rural Health 1999; 15 (2): 237-241.
13. Rupert RL, Manello D, Sandefur R. Maintenance care: health promotion services administered to US chiropractic patients aged 65 and older. Part II. Journal of Manipulative Physical Therapy 2000; 25 (1): 10-19.
14. Hawk CK, Long CR, Boulanger K, Morschhauser E, Fuhr A. Chiropractic care for patients 55 and over: Report from a practice-based research program. JAGS 2000; 48:534-545.
15. US Department of Health and Human Services. Publication #95-0643. Acute low back problems in adults: Assessment and treatment. Public Health Service: Agency of Health Care Policy and Research, 1994.
16. Hawk C, Nyiendo J, Lawrence D, Killinger L. The role of chiropractors in interdisciplinary health care in rural areas paper. Journal of Manipulative and Physiological Therapeutics 1996; 19 (2): 82-91.
17. United States Health Resources and Services Administration. Contract. The Role of Chiropractors in Interdisciplinary Preceptorship Program. Palmer College of Chiropractic, 1995.
18. Unites States Health Resources and Services Administration. Contract. Establishing an Interdisciplinary Preceptorship Program. Palmer College of Chiropractic. 1995.

19. United States Health Resources and Services Administration. Contract. Establishing Interdisciplinary Education for Chiropractors. Palmer College of Chiropractic. 1995.
20. Hawk CK, Byrd L, Killinger LZ. Evaluation of a geriatrics course emphasizing interdisciplinary issues for chiropractic students. Journal of Gerontological Nursing; Feb. 2000: 6-12.
21. Killinger LZ, Azad A, Zapotocky B, Morschhauser E. Development of a Model Curriculum in Interdisciplinary Geriatric Education: Process and Content. J Neuromusculoskeltal System. 1998; 6(4): 146-153.
22. Hawk C, Killinger LZ: Interdisciplinary Preceptorship Manual. US Health Resources and Services Administration Contract # 103HR 950079P000-000 1996.
23. Killinger LZ: Chiropractic Geriatric Education: An Interdisciplinary Resource Guide and Teaching Strategy for Health Educators. (1998 Edition). US Health Resources and Services Administration Contract #98-0599.
24. Killinger LZ, Azad A. Chiropractic Geriatric Education: An Interdisciplinary Resource Guide and Teaching Strategy for Health Educators. US Health Resources and Services Administration Contract #103HR960590P000-000, 1996.
25. Azad A, Killinger LZ, Hawk C, Moschhauser. A qualitative assessment of chiropractic geriatric education using focus groups. J American Chiropractic Assoc 1997; 34(7): 39-45.
26. Killinger LZ, Morley JE, Kettner N, Kauric E. Integrated Care of the Older Patient, 2004.
27. Berman BM. The NIH Format for achieving the integration of behavioral and relaxation techniques into medical practice: A review and critique. Mind/Body Medicine: A Journal of Clinical behavioral medicine, 1997; 2 (4): 169-175.
28. Birse TM, Lander J. Prevalence of chronic pain. Canadian Journal of Public Health, 1998. March-April; 89(2): 129-131.
29. Closs SJ, Pain in Elderly Patients: a Neglected phenomenon? Journal of Advanced Nursing 1994 June; 19 (6): 1072-81.
30. Ruoff G. Management of Pain in Patients with Multiple Heart Problems: A guide for the practicing physician. American Journal of Medicine, 1998. July 27; 105(1B): 53S-60S.
31. Gagliese L, Melzack R. Chronic Pain in Elderly People. Pain 1997; 70:3-14.
32. Gloth FM. Concerns with chronic analgesic therapy in elderly patients. American Journal of Medicine 1996. July 31; 101 (1A): 19S-24S.
33. Kee, WG, Middaugh SJ, Redpath S, Hargadon R. Age as a factor in admission to chronic pain rehablitation. Clin J Pain, June, 1998; 14 (2): 121-128.
34. Gordon NP, Sobel DS, Tarazona EZ. Use of and interest in alternative therapies among adult primary care clinicians and adult members in a large health maintenance organization. Western Journal of Medicine, Sept 1998; 169 (3) 153-161.
35. Astin JA. Why patients use alternative medicine: Results of a national study. JAMA May 1998; 279(19): 1548-1553.
36. Cutler RB, Fishbain DA, Rosomoff RS, Rosomoff HL. Outcomes in treatment of pain in geriatric and younger aged groups. Arch Phys Med Rehabil. April 1994; 75 (4) 457-64.
37. Middaugh SJ, Levin RB, Kee WG, Barchiesi FD, Roberts JM. Chronic Pain: Its treatment in geriatric and younger patients. Arch Phys Med Rehabil Dec, 1988; 69(12): 1021-1026.
38. Goertz C. Summary of the 1997 ACA statistical survey on chiropractic practice. JACA 1998; 35 (11): 30-34.
39. Yesalis CE, Et al. Does chiropractic utilization substitute for less available medical services? American Journal of Public Health 1980: 70 (4): 415-417.
40. Hawk C, Long CR, Boulganger K. Prevalence of nonmusculoskeletal complaints in a chiropractic practice: report from a practice-based research program. Journal of Manipulative Physiol Ther 2001; 24 (3): 157-169.
41. Hurwitz E.L., Et al. Use of chiropractic services from 1985 through 1991 in the United States and Canada. American Journal of Public Health 1998; 88(5): 771-76.

42. Christensen MG. Job Analysis of Chiropractic. Greeley, CO: National Board of Chiropractic Examiners, 2001.
43. AGS Panel. The management of chronic pain in older persons. Journal of American Geriatrics Society, 1998; 46 (5) 635-651.
44. Coulter ID, Hurwitz EL, Aranow HU, Cassata DM, Beck JC. Chiropractic patient in a comprehensive home-based geriatric assessment follow-up and health promotion program. Top Clin Chiroprac, 1996; 3(2) 46-55.
45. Cooperstein R, Killinger LZ. Chiropractic Techniques in Care of the Older Patient. In: Brian Gleberzon Editor. Chiropractic care of the older patient. Butterworth Heineman. Oxford, UK. 2001; 359-383. ISBN: 0-7506-4729-9.
46. Killinger LZ. Chiropractic Adjusting Techniques in the Care of Aging Patients. In: Redwood D, and Cleveland CC III, editors. Fundamentals of Chiropractic Text. Mosby Publishers. 2003
47. Bergman TF, Larson L. Manipulative therapy and older persons. Top Clin Chiro.1996; 3(2): 56-65.
48. Killinger LZ, Cooperstein R. Chiropractic techniques for geriatric patients Proceedings of the International Chiropractors Association Conference. Lisbon 2000.
49. Killinger LZ. Chiropractic adjusting and the "aging" patient. J Amer Chiropr Assoc. Nov. 2003; 40(11): 26-28.
50. Smith M, Stano M. Cost and recurrences of chiropractic and medical episodes of low back care. J Manipulative Physiol Ther 1997; 20(1): 5-12.
51. Stano M, Smith M. Chiropractic and medical costs of low back care. Medical Care 1996; 34(3): 191-204.
52. Shekelle PG, Et al. Spinal manipulation for low back pain. Annals of Internal Medicine.1992; 117(7): 590-598.
53. Besdine RW. Curricular strategies in geriatrics faculty development. In: Shortage of health professions caring for the elderly: Recommendations for change. A report by the chairman of the select committee on aging; House of Representatives: 1993.
54. Butler RN. How to ease the shortage of geriatricians in shortage of health professions caring for the elderly: Recommendations for change. A report by the chairman of the select committee on aging; House of Representatives 1993.
55. Montes JH, Johnston L.J. Eliminating health disparities for vulnerable populations through health education intervention within health services programs. J of Health Education, Sept.-Oct. Supplement 1998; 29(5): S6-S9.

Utilization, Cost, and Effects of

Chiropractic Care on Medicare Program Costs

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Executive Summary

This study examines the utilization, cost, and effects of Chiropractic services on Medicare program costs. In the course of this investigation, service utilization and program payments for Medicare beneficiaries who were treated by Doctors of Chiropractic are compared with similar data for beneficiaries treated by other provider types. The results strongly suggest that Chiropractic care significantly reduces per beneficiary costs to the Medicare program. The results also suggest that Chiropractic services could play a role in reducing costs of Medicare reform and/or a new prescription drug benefit. Presented below are detailed findings from our investigation.

What data and methods were used to investigate utilization, cost, and the effects of Chiropractic services on Medicare program costs?

To investigate utilization, cost and the effects of Chiropractic services on Medicare program costs, data were compiled from the Centers for Medicare and Medicaid Services' (CMS) 1999 5 Percent Standard Analytical Files. A data extract was created that identified all Medicare beneficiaries with primary diagnoses of selected musculoskeletal, dislocations, and sprains and strains of joints and adjacent muscles conditions during 1999. The beneficiaries were divided into two groups: (1) those who were treated by Doctors of Chiropractic and (2) those who were not. Service utilization and payment data for the two groups of beneficiaries were analyzed and compared.

How many beneficiaries had a Medicare claim with a primary diagnosis of any of the selected medical conditions during 1999?

During 1999, approximately 5.8 million beneficiaries had a Medicare claim with a principal diagnosis of at least one of the selected medical conditions. Of these individuals, about 1.5 million (26.8 percent) received Chiropractic care and 4.3 million (73.2 percent) were treated by other provider types.

Do global patterns of utilization and costs for all Medicare services differ between beneficiaries who did/did not receive Chiropractic care?

Yes, there was a consistent pattern of differences in service utilization and Medicare payments for beneficiaries who saw Doctors of Chiropractic versus those who did not.

- Beneficiaries who received Chiropractic care averaged fewer Medicare claims

per capita than those who did not (33.4 claims versus 38.5 claims).

- Beneficiaries who received Chiropractic care had lower average Medicare payments for all Medicare services than those who did not ($4,426 versus $8,103).

- Beneficiaries who received Chiropractic care had lower average Medicare payments per claim than those who did not ($133 versus $210).

- Beneficiaries who received Chiropractic care had lower average costs for each type of claim during 1999 than those who did not.

Do patterns of utilization and costs for just the selected musculoskeletal and related medical conditions differ between beneficiaries who did/did not receive Chiropractic services?

Yes, the 26.8 percent of Medicare beneficiaries with the selected medical conditions who received Chiropractic care generated nearly twice as many claims per capita for these conditions but only 19 percent of the total Medicare payments for their treatment.

- Beneficiaries who received Chiropractic care averaged more claims per capita than those who did not (8.0 versus 4.0).

- Beneficiaries who received Chiropractic care had lower average Medicare payments per capita for the treatment of these conditions than those who did not ($380 versus $594).

- Beneficiaries who received Chiropractic care had lower average Medicare payments per claim than those who did not ($48 versus $149).

Do beneficiaries who did/did not receive Chiropractic care have different patterns in their subsequent utilization of Medicare services?

Yes, there are distinct differences between the two groups of beneficiaries in their subsequent use of Medicare services.

- During 1999, the majority of beneficiaries in both groups had subsequent encounters with the Medicare program, following their initial encounter for a primary diagnosis of any of the selected musculoskeletal and related conditions. However, a lower proportion of beneficiaries who received Chiropractic care had a second encounter (69 percent versus 80 percent) or a third encounter (66 percent versus 73 percent) compared those who did not receive Chiropractic

services.

- Overall, a much lower proportion of both groups had a second or third encounter with the Medicare system for the treatment of the selected medical conditions. However, beneficiaries receiving Chiropractic care were less likely to have a second encounter (14 percent versus 34 percent) or a third encounter (11 percent versus 20 percent) than those who did not receive Chiropractic services.

Do gender differences explain the variations in service utilization and payments for these two groups of Medicare beneficiaries?

While gender differences on the order of about 5 percentage points exist between the two groups of beneficiaries, gender, by itself, does not appear to provide an explanation for the service utilization and payment variations.

Do differences in the age distributions of the two groups of beneficiaries explain the variations in service utilization and payments?

There are differences in the age distributions between the two groups of beneficiaries. A smaller proportion of beneficiaries under 65 years of age and over 80 years of age were likely to receive Chiropractic services. However, age, in this instance, appears to be a surrogate for medical acuity.

If one controls for acuity by deleting beneficiaries with institutionalized (i.e., hospital inpatient, SNF, and/or hospice) claims during 1999, do differences in utilization and costs between the two groups of beneficiaries still exist?

After removing beneficiaries with institutional claims during 1999, substantial differences still exist between the two groups of beneficiaries. Beneficiaries who received Chiropractic care still had lower overall payments per capita and per claim for all Medicare services and for their lower back pain care than those who did not.

What roles could Doctors of Chiropractic play in Medicare reform and/or a new prescription drug benefit for the elderly?

The findings of our current law analysis strongly suggest that decreased access to Chiropractic services would increase program costs. Attention should, therefore, be paid to access to Chiropractic services during the reform debate. Similarly, our analysis found that, overall, those beneficiaries who used Chiropractic services, have lower Medical doctor costs. Hence, some savings would probably accrue to the Medicare program if access to Chiropractic services were increased in concert with a Medicare prescription drug benefit.

In conclusion, these results strongly suggest that Chiropractic care significantly reduces per beneficiary costs to the Medicare program currently and could potentially save even more in the future.

Introduction

The purpose of this study is to examine current cost savings associated with the provision of Chiropractic services in the Medicare program and to speculate on future potential savings. A primary obstacle to comprehensive coverage of Chiropractic services in the Medicare program has been the persistent perception by policy makers that such coverage would increase Medicare expenditures. For example, several years ago, one since departed CBO analyst placed an enormous price tag on a modest expansion of Chiropractic coverage. The supporting research that led up to these estimates was heavy on assumptions and light on facts. A formal investigation of the use and costs of Chiropractic services in the Medicare population is, therefore, warranted.

To analyze the cost savings associated with the provision of Chiropractic care in the Medicare program, we examined service utilization and program payments for Medicare beneficiaries with selected medical conditions who were treated by Doctors of Chiropractic and compared them with similar data for beneficiaries who was treated by other provider types. The remainder of this paper is divided into 4 sections. We begin by describing the data sources and methodology used to conduct our analyses. Next, we compare the service utilization patterns and costs of beneficiaries receiving Chiropractic care with those receiving care from other providers. For each group we investigate differences in their total use and costs of health care services and in their use and costs of service for the selected medical conditions. After that, we examine the demographic characteristics (i.e., gender and age) of each group of beneficiaries and attempt to explain the differences between Medicare beneficiaries who received Chiropractic care and those who did not. The final section speculates on potential savings that could accrue under Medicare reform or the addition of a prescription drug benefit to the program.

Background

This study builds on extensive research conducted by the Department of Defense (DOD). DOD conducted a multi-year and multi-site demonstration of Chiropractic services.[3] Both a DOD contractor and Muse & Associates evaluated the results of the demonstration and found that, relative to non-users, users of Chiropractic services had:

Better health outcomes;

- Higher satisfaction; and
- Lower costs.

[3] *Report on the Department of Defense Chiropractic Demonstration Program*, Prepared by the Chiropractic members of the Oversight Advisory Committee in collaboration with Muse & Associates, March 3, 2000. Also, *Chiropractic Health Care Demonstration Program: Final Report*, Birth and Davis, Inc., February 2000.

A section of that report looked at the elderly. This study builds on that research and focuses primarily on the elderly.

Data Sources and Methodology

The data used in this study were compiled from the Centers for Medicare and Medicaid Services' (CMS) 1999 Standard Analytical Public Use Files (SAF). These files, which contain final action claims data with all adjustments resolved, capture 98 percent of all claims for all Medicare beneficiaries in a given year. The 5 Percent SAF, the data source used in this study, is created by selecting all claims records for beneficiaries with values 05, 20, 45, 70, or 95 in positions 8 and 9 of the Health Insurance Claim number.

The 5 Percent SAF consists of 7 separate files. These include inpatient, skilled nursing facility (SNF), outpatient, hospice, durable medical equipment (DME), home health agency, and Part B physician/suppliers. Results from all analyses of these files can be extrapolated to the entire Medicare population.

To conduct our analyses, we completed the following tasks:

1. From the 1999 SAF, we created a data extract that:

    - Identified all Medicare beneficiaries with primary diagnosis of selected musculoskeletal and related medical conditions;[4]

    - Pulled all of the claims for each of the beneficiaries identified.

2. From the initial extract, we created a research file that:

    - Divided the beneficiaries into two groups: (1) those who were treated by Doctors of Chiropractic and (2) those who were not. Beneficiaries who were treated by both Doctors of Chiropractic and other providers were placed in the Chiropractic care group.;

    - Created sub-files for each group of beneficiaries for the selected medical diagnoses only;

    - Provided service utilization and payment data for the treatment of beneficiaries with these selected primary diagnoses in the Medicare population.

Scope of Chiropractic Services

There is a misconception that Doctors of Chiropractic only treat low back pain. Although Doctors of Chiropractic have experience in treating back pain, they are trained and educated to treat a range of neuromusculoskeletal conditions and related ailments that affect the entire body.

[4] The selected categories included ICD-9 diagnostic codes 720.xx, 721.xx, 722.xx, 723.xx, 724.xx, 739.xx, 839.xx, 846.xx, and 847.xx. While these ICD-9 codes are the ones typically seen in Chiropractic practice, there is great variability in the use of these codes by Doctors of Chiropractic and other providers.

According to Chapman,[5] various studies, which include national surveys in the U.S., Canada, Australia, and Europe, indicate that 95 percent of Chiropractic patients have neuromusculoskeletal pain/neuromusculoskeletal disorders.

Chapman states that in treating neuromusculoskeletal pains and disorder, Doctors of Chiropractic may encounter non-musculoskeletal complaints. Whatever the patient's condition, Doctors of Chiropractic fundamentally see themselves as diagnosing and treating the underlying joint and soft tissue dysfunction. This will have reflex effects in the nervous system that may influence various conditions and general health, not just the patient's primary neuromusculoskeletal complaint.

Appendix A provides a list of the diagnoses codes commonly treated by Doctors of Chiropractic. The list, while not exhaustive or all-inclusive, includes diagnoses codes for diseases of the nervous system and sense organs, including migraines, diseases of the musculoskeletal system and corrective tissues, congenital abnormalities, and injuries, including sprains and strains.

Analysis

Baseline Summary

The analysis begins with an examination of the baseline summary of all claims for all services for Medicare beneficiaries with the selected primary diagnoses. Baseline summary data are presented in Table 1.

In 1999, there were over 5.8 million out of a total of approximately 39 million Medicare beneficiaries, nearly 15 percent of all beneficiaries, with at least one medical claim with a principal diagnosis included in the group of selected medical conditions. Collectively, these individuals generated 216 million medical claims and Medicare program payments in excess of $41 billion. On a per capita basis, program payments per beneficiary equaled $7,117. Payments per claim averaged $191.49.

As shown in Table 1, nearly every beneficiary generated a Part B professional claim and over 80 percent used outpatient services. Additionally, approximately 30 percent (29.2 percent) of the beneficiaries had DME claims and 28.4 percent had an inpatient hospitalization. Significantly lower proportions of these beneficiaries used home health services, had a nursing home stay, or needed hospice care.

[5]Chapman-Smith, David. *The Chiropractic Profession,* West Des Moines, IA: NCMIC Group, Inc., 2000.

Table 1

1999 Baseline Summary of All Claims for Patients with a Primary Diagnosis of Selected Musculoskeletal and Related Medical Conditions

File	Medicare Beneficiaries	Claims	Medicare Payments	Average Payment Per Beneficiary	Average Payment Per Claim
All Files	5,811,440	215,998,220	$41,362,447,475	$7,117.42	$191.49
DME	1,697,640	9,433,780	$1,135,903,530	$669.11	$120.41
Home Health	684,960	2,338,260	$1,849,526,230	$2,700.20	$790.98
Hospice	58,400	141,720	$262,461,482	$4,494.20	$1,851.97
Inpatient	1,651,980	3,115,040	$19,899,049,229	$12,045.58	$6,388.06
Outpatient	4,710,980	28,758,020	$4,205,937,375	$892.79	$146.25
Professional	5,790,340	171,467,460	$11,698,392,594	$2,020.33	$68.23
SNF	350,480	743,940	$2,311,177,035	$6,594.32	$3,106.67

Inpatient services, $19.9 billion, accounted for nearly half (48.1%) of total 1999 Medicare program payments for these beneficiaries, with professional services ($11.7 billion) and SNF payments ($2.3 billion) accounting for an additional 10.2 percent and 5.6 percent, respectively. On average, Medicare program payments per beneficiary were highest for inpatient hospital services ($12,046), SNF care ($6,594) and hospice services ($4,494) and lowest for outpatient services ($893) and DME ($669).

Comparison of Beneficiaries Receiving Chiropractic Services with Those Treated by Other Provider Types

The next step in the analysis was to compare the patterns of service utilization and payments of beneficiaries who received Chiropractic services with beneficiaries treated by other providers. To complete this analysis, the 5.8 million Medicare beneficiaries identified in the extract were divided into two groups based on the occurrence of provider specialty code "35 – Chiropractic" on their Part B Physician/Supplier and DME claims. The results are summarized in Table 2 and Table 3.

Table 2 compares the use of all medical services and their associated Medicare payments for these two groups of beneficiaries. In Table 3, the comparison is restricted to just claims for the treatment of the selected medical conditions that formed the basis of the initial data extract.

All Claims

As shown in Tables 2 and 3, approximately 1.6 million (26.8 percent) of the 5.8 million Medicare beneficiaries with primary diagnoses of selected musculoskeletal and related medical conditions received treatment from Doctors of Chiropractic. In comparing these beneficiaries with those who did not receive Chiropractic care, several interesting results stand out.

Table 2

Summary of All Claims for Beneficiaries with a Primary Diagnosis of Selected Musculoskeletal and Related Medical Conditions
1999

Beneficiary Type	File	Medicare Beneficiaries	Claims	Medicare Payments	Average Payment Per Beneficiary	Average Payment Per Claim
Beneficiary not seen by a Doctor of Chiropractic	All Files	4,253,720	164,013,400	$34,467,924,349	$8,103.01	$210.15
	DME	1,365,200	7,911,360	$969,683,906	$710.29	$122.57
	Home Health	592,940	2,096,620	$1,677,461,033	$2,829.06	$800.08
	Hospice	51,640	125,980	$233,721,204	$4,525.97	$1,855.22
	Inpatient	1,356,480	2,635,500	$16,832,524,858	$12,408.97	$6,386.84
	Outpatient	3,554,480	22,771,980	$3,435,468,009	$966.52	$150.86
	Professional	4,232,620	127,800,140	$9,213,109,498	$2,176.69	$72.09
	SNF	309,620	671,820	$2,105,955,841	$6,801.74	$3,134.70
Beneficiary seen by a Doctor of Chiropractic	All Files	1,557,720	51,984,820	$6,894,523,126	$4,426.03	$132.63
	DME	332,440	1,522,420	$166,219,623	$500.00	$109.18
	Home Health	92,020	241,640	$172,065,197	$1,869.87	$712.07
	Hospice	6,760	15,740	$28,740,278	$4,251.52	$1,825.94
	Inpatient	295,500	479,540	$3,066,524,371	$10,377.41	$6,394.72
	Outpatient	1,156,500	5,986,040	$770,469,365	$666.21	$128.71
	Professional	1,557,720	43,667,320	$2,485,283,097	$1,595.46	$56.91
	SNF	40,860	72,120	$205,221,194	$5,022.55	$2,845.55

Examination of the data for all claims for all services (and their associated Medicare payments) utilized during 1999 (Table 2) reveals some very clear differences between the two groups of beneficiaries. Beneficiaries treated by Doctors of Chiropractic comprise 26.8 percent of the beneficiaries with any of the selected ICD-9 diagnosis codes and 24.1 percent of their claims. However, they generated only 16.7 percent of total Medicare payments, a significantly lower proportion than their numbers would suggest. Recipients of Chiropractic care averaged 33.4 claims per beneficiary in 1999, 5 fewer claims per person than beneficiaries not receiving Chiropractic care. More importantly, their per capita payments for all Medicare services utilized during 1999 were nearly 50 percent lower than those for recipients who did not receive Chiropractic care ($4,426 versus $8,103). Similarly, the average payment per claim for all

Medicare services used during 1999 is almost 40 percent lower for beneficiaries who received Chiropractic services ($132.63 versus $210.15). Regardless of the type of claim, average payment per beneficiary was substantially lower for beneficiaries treated by a Doctor of Chiropractic. With only two exceptions (e.g., hospice and inpatient hospital), similar findings are noted for average payment per claim. However, even in the case of these two exceptions, the average costs per service are nearly identical for the two groups of beneficiaries. Therefore, when all claims for all services are examined, it would appear that Medicare beneficiaries who were treated by Doctors of Chiropractic during 1999 had fewer Medicare claims per capita and lower average Medicare payments for all Medicare services than those who did not.

Selected Musculoskeletal and Related Claims Only

When the comparison of utilization and Medicare payments is restricted to just claims for the selected musculoskeletal and related claims used to define the initial extract, the overall results, while similar, also include some key findings (Table 3). For example, while constituting 26.8 percent of Medicare beneficiaries, beneficiaries who received Chiropractic care during 1999 generated 42.3 percent of such claims. They averaged nearly 8 claims per capita compared to only 4 claims per capita for beneficiaries who did not receive Chiropractic care.

Table 3
Summary of All Musculoskeletal and Related Claims for Patients with a Primary Diagnosis of Selected Musculoskeletal and Related Medical Conditions
1999

Beneficiary Type	File	Medicare Beneficiaries	Claims	Medicare Payments	Average Payment Per Beneficiary	Average Payment Per Claim
Beneficiary not seen by a Doctor of Chiropractic	All Files	4,253,720	16,940,020	$2,524,698,640	$593.53	$149.04
	DME	208,220	489,320	$53,808,762	$258.42	$109.97
	Home Health	55,060	114,160	$84,816,650	$1,540.44	$742.96
	Hospice	80	140	$274,067	$3,425.84	$1,957.62
	Inpatient	142,060	157,500	$858,751,277	$6,044.99	$5,452.39
	Outpatient	1,578,360	2,985,540	$390,056,484	$247.13	$130.65
	Professional	3,916,100	13,163,860	$1,044,195,022	$266.64	$79.32
	SNF	19,600	29,500	$92,796,379	$4,734.51	$3,145.64
Beneficiary seen by a Doctor of Chiropractic	All Files	1,557,720	12,439,080	$592,095,669	$380.10	$47.60
	DME	21,940	40,340	$3,841,226	$175.08	$95.22
	Home	4,560	8,320	$5,472,240	$1,200.0	$657.72

Health				5	
Inpatient	18,220	20,320	$104,815,244	$5,752.76	$5,158.23
Outpatient	207,720	408,300	$54,193,176	$260.90	$132.73
Professional	1,556,640	11,958,900	$414,821,202	$266.48	$34.69
SNF	1,820	2,900	$8,952,580	$4,919.00	$3,087.10

However, despite the fact that they comprise slightly more than one-fourth of all Medicare beneficiaries in the extract and had twice as many claims per capita (over 40 percent of all services associated with the selected diagnoses), Medicare payments for the treatment of these selected medical conditions for beneficiaries receiving Chiropractic care constituted only 19 percent of all Medicare payments for the treatment of these conditions. Furthermore, beneficiaries treated by Doctors of Chiropractic had average payments per capita that were nearly 40 percent lower than those for beneficiaries who received care from other providers ($380.10 versus $593.53). Also, average payment per claim for the treatment of these medical conditions was nearly two-thirds lower for beneficiaries receiving Chiropractic care compared to beneficiaries not seen by Doctors of Chiropractic ($47.60 versus $149.04). As with the summary of all claims (see above), with few exceptions, regardless of the type of claim, average payment per beneficiary and average payment per claim were lower for beneficiaries who received Chiropractic care. Therefore, Medicare beneficiaries treated by Doctors of Chiropractic averaged twice as many claims per capita but generated significantly lower Medicare payments than beneficiaries receiving services from other providers.

Subsequent Use of Medicare Services

Using a methodology developed for a previous study,[6] further analysis was conducted to examine subsequent service utilization patterns for both groups of beneficiaries. The analysis consists of chronologically ordering the claims data for each beneficiary and summarizing the information by "encounter." An encounter is defined as a chronologically contiguous episode of care at a particular provider type from a single SAF file. Because date of service is not listed on the claims, the chronological order was determined by using incurred quarter and claim receipt date. Conflicts in the ordering of records from different files are resolved using a predetermined sequence of files (Inpatient, SNF, HHA, outpatient, hospice, Part B physician/supplier, and DME). Only the first contact with a primary diagnosis of one of the selected medical conditions and the subsequent two encounters for Medicare services are included in this analysis. Results of the analysis of subsequent use of Medicare services are presented in Tables 4 and 5.

All Claims

Starting with the first encounter during 1999 for any of the selected ICD-9 diagnosis codes used to define the initial extract, we began our analysis of beneficiaries' subsequent

[6] Muse & Associates, *An Analysis of Rehabilitation Services "Flow" Patterns and Payments by Provider Setting for Medicare Beneficiaries,* Washington, DC: November 1997.

contacts with the Medicare program by examining the next two encounters for all services (Tables 4). Presented in Table 4 are a count of beneficiaries, total payments, and average payment per beneficiary for each of the first three encounters, including the initial encounter containing a claim with any of the selected primary diagnosis codes.

Table 4
Subsequent Encounters with the Medicare Program for
Beneficiaries with a Primary Diagnosis of Selected Musculoskeletal and Related Medical Conditions
All Claims: 1999
(by treatment status and contact)

Beneficiary Type	Encounter	Medicare Beneficiaries	Percent of Medicare Beneficiaries	Medicare Payments	Medicare Payment Per Beneficiary
Beneficiary not seen by a Doctor of Chiropractic	First	4,253,720	100.0%	$1,463,955,180	$344.16
	Second	3,383,140	79.5%	$2,442,063,163	$721.83
	Third	3,117,840	73.3%	$1,497,207,909	$480.21
Beneficiary seen by a Doctor of Chiropractic	First	1,557,720	100.0%	$589,136,161	$378.20
	Second	1,079,260	69.3%	$547,406,907	$507.21
	Third	1,033,100	66.3%	$408,319,296	$395.24

In general, the majority of Medicare beneficiaries in both groups had multiple encounters with the Medicare program in 1999. Of the beneficiaries not treated by Doctors of Chiropractic, approximately 80 percent had a second encounter with the Medicare program during 1999, following their initial claim for one of the selected primary diagnoses. Nearly three-quarters (73.3 percent) of these beneficiaries also had a third encounter later that year. By comparison, 69 percent of beneficiaries who received Chiropractic care had a second encounter with the Medicare program and 66 percent had a third encounter during 1999.

Interestingly, beneficiaries not receiving Chiropractic services had average payments per beneficiary for all services for their first encounter with the Medicare program during 1999 that were nearly 10 percent lower than average payments for beneficiaries who received Chiropractic services ($344.16 versus $378.20). However, for the second and

third encounters, the situation is reversed. Beneficiaries receiving Chiropractic care had significantly lower average Medicare payments per encounter.

Selected Musculoskeletal and Related Claims Only

Considering only claims for the selected musculoskeletal and related diagnoses, the analysis of the first three encounters with the Medicare program during 1999 was repeated. The results of this analysis are presented in Table 5.

The data presented in Table 5 indicate several interesting findings. Not surprising, a much smaller proportion of beneficiaries with any of the selected musculoskeletal and related medical conditions during 1999 had a second or third encounter with the Medicare program for these conditions than was the case with their overall use of Medicare services. The great majority of treatments for these medical conditions were received in the same provider setting. However, as was the case with their use of all services, a much lower proportion of beneficiaries treated by Doctors of Chiropractic had a second or third encounter with the Medicare program.

Table 5
Subsequent Contacts with the Medicare Program for
Beneficiaries with a Primary Diagnosis of Selected Musculoskeletal and Related Medical Conditions: 1999
Musculoskeletal and Related Claims Only
(by treatment status and contact)

Beneficiary Type	Encounter	Medicare Beneficiaries	Percent of Medicare Beneficiaries	Medicare Payments	Medicare Payment Per Beneficiary
Beneficiary not seen by a Doctor of Chiropractic	First	4,253,700	100.0%	$806,570,036	$189.62
	Second	1,447,700	34.0%	$546,358,964	$377.40
	Third	831,200	19.5%	$289,624,275	$348.44
Beneficiary seen by a Doctor of Chiropractic	First	1,557,720	100.0%	$329,015,857	$211.22
	Second	222,040	14.3%	$69,002,782	$310.77
	Third	169,880	10.9%	$48,738,672	$286.90

Medicare beneficiaries receiving Chiropractic care had average Medicare payments for their first encounter for these selected musculoskeletal and related medical conditions that were approximately 11 percent higher than the average payment for beneficiaries treated by other providers. This may be due, at least in part, to the fact that beneficiaries receiving Chiropractic care for the treatment of these medical

conditions averaged twice as many claims per capita compared to beneficiaries who received treatment from other providers. Thus, when aggregated over the entire first encounter, the total cost for that encounter may be higher for beneficiaries receiving Chiropractic care, even though their average Medicare payment per claim was significantly lower. For those beneficiaries who had a second and/or third encounter for these conditions during 1999, both the proportion of beneficiaries having second or third encounters and the average Medicare payments per encounter were significantly lower for beneficiaries treated by Doctors of Chiropractic.

Why are there Differences Between Beneficiaries Seen and Not Seen by Doctors of Chiropractic?

Our comparative analysis of the use of and payments for services by Medicare beneficiaries who were/were not treated by Doctors of Chiropractic for these selected primary diagnoses during 1999 indicates that there are differences between the two groups. In general, beneficiaries receiving Chiropractic care had lower average payments per capita and per claim for all Medicare services and for claims associated with the treatment of their musculoskeletal and related medical problems. With the exception of the first encounter involving a principal diagnosis of one of these selected diagnoses, they also had lower average payments per beneficiary for the subsequent two encounters with the Medicare system.

Given these findings, what factors explain the differences between these two groups of Medicare beneficiaries? Is it gender, age, and/or acuity? First we examine gender. Then we consider the age distributions of the two groups of beneficiaries and, finally, acuity.

Gender

As shown in Table 6, a slightly lower proportion of females received treatment from Doctors of Chiropractic than from other provider types (58.8. percent versus 63.7 percent). Conversely, a higher proportion of males received Chiropractic care than treatments from other providers (41.2 percent versus 36.3 percent).

Table 6
Number of Beneficiaries
by Gender and Treatment Status

Beneficiary Type	Female	Male	Total
Beneficiary not seen by a Doctor of Chiropractic	2,710,420	1,543,300	4,253,720
Percent	63.7%	36.3%	100.0%
Beneficiary seen by a Doctor of Chiropractic	916,180	641,540	1,557,720
Percent	58.8%	41.2%	100.0%
Total	3,626,600	2,184,840	5,811,440

While these differences, on the order of 5 percentage points, exist, they do not appear to be sufficiently large by themselves to account for the service utilization and payment differences between the two groups of beneficiaries. Gender, therefore, does not appear to have high explanatory power to differentiate between these groups.

Age

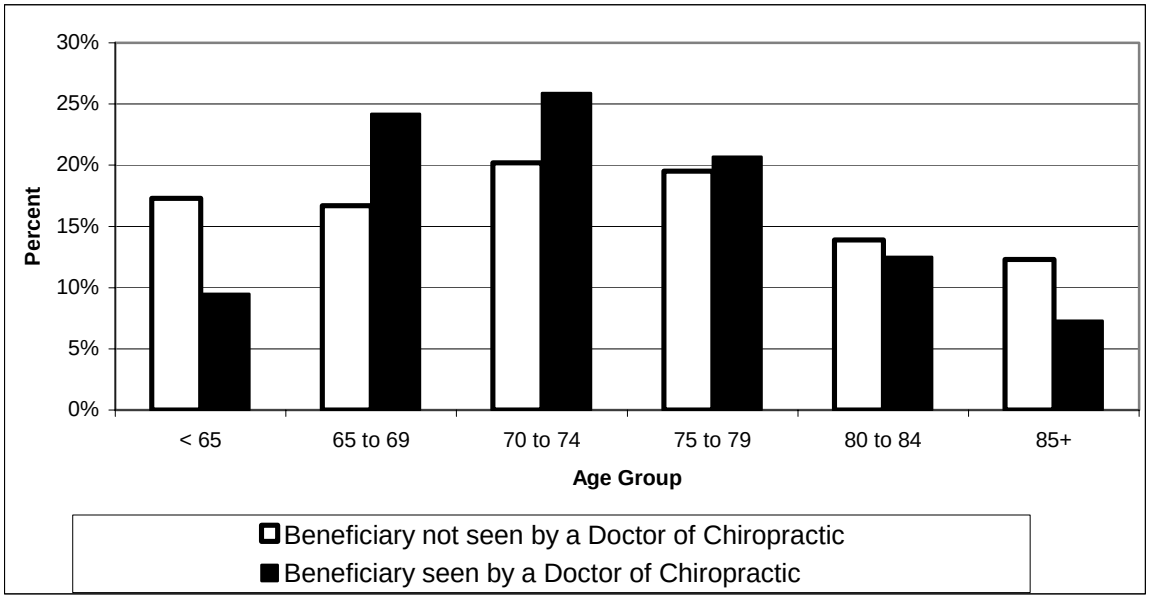
Data on the age distribution of the two groups of beneficiaries are presented in Table 7 and Figure 1. Examination of the data suggests some potentially important differentiating factors. It is clear from a review of Table 7 and Figure 1that Medicare beneficiaries under age 65 (i.e., the "disabled" and "ESRD" populations) are much less likely to have received Chiropractic care. Likewise, among beneficiaries 80 years of age and older, a smaller proportion were treated by Doctors of Chiropractic. Conversely, a higher percentage of beneficiaries between 65 and 74 years of age received Chiropractic care. For beneficiaries 75-79 years of age, approximately the same proportion did and did not receive Chiropractic care. This suggests that medical doctors, not Doctors of Chiropractic, treat older and/or sicker Medicare beneficiaries. Therefore, acuity may be an important factor in explaining differences in the use of Chiropractic services among Medicare beneficiaries.

Table 7
Age Distribution of Beneficiaries with a Primary Diagnosis of Selected Musculoskeletal and Related Medical Conditions
(by gender and treatment status)

Beneficiary Type	Age Group	Female	% Female	Male	**%** Male	Total	%
Beneficiary not seen by a Doctor of Chiropractic	64 and Younger	378,080	13.9%	359,840	23.3%	737,920	17.3%
	65 to 69	447,020	16.5%	264,980	17.2%	712,000	16.7%
	70 to 74	549,400	20.3%	310,840	20.1%	860,240	20.2%
	75 to 79	548,640	20.2%	281,380	18.2%	830,020	19.5%
	80 to 84	402,140	14.8%	187,920	12.2%	590,060	13.9%
	85 and Older	385,140	14.2%	138,340	9.0%	523,480	12.3%
	Total	2,710,420	100.0%	1,543,300	100.0%	4,253,720	100.0%
Beneficiary seen by a Doctor of Chiropractic	64 and Younger	77,400	8.4%	70,180	10.9%	147,580	9.5%
	65 to 69	216,880	23.7%	159,460	24.9%	376,340	24.2%
	70 to 74	233,480	25.5%	170,140	26.5%	403,620	25.9%
	75 to 79	193,280	21.1%	128,540	20.0%	321,820	20.7%
	80 to 84	120,920	13.2%	74,480	11.6%	195,400	12.5%
	85 and Older	74,220	8.1%	38,740	6.0%	112,960	7.3%
	Total	916,180	100.0%	641,540	100.0%	1,557,720	100.0%

Figure 1

Age Distribution of Beneficiaries with a Primary
Diagnosis of Selected Musculoskeletal and Related Medical Conditions



Removing Acuity

There is no simple or direct way to measure medical acuity from the data included in the 1999 5 Percent SAF. Accordingly, to assess whether acuity is important in differentiating beneficiaries who did/did not receive Chiropractic care during 1999 for the treatment of these selected medical diagnoses, we used an approach that deleted the institutionalized population which, by definition, has high medical acuity.

To test this hypothesis, we deleted beneficiaries with inpatient hospital, SNF, and/or hospice claims during 1999 and reran the service utilization and cost analyses. Controlling for acuity of beneficiaries' overall medical conditions results in a mostly ambulatory patient population, the type of population most likely to seek out and benefit from Chiropractic care. The findings from our reanalysis are presented in Tables 8 and 9.

All Claims

Presented in Table 8 are analytical results from the reanalysis of all claims for primarily ambulatory Medicare beneficiaries. As shown in Table 8, beneficiaries treated by Doctors of Chiropractic had lower overall payments per claim and per beneficiary for all Medicare services used during 1999 than beneficiaries receiving treatment from other providers. Likewise, for every type of claim, Medicare payments per patient and per claim are substantially lower for beneficiaries who received Chiropractic care for their musculoskeletal land related medical conditions.

Table 8

Summary of All Claims for Beneficiaries with a Primary
Diagnosis of Selected Musculoskeletal and Related Medical Conditions

(Inpatient, Skilled Nursing Facility, and Hospice Beneficiaries Deleted)
1999

Beneficiary Type	File	Medicare Beneficiaries	Claims	Medicare Payments	Average Payment Per Beneficiary	Average Payment Per Claim
Beneficiary not seen by Doctor of Chiropractic	All Files	2,878,900	77,855,140	$5,815,128,170	$2,019.91	$74.69
	DME	673,080	3,155,200	$382,771,913	$568.69	$121.31
	Home Health	109,560	424,500	$308,916,874	$2,819.61	$727.72
	Outpatient	2,295,760	12,170,100	$1,543,707,105	$672.42	$126.84
	Professional	2,861,760	62,105,340	$3,579,732,279	$1,250.88	$57.64
Beneficiary seen by Doctor of Chiropractic	All Files	1,260,140	34,251,780	$1,937,014,882	$1,537.14	$56.55
	DME	208,960	825,780	$84,162,077	$402.77	$101.92
	Home Health	15,460	47,080	$32,680,646	$2,113.88	$694.15
	Outpatient	886,360	3,885,300	$440,352,524	$496.81	$113.34
	Professional	1,260,140	29,493,620	$1,379,819,635	$1,094.97	$46.78

Selected Musculoskeletal and Related Claims Only

The data were reanalyzed with claims for the selected musculoskeletal and related diagnoses only (Table 9). As shown in Table 9, on the next page, primarily ambulatory beneficiaries treated by Doctors of Chiropractic had lower overall Medicare payments per capita and per claim than beneficiaries treated by other provider types. However, Chiropractic patients did generate slightly higher average Medicare payments per beneficiary for Outpatient services and moderately higher average payments per beneficiary for Professional services. In this case of Professional services, the higher average payment per beneficiary is the result of a higher number of beneficiary visits. For Outpatient services, the average payments per claim are nearly identical for the two groups of beneficiaries.

Table 9

Summary of Musculoskeletal and Related Claims Only for Patients with a Primary Diagnosis of Selected Musculoskeletal and Related Medical Conditions:
(Inpatient, Skilled Nursing Facility, and Hospice Beneficiaries Deleted)
1999

Beneficiary Type	File	Medicare Beneficiari	Claims	Medicare Payments	Average Payment Per	Average Payment Per

		es			Beneficiary	Claim
Beneficiary not seen by Doctor of Chiropractic	All Files	2,878,900	10,291,700	$808,179,022	$280.72	$78.53
	DME	113,020	250,120	$25,698,273	$227.38	$102.74
	Home Health	13,140	29,840	$19,834,639	$1,509.49	$664.70
	Outpatient	1,050,020	1,917,180	$244,832,344	$233.17	$127.70
	Professional	2,646,320	8,094,560	$517,813,766	$195.67	$63.97
Beneficiary seen by Doctor of Chiropractic	All Files	1,260,140	9,911340	$337,431,780	$267.77	$34.05
	DME	13,000	22,700	$1,917,973	$147.54	$84.49
	Home Health	780	1,520	$937,461	$1,201.87	$616.75
	Outpatient	146,240	276,080	$35,705,762	$244.16	$129.33
	Professional	1,259,300	9,611,040	$298,870,584	$237.33	$31.10

In conclusion, these results strongly suggest that Chiropractic care reduces per beneficiary costs to the Medicare program under current law.

Potential Future Savings Under Medicare and/or the Addition of Prescription Drugs

Congress and the President are committed to Medicare reform and establishment of some form of a prescription drug benefit for the Medicare population.

Medicare Reform

A wide variety of approaches and proposals exist for Medicare reform. Some address the role of the private sector in the program. Others focus on incentives that could lead to some over utilization of services by the elderly. These proposals may result in either increased or decreased access to Chiropractic services. The findings of our current law analysis strongly suggest that decreased access to Chiropractic services would increase program costs. This is contrary to the purpose of the Medicare program, which is to provide cost-effective health care services to the broadest group of Medicare beneficiaries. Attention should, therefore, be paid to access to Chiropractic Services during the Medicare reform debate.

A Prescription Drug Benefit

Doctors, not beneficiaries, write prescription drug scripts. Extensive research shows that the more visits a person has to a medical doctor, the more prescriptions they are likely to receive. Our analysis found that, overall, those beneficiaries who used Chiropractic services, have lower medical doctor costs and, by extrapolation, lower prescription drug costs. Thus, enhanced access to Chiropractic services could drive down the number of

prescriptions even further. Therefore, some savings would probably accrue to the Medicare program if access to Chiropractic services was increased.

(V:ACA/Medicare 2001/Report)

Appendix A

List of Diagnoses Commonly Treated By Doctors of Chiropractic

Appendix A

List of Diagnoses Commonly Treated By Doctors of Chiropractic

ICD-9-CM CODES

International Classification of Diseases, 9th Revision, Clinical Modification Codes (ICD-9–CM Codes) are designed to classify illnesses, injuries, and patient-health care provider encounters for services.

NOTE: This is not an all-inclusive list of ICD-9 codes, and is provided simply as a list of commonly used codes by DCs.

ICD-9-CM Codes

ICD CODES – NUMERIC CATEGORY LISTING

CODE	*DESCRIPTION*
320-389.1.1	**Diseases of the Nervous System and Sense Organs**
333.83	SPASMODIC TORTICOLLIS
346	MIGRAINE
346.0	CLASSIC MIGRAINE
346.1	COMMON MIGRAINE
346.2	VARIANTS OF MIGRAINE
346.8	OTHER FORMS OF MIGRAINE
346.9	MIGRAINE, UNSPECIFIED
350.1	TRIGEMINAL NEURALGIA
350.2	ATYPICAL FACE PAIN
351	FACIAL NERVE DISORDER
351.0	BELL'S PALSY
352	DISORDERS OF OTHER CRANIAL NERVES
352.3	DISORDERS OF PNEUMOGASTRIC (10TH) NERVE
352.9	UNSPECIFIED DISORDER OF CRANIAL NERVES
353	NERVE ROOT AND PLEXUS DISORDERS
353.0	BRACHIAL PLEXUS LESIONS
353.1	LUMBOSACRAL PLEXUS LESIONS
353.2	CERVICAL ROOT LESIONS, NOT ELSEWHERE CLASSIFIED
353.3	THORACIC ROOT LESIONS, NOT ELSEWHERE CLASSIFIED
353.4	LUMBOSACRAL ROOT LESIONS, NOT ELSEWHERE CLASSIFIED
353.8	OTHER NERVE ROOT AND PLEXUS DISORDERS
353.9	UNSPECIFIED NERVE ROOT AND PLEXUS DISORDER
354	MONONEURITIS UPPER LIMB
354.0	CARPAL TUNNEL SYNDROME
354.1	OTHER LESION OF MEDIAN NERVE

354.2 LESION OF ULNAR NERVE
354.3 LESION OF RADIAL NERVE
354.4 CAUSALGIA OF UPPER LIMB
354.5 MONONEURITIS MULTIPLEX
354.8 OTHER MONONEURITIS OF UPPER LIMB
354.9 MONONEURITIS OF UPPER LIMB, UNSPECIFIED
355 MONONEURITIS LEG
355.0 LESION OF SCIATIC NERVE
355.1 MERALGIA PARESTHETICA
355.4 LESION OF MEDIAL POPLITEAL NERVE
355.5 TARSAL TUNNEL SYNDROME
381.4 NONSUPPURATIVE OTITIS MEDIA, NOT SPECIFIED AS ACUTE OR CHRONIC
386 VERTIGINOUS SYNDROME
386.0 MENIERE'S DISEASE
386.3 LABYRINTHITIS, UNSPECIFIED
386.9 UNSPECIFIED VERTIGINOUS SYNDROMES AND LABYRINTHINE DISORDERS

390-459 Diseases of the Circulatory System
401.9 UNSPECIFIED ESSENTIAL HYPERTENSION

520-579 Diseases of the Digestive System
524.6 TEMPOROMANDIBULAR JOINT DISORDERS, UNSPECIFIED

630-677 Complications of Pregnancy, Childbirth, and Puerperium
648.7.1.1.1.1 BONE AND JOINT DISORDERS OF BACK, PELVIS, AND LOWER LIMBS OF MOTHER, COMPLICATING PREGNANCY, CHILDBIRTH, OR THE PUERPERIUM

710-739 Diseases of the Neuromusculoskeletal System and Connective Tissue
710.4 POLYMYOSITIS
714.3 CHRONIC OR UNSPECIFIED POLYARTICULAR JUVENILE RHEUMATOID ARTHRITIS
715 OSTEOARTHROSIS, GENERALIZED
715.0 OSTEOARTHROSIS AND ALLIED DISORDERS
715.00 OSTEOARTHROSIS, GENERALIZED, INVOLVING UNSPECIFIED SITE
715.04 OSTEOARTHROSIS, GENERALIZED, INVOLVING HAND
715.09 OSTEOARTHROSIS, GENERALIZED, INVOLVING MULTIPLE SITES
715.1 OSTEOARTHROSIS, LOCALIZED, PRIMARY
715.11 OSTEOARTHROSIS, LOCALIZED, PRIMARY, INVOLVING SHOULDER REGION
715.15 OSTEOARTHROSIS, LOCALIZED, PRIMARY, INVOLVING PELVIC REGION AND THIGH
715.18 OSTEOARTHROSIS, LOCALIZED, PRIMARY, INVOLVING OTHER SPECIFIED SITES
715.2 OSTEOARTHROSIS, LOCALIZED, SECONDARY

715.3	OSTEOARTHROSIS, LOCALIZED, NOT SPECIFIED WHETHER PRIMARY OR SECONDARY
715.30	OSTEOARTHROSIS, LOCALIZED, NOT SPECIFIED WHETHER PRIMARY OR SECONDARY, UNSPECIFIED
715.38	OSTEOARTHROSIS, LOCALIZED, NOT SPECIFIED WHETHER PRIMARY OR SECONDARY, INVOLVING OTHER SPECIFIED SITES
715.8	OSTEOARTHROSIS INVOLVING OR WITH MENTION OF MORE THAN ONE SITE, BUT NOT SPECIFIED AS GENERALIZED
715.80	OSTEOARTHROSIS INVOLVING OR WITH MENTION OF MORE THAN ONE SITE, BUT NOT SPECIFIED AS GENERALIZED, AND INVOLVING UNSPECIFIED SITE, UNSPECIFIED
715.89	OSTEOARTHROSIS INVOLVING OR WITH MENTION OF MULTIPLE SITES, BUT NOT SPECIFIED AS GENERALIZED
715.9	OSTEOARTHROSIS, UNSPECIFIED WHETHER GENERALIZED OR LOCALIZED, INVOLVING UNSPECIFIED SITE
715.90	OSTEOARTHROSIS, UNSPECIFIED WHETHER GENERALIZED OR LOCALIZED, UNSPECIFIED
715.96	OSTEOARTHROSIS, UNSPECIFIED WHETHER GENERALIZED OR LOCALIZED, INVOLVING LOWER LEG
715.98	OSTEOARTHROSIS, UNSPECIFIED WHETHER GENERALIZED OR LOCALIZED, INVOLVING OTHER SPECIFIED SITES
716.1	TRAUMATIC ARTHROPATHY
716.66	UNSPECIFIED MONOARTHRITIS INVOLVING LOWER LEG
716.9	UNSPECIFIED ARTHROPATHY
716.90	UNSPECIFIED ARTHROPATHY, SITE UNSPECIFIED, UNSPECIFIED
716.91	UNSPECIFIED ARTHROPATHY INVOLVING SHOULDER REGION
716.95	UNSPECIFIED ARTHROPATHY INVOLVING PELVIC REGION AND THIGH
716.96	UNSPECIFIED ARTHROPATHY INVOLVING LOWER LEG
716.97	UNSPECIFIED ARTHROPATHY INVOLVING ANKLE AND FOOT
716.99	UNSPECIFIED ARTHROPATHY INVOLVING MULTIPLE SITES
717	INTERNAL DERANGEMENT OF KNEE
717.5	DERANGEMENT OF MENISCUS, NOT ELSEWHERE CLASSIFIED
717.7	CHONDROMALACIA OF PATELLA
717.8	OTHER INTERNAL DERANGEMENT OF KNEE
717.9	UNSPECIFIED INTERNAL DERANGEMENT OF KNEE
718	OTHER DERANGEMENT OF JOINT
718.0	ARTICULAR CARTILAGE DISORDER
718.00	ARTICULAR CARTILAGE DISORDER, UNSPECIFIED
718.4	CONTRACTURE OF JOINT
718.5	ANKYLOSIS OF JOINT
718.50	ANKYLOSIS OF JOINT, UNSPECIFIED
718.55	ANKYLOSIS OF JOINT, PELVIS
718.85	OTHER JOINT DERANGEMENT, NOT ELSEWHERE CLASSIFIED
718.88	OTHER JOINT DERANGEMENT, NOT ELSEWHERE CLASSIFIED, INVOLVING OTHER SPECIFIED SITES
718.98	UNSPECIFIED DERANGEMENT OF JOINT OF OTHER SPECIFIED SITES

719.4	PAIN IN JOINT
719.40	PAIN IN JOINT, UNSPECIFIED
719.41	PAIN IN JOINT INVOLVING SHOULDER REGION
719.42	PAIN IN JOINT INVOLVING UPPER ARM
719.43	PAIN IN JOINT INVOLVING FOREARM
719.44	PAIN IN JOINT INVOLVING HAND
719.45	PAIN IN JOINT INVOLVING PELVIC REGION AND THIGH
719.46	PAIN IN JOINT INVOLVING LOWER LEG
719.47	PAIN IN JOINT INVOLVING ANKLE AND FOOT
719.48	PAIN IN JOINT INVOLVING OTHER SPECIFIED SITES
719.49	PAIN IN JOINT INVOLVING MULTIPLE SITES
719.5	STIFFNESS OF JOINT, NOT ELSEWHERE CLASSIFIED
719.50	STIFFNESS OF JOINT, NOT ELSEWHERE CLASSIFIED, UNSPECIFIED
719.51	STIFFNESS OF JOINT, NOT ELSEWHERE CLASSIFIED, INVOLVING SHOULDER REGION
719.55	STIFFNESS OF JOINT, NOT ELSEWHERE CLASSIFIED, INVOLVING UNSPECIFIED SITE
719.58	STIFFNESS OF JOINT, NOT ELSEWHERE CLASSIFIED, INVOLVING OTHER SPECIFIED SITES
719.59	STIFFNESS OF JOINT, NOT ELSEWHERE CLASSIFIED, INVOLVING MULTIPLE SITES
719.6	OTHER SYMPTOMS REFERABLE TO JOINT
719.60	OTHER SYMPTOMS REFERABLE TO JOINT, UNSPECIFIED
719.65	OTHER SYMPTOMS REFERABLE TO JOINT, PELVIS
719.68	OTHER SYMPTOMS REFERABLE TO JOINT, INVOLVING OTHER SPECIFIED SITES
719.69	OTHER SYMPTOMS REFERABLE TO JOINT, INVOLVING MULTIPLE SITES
719.7	DIFFICULTY IN WALKING
719.70	DIFFICULTY IN WALKING, UNSPECIFIED
719.75	DIFFICULTY IN WALKING, PELVIS
719.8	OTHER SPECIFIED DISORDERS OF JOINT, INVOLVING OTHER SPECIFIED SITE
719.80	OTHER SPECIFIED DISORDERS OF JOINT, INVOLVING OTHER SPECIFIED SITE, UNSPECIFIED
719.85	OTHER SPECIFIED DISORDERS OF JOINT, INVOLVING OTHER SPECIFIED SITE, PELVIS
719.88	OTHER SPECIFIED DISORDERS OF JOINT, INVOLVING OTHER SPECIFIED SITES
719.89	OTHER SPECIFIED DISORDERS OF JOINT, INVOLVING MULTIPLE SITES
719.9	UNSPECIFIED DISORDER OF JOINT
719.90	UNSPECIFIED DISORDER OF JOINT, UNSPECIFIED
719.95	UNSPECIFIED DISORDER OF JOINT, PELVIS
719.98	UNSPECIFIED DISORDER OF JOINT
719.99	UNSPECIFIED DISORDER OF JOINT
720	ANKYLOSING SPONDYLITIS AND OTHER INFLAMMATORY SPONDYLOPATHIES
720.0	ANKYLOSING SPONDYLITIS

720.1	SPINAL ENTHESOPATHY
720.2	SACROILIITIS, NOT ELSEWHERE CLASSIFIED
720.8	OTHER INFLAMMATORY SPONDYLOPATHIES
720.81	INFLAMMATORY SPONDYLOPATHIES IN DISEASES CLASSIFIED ELSEWHERE
720.9	UNSPECIFIED INFLAMMATORY SPONDYLOPATHY
721	SPONDYLOSIS AND ALLIED DISORDERS
721.0	CERVICAL SPONDYLOSIS WITHOUT MYELOPATHY
721.1	CERVICAL SPONDYLOSIS WITH MYELOPATHY
721.2	THORACIC SPONDYLOSIS WITHOUT MYELOPATHY
721.3	LUMBOSACRAL SPONDYLOSIS WITHOUT MYELOPATHY
721.4	THORACIC OR LUMBAR SPONDYLOSIS WITH MYELOPATHY
721.41	SPONDYLOSIS WITH MYELOPATHY, THORACIC REGION
721.42	SPONDYLOSIS WITH MYELOPATHY, LUMBAR REGION
721.5	KISSING SPINE
721.6	ANKYLOSING VERTEBRAL HYPEROSTOSIS
721.7	TRAUMATIC SPONDYLOPATHY
721.8	OTHER ALLIED DISORDERS OF SPINE
721.9	SPONDYLOSIS OF UNSPECIFIED SITE
721.90	SPONDYLOSIS OF UNSPECIFIED SITE WITHOUT MENTION OF MYELOPATHY
721.91	SPONDYLOSIS OF UNSPECIFIED SITE WITH MYELOPATHY
722	INTERVERTEBRAL DISC DISORDERS
722.0	DISPLACEMENT OF CERVICAL INTERVERTEBRAL DISC WITHOUT MYELOPATHY
722.1	DISPLACEMENT OF THORACIC OR LUMBAR INTERVERTEBRAL DISC WITHOUT MYELOPATHY
722.10	DISPLACEMENT OF LUMBAR INTERVERTEBRAL DISC WITHOUT MYELOPATHY
722.11	DISPLACEMENT OF THORACIC INTERVERTEBRAL DISC WITHOUT MYELOPATHY
722.2	DISPLACEMENT OF INTERVERTEBRAL DISC, SITE UNSPECIFIED, WITHOUT MYELOPATHY
722.3	SCHMORL'S NODES
722.30	SCHMORL'S NODES, UNSPECIFIED
722.31	SCHMORL'S NODES OF THORACIC REGION
722.32	SCHMORL'S NODES OF LUMBAR REGION
722.4	DEGENERATION OF CERVICAL INTERVERTEBRAL DISC
722.5	DEGENERATION OF THORACIC OR LUMBAR INTERVERTEBRAL DISC
722.51	DEGENERATION OF THORACIC OR THORACOLUMBAR INTERVERTEBRAL DISC
722.52	DEGENERATION OF LUMBAR OR LUMBOSACRAL INTERVERTEBRAL DISC
722.6	DEGENERATION OF INTERVERTEBRAL DISC, SITE UNSPECIFIED
722.7	INTERVERTEBRAL DISC DISORDER WITH MYELOPATHY
722.71	INTERVERTEBRAL DISC DISORDER WITH MYELOPATHY, CERVICAL REGION

722.72	INTERVERTEBRAL DISC DISORDER WITH MYELOPATHY, THORACIC REGION
722.73	INTERVERTEBRAL DISC DISORDER WITH MYELOPATHY, LUMBAR REGION
722.8	POSTLAMINECTOMY SYNDROME
722.80	POSTLAMINECTOMY SYNDROME, UNSPECIFIED
722.81	POSTLAMINECTOMY SYNDROME OF CERVICAL REGION
722.82	POSTLAMINECTOMY SYNDROME OF THORACIC REGION
722.83	POSTLAMINECTOMY SYNDROME OF LUMBAR REGION
722.9	OTHER AND UNSPECIFIED DISC DISORDER
722.90	OTHER AND UNSPECIFIED DISC DISORDER OF UNSPECIFIED REGION
722.91	OTHER AND UNSPECIFIED DISC DISORDER OF CERVICAL REGION
722.92	OTHER AND UNSPECIFIED DISC DISORDER OF THORACIC REGION
722.93	OTHER AND UNSPECIFIED DISC DISORDER OF LUMBAR REGION
723	OTHER DISORDERS OF CERVICAL REGION
723.0	SPINAL STENOSIS IN CERVICAL REGION
723.1	CERVICALGIA
723.2	CERVICOCRANIAL SYNDROME
723.3	CERVICOBRACHIAL SYNDROME (DIFFUSE)
723.4	BRACHIAL NEURITIS OR RADICULITIS NOS
723.5	TORTICOLLIS, UNSPECIFIED
723.6	PANNICULITIS SPECIFIED AS AFFECTING NECK
723.7	OSSIFICATION OF POSTERIOR LONGITUDINAL LIGAMENT IN CERVICAL REGION
723.8	OTHER SYNDROMES AFFECTING CERVICAL REGION
723.9	UNSPECIFIED NEUROMUSCULOSKELETAL DISORDERS AND SYMPTOMS REFERABLE TO NECK
724	OTHER AND UNSPECIFIED DISORDERS OF BACK
724.0	SPINAL STENOSIS, OTHER THAN CERVICAL
724.00	SPINAL STENOSIS OF UNSPECIFIED REGION
724.01	SPINAL STENOSIS OF THORACIC REGION
724.02	SPINAL STENOSIS OF LUMBAR REGION
724.09	SPINAL STENOSIS OF OTHER REGION
724.1	PAIN IN THORACIC SPINE
724.2	LUMBAGO
724.3	SCIATICA
724.4	THORACIC OR LUMBOSACRAL NEURITIS OR RADICULITIS, UNSPECIFIED
724.5	BACKACHE, UNSPECIFIED
724.6	DISORDERS OF SACRUM
724.7	DISORDERS OF COCCYX
724.70	UNSPECIFIED DISORDERS OF COCCYX
724.79	OTHER DISORDERS OF COCCYX
724.8	OTHER SYMPTOMS REFERABLE TO BACK
724.9	OTHER UNSPECIFIED BACK DISORDERS
726	PERIPHERAL ENTHESOPATHIES AND ALLIED SYNDROMES

726.0	ADHESIVE CAPSULITIS OF SHOULDER
726.1	DISORDERS OF BURSAE AND TENDONS IN SHOULDER REGION, UNSPECIFIED
726.10	ROTATOR CUFF SYNDROME OF SHOULDER AND ALLIED DISORDERS
726.11	CALCIFYING TENDINITIS OF SHOULDER
726.2	OTHER AFFECTIONS OF SHOULDER REGION, NOT ELSEWHERE CLASSIFIED
726.32	LATERAL EPICONDYLITIS
726.91	EXOSTOSIS OF UNSPECIFIED SITE
727	OTHER DISORDERS OF SYNOVIUM, TENDON, AND BURSA
727.0	SYNOVITIS AND TENOSYNOVITIS
727.00	SYNOVITIS NOS
727.01	SYNOVITIS AND TENOSYNOVITIS IN DISEASES CLASSIFIED ELSEWHERE
727.04	RADIAL STYLOID TENOSYNOVITIS
727.05	OTHER TENOSYNOVITIS OF HAND AND WRIST
727.06	TENOSYNOVITIS OF FOOT AND ANKLE
727.09	OTHER SYNOVITIS AND TENOSYNOVITIS
727.2	SPECIFIC BURSITIDES OFTEN OF OCCUPATIONAL ORIGIN
727.3	OTHER BURSITIS DISORDERS
727.9	UNSPECIFIED DISORDER OF SYNOVIUM, TENDON, AND BURSA
728.1	MUSCULAR CALCIFICATION AND OSSIFICATION
728.10	CALCIFICATION AND OSSIFICATION, UNSPECIFIED
728.12	TRAUMATIC MYOSITIS OSSIFICANS
728.4	LAXITY OF LIGAMENT
728.5	HYPERMOBILITY SYNDROME
728.6	CONTRACTURE OF PALMAR FASCIA
728.7	OTHER FIBROMATOSES OF MUSCLE, LIGAMENT, AND FASCIA
728.8	OTHER DISORDERS OF MUSCLE, LIGAMENT, AND FASCIA
728.81	INTERSTITIAL MYOSITIS
728.85	SPASM OF MUSCLE
728.9	UNSPECIFIED DISORDER OF MUSCLE, LIGAMENT, AND FASCIA
729	OTHER DISORDERS OF SOFT TISSUES
729.0	RHEUMATISM, UNSPECIFIED AND FIBROSITIS
729.1	MYALGIA AND MYOSITIS, UNSPECIFIED
729.2	NEURALGIA, NEURITIS, AND RADICULITIS, UNSPECIFIED
729.3	PANNICULITIS, UNSPECIFIED
729.30	PANNICULITIS
729.4	FASCIITIS, UNSPECIFIED
729.5	PAIN IN LIMB
729.8	OTHER NEUROMUSCULOSKELETAL SYMPTOMS REFERABLE TO LIMBS
729.81	SWELLING OF LIMB
729.9	OTHER AND UNSPECIFIED DISORDERS OF SOFT TISSUE
734	PES PLANUS
736.81	UNEQUAL LEG LENGTH (ACQUIRED)
737.0	ADOLESCENT POSTURAL KYPHOSIS
737.1	KYPHOSIS
737.10	KYPHOSIS (ACQUIRED) (POSTURAL)

737.12	KYPHOSIS, POSTLAMINECTOMY
737.19	KYPHOSIS (ACQUIRED) OTHER
737.2	LORDOSIS (ACQUIRED)
737.20	LORDOSIS (ACQUIRED) (POSTURAL)
737.21	LORDOSIS, POSTLAMINECTOMY
737.22	OTHER POSTSURGICAL LORDOSIS
737.29	LORDOSIS (ACQUIRED) OTHER
737.3	SCOLIOSIS (AND KYPHOSCOLIOSIS), IDIOPATHIC
737.30	KYPHOSCOLIOSIS AND SCOLIOSIS
737.31	RESOLVING INFANTILE IDIOPATHIC SCOLIOSIS
737.32	PROGRESSIVE INFANTILE IDIOPATHIC SCOLIOSIS
737.34	THORACOGENIC SCOLIOSIS
737.39	KYPHOSCOLIOSIS AND SCOLIOSIS OTHER
737.4	CURDVATURE OF SPINE ASSOCIATED WITH OTHER CONDITIONS
737.40	CURVATURE OF SPINE, UNSPECIFIED
737.41	KYPHOSIS ASSOCIATED WITH OTHER CONDITIONS
737.42	LORDOSIS ASSOCIATED WITH OTHER CONDITIONS
737.43	SCOLIOSIS ASSOCIATED WITH OTHER CONDITIONS
737.8	OTHER CURVATURES OF SPINE ASSOCIATED WITH OTHER CONDITIONS
738	OTHER ACQUIRED NEUROMUSCULOSKELETAL DEFORMITY
738.2	ACQUIRED DEFORMITY OF NECK
738.3	ACQUIRED DEFORMITY OF CHEST AND RIB
738.4	ACQUIRED SPONDYLOLISTHESIS
738.5	OTHER ACQUIRED DEFORMITY OF BACK OR SPINE
738.6	ACQUIRED DEFORMITY OF PELVIS
738.9	ACQUIRED NEUROMUSCULOSKELETAL DEFORMITY OF UNSPECIFIED SITE
739	NONALLOPATHIC LESIONS, NOT ELSEWHERE CLASSIFIED
739.0	NONALLOPATHIC LESIONS OF HEAD REGION, NOT ELSEWHERE CLASSIFIED
739.1	NONALLOPATHIC LESIONS OF CERVICAL REGION, NOT ELSEWHERE CLASSIFIED
739.2	NONALLOPATHIC LESIONS OF THORACIC REGION, NOT ELSEWHERE CLASSIFIED
739.3	NONALLOPATHIC LESIONS OF LUMBAR REGION, NOT ELSEWHERE CLASSIFIED
739.4	NONALLOPATHIC LESIONS OF SACRAL REGION, NOT ELSEWHERE CLASSIFIED
739.5	NONALLOPATHIC LESIONS OF PELVIC REGION, NOT ELSEWHERE CLASSIFIED
739.6	NONALLOPATHIC LESIONS OF LOWER EXTREMITIES, NOT ELSEWHERE CLASSIFIED
739.7	NONALLOPATHIC LESIONS OF UPPER EXTREMITIES, NOT ELSEWHERE CLASSIFIED
739.8	NONALLOPATHIC LESIONS OF RIB CAGE, NOT ELSEWHERE CLASSIFIED

754.2	CONGENITAL NEUROMUSCULOSKELETAL DEFORMITIES OF SPINE
755.69	OTHER CONGENITAL ANOMALIES OF LOWER LIMB, INCLUDING PELVIC GIRDLE
756.1	CONGENITAL ANOMALIES OF SPINE
756.11	CONGENITAL SPONDYLOLYSIS, LUMBOSACRAL REGION
756.12	SPONDYLOLISTHESIS, CONGENITAL
756.13	ABSENCE OF VERTEBRA, CONGENITAL
756.14	HEMIVERTEBRA
756.15	FUSION OF SPINE (VERTEBRA), CONGENITAL
756.16	KLIPPEL-FEIL SYNDROME
756.17	SPINA BIFIDA OCCULTA
756.19	OTHER CONGENITAL ANOMALIES OF SPINE
756.2	CERVICAL RIB

780-799	**Symptoms, Signs, and Ill-Defined Conditions**
780.4	DIZZINESS AND GIDDINESS
780.7	MALAISE AND FATIGUE
780.8	HYPERHIDROSIS
780.9	OTHER GENERAL SYMPTOMS
781	OTHER SYMPTOMS INVOLVING NERVOUS AND NEUROMUSCULOSKELETAL SYSTEMS
781.0	ABNORMAL INVOLUNTARY MOVEMENTS
781.9	OTHER SYMPTOMS INVOLVING NERVOUS AND NEUROMUSCULOSKELETAL SYSTEMS
784	SYMPTOMS INVOLVING HEAD AND NECK
784.0	HEADACHE
784.1	THROAT PAIN
786.5	CHEST PAIN
786.50	UNSPECIFIED CHEST PAIN
788.3	ENURESIS, NOCTURNAL
789.0	COLIC, INFANTILE, ABDOMINAL, INTESTINAL, SPASMODIC

800-999	**Injury**
839	DISLOCATION, NOT ELSEWHERE CLASSIFIED
839.0	DISLOCATION, CERVICAL VERTEBRA
839.00	DISLOCATION, CERVICAL VERTEBRA, CLOSED
839.01	DISLOCATION FIRST CERVICAL VERTEBRA, CLOSED
839.02	DISLOCATION SECOND CERVICAL VERTEBRA, CLOSED
839.03	DISLOCATION THIRD CERVICAL VERTEBRA, CLOSED
839.04	DISLOCATION FOURTH CERVICAL VERTEBRA, CLOSED
839.05	DISLOCATION FIFTH CERVICAL VERTEBRA, CLOSED
839.06	DISLOCATION SIXTH CERVICAL VERTEBRA, CLOSED
839.07	DISLOCATION SEVENTH CERVICAL VERTEBRA, CLOSED
839.08	DISLOCATION MULTIPLE CERVICAL VERTEBRAE, CLOSED
839.2	CLOSED DISLOCATION, THORACIC AND LUMBAR VERTEBRA
839.20	CLOSED DISLOCATION, LUMBAR VERTEBRA
839.21	CLOSED DISLOCATION, THORACIC VERTEBRA
840	SPRAINS AND STRAINS OF SHOULDER AND UPPER ARM

840.0 ACROMIOCLAVICULAR (JOINT) (LIGAMENT) SPRAIN
840.1 CORACOCLAVICULAR (LIGAMENT) SPRAIN
840.2 CORACOHUMERAL (LIGAMENT) SPRAIN
840.3 INFRASPINATUS (MUSCLE) (TENDON) SPRAIN
840.4 ROTATOR CUFF (CAPSULE) SPRAIN
840.5 SUBSCAPULARIS (MUSCLE) SPRAIN
840.6 SUPRASPINATUS (MUSCLE) (TENDON) SPRAIN
840.8 SPRAIN OF OTHER SPECIFIED SITES OF SHOULDER AND UPPER ARM
840.9 SPRAIN OF UNSPECIFIED SITE OF SHOULDER AND UPPER ARM
841 SPRAINS AND STRAINS OF ELBOW AND FOREARM
841.0 RADIAL COLLATERAL LIGAMENT SPRAIN
841.1 ULNAR COLLATERAL LIGAMENT SPRAIN
841.2 RADIOHUMERAL
841.3 ULNOHUMERAL (JOINT) SPRAIN
841.8 SPRAIN OF OTHER SPECIFIED SITES OF ELBOW AND FOREARM
841.9 SPRAIN OF UNSPECIFIED SITE OF ELBOW AND FOREARM
842 SPRAINS AND STRAINS OF WRIST AND HAND
842.0 WRIST SPRAIN
842.00 SPRAIN OF UNSPECIFIED SITE OF WRIST
842.01 SPRAIN OF CARPAL (JOINT) OF WRIST
842.02 SPRAIN OF RADIOCARPAL (JOINT) (LIGAMENT) OF WRIST
842.09 OTHER WRIST SPRAIN
842.1 HAND SPRAIN
842.10 SPRAIN OF UNSPECIFIED SITE OF HAND
842.11 SPRAIN OF CARPOMETACARPAL (JOINT) OF HAND
842.12 SPRAIN OF METACARPOPHALANGEAL (JOINT) OF HAND
842.13 SPRAIN OF INTERPHALANGEAL (JOINT) OF HAND
842.19 OTHER HAND SPRAIN
843 SPRAINS AND STRAINS OF HIP AND THIGH
843.0 ILIOFEMORAL (LIGAMENT) SPRAIN
843.8 SPRAIN OF OTHER SPECIFIED SITES OF HIP AND THIGH
843.9 SPRAIN OF UNSPECIFIED SITE OF HIP AND THIGH
844 SPRAINS AND STRAINS OF KNEE AND LEG
844.0 SPRAIN OF LATERAL COLLATERAL LIGAMENT OF KNEE
844.1 SPRAIN OF MEDIAL COLLATERAL LIGAMENT OF KNEE
844.2 SPRAIN OF CRUCIATE LIGAMENT OF KNEE
844.3 SPRAIN OF TIBIOFIBULAR (JOINT) (LIGAMENT) SUPERIOR, OF KNEE
844.8 SPRAIN OF OTHER SPECIFIED SITES OF KNEE AND LEG
844.9 SPRAIN OF UNSPECIFIED SITE OF KNEE AND LEG
845 SPRAINS AND STRAINS OF ANKLE AND FOOT
845.0 ANKLE SPRAIN
845.00 UNSPECIFIED SITE OF ANKLE SPRAIN
845.01 DELTOID (LIGAMENT), ANKLE SPRAIN
845.02 CALCANEOFIBULAR (LIGAMENT) ANKLE SPRAIN
845.03 TIBIOFIBULAR (LIGAMENT) SPRAIN, DISTAL
845.09 OTHER ANKLE SPRAIN
845.1 FOOT SPRAIN
845.10 UNSPECIFIED SITE OF FOOT SPRAIN

845.11	TARSOMETATARSAL (JOINT) (LIGAMENT) SPRAIN
845.12	METATARSOPHALANGEAL (JOINT) SPRAIN
845.13	INTERPHALANGEAL (JOINT), TOE SPRAIN
845.19	OTHER FOOT SPRAIN
846	SPRAINS AND STRAINS OF SACROILIAC REGION
846.0	LUMBOSACRAL (JOINT) (LIGAMENT) SPRAIN
846.1	SACROILIAC (LIGAMENT) SPRAIN
846.2	SACROSPINATUS (LIGAMENT) SPRAIN
846.3	SACROTUBEROUS
846.8	OTHER SPECIFIED SITES OF SACROILIAC REGION SPRAIN
846.9	UNSPECIFIED SITE OF SACROILIAC REGION SPRAIN
847	SPRAINS AND STRAINS OF OTHER AND UNSPECIFIED PARTS OF BACK
847.0	NECK SPRAIN
847.1	THORACIC SPRAIN
847.2	LUMBAR SPRAIN
847.3	SPRAIN OF SACRUM
847.4	SPRAIN OF COCCYX
847.9	SPRAIN OF UNSPECIFIED SITE OF BACK
848	OTHER AND ILL-DEFINED SPRAINS AND STRAINS
848.1	JAW SPRAIN
848.2	THYROID REGION SPRAIN
848.3	SPRAIN OF RIBS
848.4	STERNUM SPRAIN
848.42	CHONDROSTERNAL (JOINT) SPRAIN
848.5	PELVIC SPRAIN
848.8	OTHER SPECIFIED SITES OF SPRAINS AND STRAINS
848.9	UNSPECIFIED SITE OF SPRAIN AND STRAIN
850.9	CONCUSSION, UNSPECIFIED
905.7	LATE EFFECT OF SPRAIN AND STRAIN WITHOUT MENTION OF TENDON INJURY
905.8	LATE EFFECT OF TENDON INJURY
907.3	LATE EFFECT OF INJURY TO NERVE ROOT(S), SPINAL PLEXUS(ES), AND OTHER NERVES OF TRUNK
953.0	INJURY TO CERVICAL NERVE ROOT
953.1	INJURY TO DORSAL NERVE ROOT
953.2	INJURY TO LUMBAR NERVE ROOT
953.3	INJURY TO SACRAL NERVE ROOT
953.4	INJURY TO BRACHIAL PLEXUS
953.5	INJURY TO LUMBOSACRAL PLEXUS
954	INJURY TO CERVICAL SYMPATHETIC NERVE, EXCLUDING SHOULDER AND PELVIC GIRDLES
956	INJURY TO SCIATIC NERVE
959.2	OTHER AND UNSPECIFIED INJURY TO SHOULDER AND UPPER ARM
959.6	OTHER AND UNSPECIFIED INJURY TO HIP AND THIGH
959.7	OTHER AND UNSPECIFIED INJURY TO KNEE, LEG, ANKLE, AND FOOT