

# **American Chiropractic Association**

## **Chiropractic Clinical Healthplan Integration Program(Blue CCHIP)**

### **Vital Information for Decision Makers in Health Care**

**(Personalized)**

**Presented by:  
ACA representative  
Glenn Czulada DC  
1201 Wheeler Ave  
Dunmore, Pa 18510  
570-343-0400  
[glenncz@cs.com](mailto:glenncz@cs.com)**

## Simple Justice – A Patients Right to Chiropractic Care

Patients have emerged stronger and wiser through the last two decades of turbulent change in the health delivery system. They are now sophisticated shoppers and know their rights in making informed and responsible health care choices. They are advocates of high-quality care which can be offered in a conservative, non-invasive environment.

Traditionally, quality of care as defined by consumers dealt with service-level issues like the office location being conveniently located to their home, or little or no waiting period for an appointment. This paradigm has shifted as consumers not only expect ongoing service-level improvements, but increasingly are voicing a desire for more accountability in clinical quality and treatment outcomes. In other words, patients want to get better, and rely on providers to give them information, support and care that works to restore and maintain a healthy lifestyle.

Evidence shows that patients are frequently choosing doctors of chiropractic (chiropractic physicians) as their primary entry point into the health care system. They appreciate the value of a holistic, natural approach to healing and are seeking the most expertly-trained and skilled professional in spinal care: the doctor of chiropractic.

Chiropractors are meeting their patients expectations by:

1. Identifying effective treatment options,
2. Promoting integrated multidisciplinary treatment teams to leverage provider skills, training and expertise, and
3. Providing cost-effective and efficacious treatment.

The following studies prove without doubt, that doctors of chiropractic provide quality health care that is safe and effective. Spinal manipulative therapy is clearly associated with important cost savings and improved patient outcomes. The following scientific papers have documented these effects.

The ACA Blue Chip program was created to obtain **simple justice** for their patients- which will result in improved health care through expanded access to chiropractic care.

Please note: in the overview which precedes the clinical studies, all of the bullets are direct quotations from the referenced study

## **Chiropractic: A Profession at the Crossroads of Mainstream and Alternative Medicine**

Annals of Internal Medicine – 2002 Volume 136 – Number 3

- Chiropractic is the largest, most regulated, and best recognized of the professions that have traditionally functioned outside of mainstream medical institutions.
- Chiropractors are used more often than any other alternative provider group (2), and the satisfaction with chiropractic care is very high.
- A College in Canada, and two in Great Britain are provided at established government-sponsored universities and colleges.
- A recent study described U.S. chiropractic curricula as an average of 4820 classroom and clinical hours, with about 30% spent in the basic sciences and 70% in clinical sciences internship (22). Medical school curricula average about 4670 hours with a similar breakdown.
- Studies confirm that most patients go to chiropractors for musculoskeletal problems: about 60% with low back pain, and the remainder with head, neck, and extremity symptoms.
- Only a small number, typically fewer than 2% to 5%, seek care for other conditions. Recent studies have also documented that a minor proportion of patients visit chiropractors for general health concerns, prevention, and a feeling of well-being; they often receive standard health advice, most often with regard to physical fitness and nutrition.
- The approach used in chiropractic training and practice for clinical diagnosis is similar to that of all health care disciplines: a history, physical examination, and specialty-specific assessments.
- The profession has developed detailed consensus guidelines for quality for most aspects of case management (39), and these are didactically and clinically modeled in accredited chiropractic institutions.
- Observational studies (3, 4) and randomized trials (48) leave little doubt that chiropractic patients are very satisfied with their management.

- Forty-three randomized trials of spinal manipulation for treatment of acute, sub acute, and chronic low back pain have been published. Thirty favored manipulation over the comparison treatments in at least a subgroup of patients, and the other 13 found no significant differences. No trial to date has found manipulation to be statistically or clinically less effective than the comparison treatment.
- In most of the randomized, controlled trials of manipulation for musculoskeletal pain, the positive effect sizes appear to be clinically and statistically significant.
- In 1994, the U.S. Agency for Health Care Policy and Research similarly concluded that spinal manipulation was safe and effective for acute low-back pain. This agency reviewed all clinical trials available at the time and found no other treatment to have stronger evidence.
- A recent trial found that manipulation for patients with sciatica related to disc herniation was better than chemonucleolysis.
- Surprisingly, spinal manipulation is one of the most studied treatments for back pain.
- Chiropractic theory has held that subluxation and manipulation can have important physiologic effects: increased range of joint motion, changes in facet joint kinematics, increased pain tolerance, increased muscle strength, attenuation of motoneuron activity, enhanced proprioceptive behavior, and changes in endorphins and substance P. A biomechanical picture of manipulation is beginning to emerge from studies on the forces involved and the resultant kinetics and kinematics.
- No serious complication has been noted in more than 73 controlled clinical trials or in any prospectively evaluated case series to date.
- Serious complications from lumbar spinal manipulation are extremely rare, estimated to be 1 case per 100 million manipulations.
- Chiropractic has survived, and it has begun to embrace the values and behaviors of a mainstream health profession. In the past few decades, chiropractic has strengthened its educational system; initiated research that has validated spinal manipulation; increased its market share of satisfied patients; initiated collaborations with other disciplines in practice, research, and professional settings; and effectively used political, legislative, and legal measures to secure a role.

## **Patients using Chiropractors in North America - Who Are They, and Why Are They in Chiropractic Care?**

SPINE 2002 Volume 27, Number 3

- These data support the theory that patients seek chiropractic care almost exclusively for musculoskeletal symptoms and that chiropractors and their patients share a similar belief system.
- The proportion of the population using chiropractic services has doubled in the past 20 years.
- The level of satisfaction with chiropractic care was quite high (mean score of 87.4 of 100), a finding that has been consistently demonstrated.
- In this study few patients sought chiropractic care for anything other than a musculoskeletal complaint.
- We did not directly test whether chiropractic patients were ignorant of medical care, but we believe that the high level of education of the patients in this study argues against the inadequate socialization theory. Furthermore, if patients were ignorant of medicine, we would have expected to see a broader range of symptoms being presented to chiropractors, rather than the near-complete concentration of musculoskeletal symptoms.

## **Is Chiropractic Evidence Based? A Pilot Study**

Journal of Manipulative and Physiological Therapeutics  
2003 Volume 26, Number 1

- When compared to the many other studies of similar design that have evaluated the extent to which different medical specialties are evidence based, chiropractic practice was found to have the highest proportion of care (68.3%) supported by good-quality experimental evidence.
- Recent trends in health care include the growing popularity of CAM, editorial comments in medical journals contending that CAM is not evidence based and mainstream medicine's growing preoccupation with practicing in an evidence-based model.
- The stimulus in asking what proportion of medical care in evidence based came from previous observations, which estimated that only approximately 10% to 20% of all procedure currently used in medical practice have been shown to be efficacious by controlled trials.
- The proportion of the delivered care supported by RCT evidence was less than 50% in the majority of medical specialties examined to date.
- Based on the results of this study, chiropractic practice can be included with 3 medical specialties – 53% inpatient general medicine, 50% and 64.8% internal medicine, and 65% acute general psychiatry – as disciplines with at least 50% of care delivered supported by RCT evidence. Furthermore, when compared to medical specialties that have been similarly evaluated, the results of this study imply that chiropractic practice may provide the highest proportion of care (68.3%) supported by good-quality experimental evidence.
- The results, although limited to patients under the care of 1 chiropractor, suggested that chiropractic practice can readily be examined with methodologies as rigorous as those used to evaluate specialties of medicine, and that 68.3% of the care delivered to patients presenting to a chiropractic practice was supported by evidence from good-quality, randomized clinical trials. This proportion compares favorably to a number of specialties of medicine that have been similarly examined

## **The Adequacy of Medical School Education in Musculoskeletal Medicine**

Journal of Bone and Joint Surgery 1998 80:1421-7

- The purpose of the current study was to test a group of recent medical school graduates on basic topics in musculoskeletal medicine in order to assess the adequacy of their preparation in this area.
- The study population comprised all eighty-five residents who are in their first postgraduate year at our institution.
- Seventy (82 per cent) of the eighty-five residents failed to demonstrate basic competency on the examination.
- We therefore believe that medical school preparation in musculoskeletal medicine is inadequate.

## **A comparison of chiropractic student knowledge versus medical residents**

### **Chiropractic Research Centre of Macquarie University**

- Based on the marking scale determined by the chief residents, the Chiropractic group (n=51) showed statistically significant higher average grade than the orthopedic residents. Expressed in other terms, 70% of chiropractic students passed the knowledge questionnaire, compared to an 80% failure rate for the residents.
- The results of this study suggest that chiropractic student neuromusculoskeletal knowledge is as good or better than medical residents.

## **A Comparative Study of Chiropractic and Medical Education**

Alternative therapies, September 1998, Vol. 4, No. 5

- An intriguing result is that chiropractic education devotes more time to the basic and clinical sciences than does medical education.
- One conclusion that can be drawn from this study is that the educational training of medical and chiropractic doctors has much in common.
- In our interviews with medical students, something became clear: these students spend little time studying the neuromusculoskeletal system and its health-related problems, the subjects of most concern to chiropractors.

## **Family Physicians, Chiropractors, and Back Pain**

The Journal of Family Practice 1992, Vol. 35, No. 5

- Back pain is the second leading reason reported by patients for visiting physicians.
- Thus, in terms of musculoskeletal problems, family physicians and chiropractors provide the majority of ambulatory care in the health care system.
- Although 26% saw them as an excellent source of care for certain musculoskeletal problems.
- In terms of return to normal function and patient satisfaction, chiropractic therapy seems to be of value.

## **Comparing the Satisfaction of Low Back Pain Patients Randomized to Receive Medical or Chiropractic Care: Results From the UCLA Low-Back Pain Study**

American Journal of Public Health – October 2002, Vol. 92, No. 10

- Patient satisfaction is an important component of evaluating care for low back pain, especially because objectively measurable treatment outcomes are largely absent.
- Studies concluded that patients were more satisfied with chiropractic care than with physical therapy after 6 weeks.
- Results from observational studies suggest that back pain patients are more satisfied with chiropractic care than with medical care.
- In this randomized trial, chiropractic patients were more satisfied with their back care providers after 4 weeks of treatment than were medical patients. Similar results have been reported by others.
- By contrast, we found that receipt of self-care advice and explanation of treatment had strong estimated effects on patient satisfaction. These findings are consistent with previous studies that demonstrate associations between the amount of information patients receive and their degree of satisfaction.
- A fourth possible explanation for the residual satisfaction gap is that chiropractors might give more detailed physical examinations than do medical providers.
- We conclude that providers in managed care organizations may be able to increase the satisfaction of their low back pain patients by communicating advice and information to patients about their condition and treatment.

## **Chronic Spinal Pain - A Randomized Clinical Trial Comparing Medication, Acupuncture, and Spinal Manipulation**

SPINE 2003 Volume 28, Number 14

- The consistency of the results provides, despite some discussed shortcomings of this study, evidence that in patients with chronic spinal pain, manipulation, if not contraindicated, results in greater short-term improvement than acupuncture or medication.
- The current RCT was designed with a rigorous protocol.
- Medication apparently did not achieve a marked improvement in chronic spinal pain and caused adverse reactions in 6.1% of patients.
- In summary, the significance of the study is that for chronic spinal pain syndromes, it appears that spinal manipulation provided the best overall short-term results, despite the fact that the spinal manipulation group had experienced the longest pretreatment duration of pain.

## **Patterns and Perceptions of Care for Treatment of Back and Neck Pain - Results of a National Survey**

SPINE 2003 Volume 28, Number 3

- Chiropractic, massage, and relaxation techniques were rated as “very helpful” for back or neck pain among users (61%, 65%, and 43%, respectively), whereas conventional providers were rated as “very helpful” by 27% of users.
- Back pain is the second leading symptomatic cause of physician visits in the United States. Neck pain affects up to two-thirds of adults at some point in their lives and is the most common cause of musculoskeletal pain in some populations.
- Chiropractic and massage were rated as “very helpful” for back and neck pain by two of three users, whereas one in four users rated conventional providers as “very helpful.”

## **Survey Conducted by Health Benchmarks Reveals High Patient Satisfaction with Chiropractic Treatment**

American Specialty Health Members Report(2003)

- Widespread Satisfaction with Overall Care and Chiropractic Plan Services.
- “The very favorable response to overall indicators of satisfaction and high reported levels of perceived effectiveness of chiropractic treatment, indicates that patients are benefiting from chiropractic services.”
- A significant number of respondents revealed that they had a medical condition they thought the chiropractor could treat (67%), they had successfully used a chiropractor before (52%), and wanted to avoid taking prescription medications (31%).

**Patient Characteristics, Practice Activities, and One-Month Outcomes for Chronic, Recurrent Low-Back Pain Treated by Chiropractors and Family Medicine Physicians: A Practice-Based Feasibility Study**

Journal of Manipulative and Physiological Therapeutics, May 2000

- Although seldom life-threatening, it is a major cause of functional disability, representing one fourth of all disabling work injuries.
- Chiropractic patients showed greater improvement at 1 month on the 2 MPQ dimensions and on the VAS. Family practice patients actually regressed 26% to 29% on the MPQ dimensions. Although 6% improvement was noted for medical patients on the VAS, the improvement for chiropractic patients was 5 times greater, at 31%. Chiropractic patients also showed less functional disability at 1 month.
- One possible explanation for the greater improvement seen in the chiropractic cohort may be the efficacy of spinal manipulation or some combination of manipulation and other modalities.

**Chronic Spinal Pain Syndromes: A Clinical Pilot Trial Comparing  
Acupuncture, a Nonsteroidal Anti-inflammatory Drug, and Spinal  
Manipulation**

**Journal of Manipulative and Physiological Therapeutics  
Volume 22 – Number 6 – July/August 1999**

- The most remarkable feature of the results of this pilot study, however, is the absolute consistency: over all outcome measures, the manipulation group displayed the most substantial improvements that were uniformly found to be significant. In the two other intervention groups, not a single significant improvement could be found in any of the outcome measures.

**Randomized comparison of chiropractic and hospital outpatient management for low back pain: results from extended follow up**

**British Medicine Journal – August 1995 Volume 311 –**

- According to total Oswestry scores improvement in all patients at three years was about 29% more in those treated by chiropractors than in those treated by the hospitals. The beneficial effect of chiropractic on pain was particularly clear.
- The substantial benefit of chiropractic on intensity of pain is evident early on and then persists.
- Meanwhile, the results of our trial show that chiropractic has a valuable part to play in the management of low back pain.

## **The Chiropractic Report Card: Patient Satisfaction Study Journal of the American Chiropractic Association – October 1997**

- A survey of members of the Group Health Cooperative of South Central Wisconsin in 1995, concerning their utilization of chiropractic services.
- Results indicated that 95.8 percent were satisfied with their chiropractic care. Highest marks were given in response to the questions relating to “friendliness and courtesy shown by the chiropractor” and to “skill, experience, and training of the chiropractor.” The findings of this project are consistent with two previous projects that garnered very similar results.
- Patients of 208 practitioners in North Carolina, including primary care physicians, urban chiropractors, rural chiropractors, orthopedic surgeons, and primary care providers of an HMO, were the subject of a study regarding care they received for back pain between June 1992 and March 1993. After six months of treatment, the researchers concluded that patients were most satisfied with the care they received from the chiropractors. By illustration, the article points out that the biggest difference in patient satisfaction with chiropractic care for back pain was in the quality of the doctors’ “history taking, examination, and explanation of the problem during the visit.”
- A study conducted by Hurwitz (1994) of 103 chiropractic patients and 187 medical patients who sought treatment from April 16 to May 18, 1990, compared the management of low back pain between the two types of practices. Although not a study of patient satisfaction per se, this study concluded that more chiropractic patients felt their treatment was successful than their medical patient counterparts.
- Using a survey instrument for measuring patient satisfaction that is an adaptation of one which is widely employed throughout the spectrum of health care practice, the patients in this randomly selected sample from a mid-western chiropractic MCO appear to be highly satisfied with the chiropractic care they received within this managed care setting.
- In particular, the elements of chiropractic care that the profession itself stresses, such as friendliness, courtesy, and paying careful attention to what patients have to say, get high marks in this managed care arrangement.

## **Chiropractic in the Mainstream**

### **Patient Evaluations of Care from Family Physicians and Chiropractors**

Western Journal of Medicine, July 1989

- Patients of chiropractors were three times as likely as patients of family physicians to respond that they were satisfied with the care they received for low back pain, the survey showed. Chiropractic patients were also more likely to have been satisfied with the amount of information they were given and to believe their doctor was concerned about them.
- This study was conducted at the Group Health Cooperative of Puget Sound, a 40-year-old staff-model health maintenance organization (HMO) in western Washington State with 32,000 enrollees.
- The percentage of chiropractor patients who were “very satisfied” with the care they received for low back pain was triple that for patients of family physicians (66% versus 22%).
- Patients of family physicians were less satisfied with the information they had received about the cause of their pain and less likely to feel they had received clear information about recovery time and about how to care for their backs after the visit. Family physician patients were also significantly less likely to report having received a graphic description of the causes of low back pain or instruction on exercise, posture and lifting techniques.
- Compared with patients of chiropractors, patients of family physicians were significantly less likely to have been satisfied with the amount of time the provider listened to them, to have felt that their provider believed their pain was real, to have thought their provider understood their concerns about the cause of the pain and to have believed their provider was concerned about their condition after they left the office.
- In contrast to 60% of the chiropractor patients, less than a fourth of the family physician patients strongly agree that their provider seemed confident and comfortable in diagnosing and treating their low back pain.
- Of the family physician patients, 46% compared with the 15% of the chiropractor patients believed that there were things their provider did not do that would have been helpful.
- Although studies of spinal manipulation for back pain have generally found that it provides more immediate relief of back pain than other methods with which it has been compared.

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# **Research Synopsis**

## **Efficacy and Patient Satisfaction Studies**

**Patient satisfaction with the chiropractic clinical encounter: Report from a practice-based research program. Journal of the Neuromusculoskeletal System 2001; 9(4): 109-117.**

2,987 patients completed a data collection survey. Patients came from a variety of both rural and urban locations in the United States and Canada. 85 % stated, "their chiropractor always listened carefully." 85.3% stated "the DC explained things understandably," 88.2% stated "the DC showed respect for what they had to say." Overall, the majority of patients were highly satisfied with their care.

**Patient satisfaction with chiropractic physicians in an independent physicians association. Journal of Manipulative and Physiological Therapeutics 2001; 24(9): 556-559.**

150 chiropractic patients were surveyed. Chiropractic care received "excellent" remarks by percentage, in the following categories: 84.9% time to get an appointment, 57.7% convenience of office, 77.3% access to office by phone, 75.7% length of wait, 74.3% time spent with provider, 72.8% explanation of treatment, 83.3% skill of provider, 92.4% personal manner of the chiropractor. Overall visit was given the "excellent" response by 83.3% of those surveyed.

**The Effectiveness and Cost-Effectiveness of Chiropractic Management of Low-Back Pain Richmond Hill, Ontario: Kenilworth Publishing, 1993**

A major study to assess the most appropriate use of available health care resources was reported in 1993 by the Ontario Ministry of Health. The Report overwhelmingly supported the efficacy, safety, scientific validity, and cost-effectiveness of chiropractic for low-back pain.

- "There is no clinical or case-control study that demonstrates or even implies that chiropractic spinal manipulation is unsafe in the treatment of low-back pain. Some medical treatments are equally safe, but others are unsafe and generate iatrogenic complications for LBP patients ... The literature suggests that chiropractic manipulation is safer than medical management of low-back pain."
- "There is an overwhelming body of evidence indicating that chiropractic management of low-back pain is more cost-effective than medical management ... The evidence includes studies showing lower chiropractic costs for the same diagnosis and episodic need for care."
- "There is good empirical evidence that patients are very satisfied with chiropractic management of LBP and considerably less satisfied with physician management. Patient satisfaction is an important health outcome indicator and adds further weight to the clinical and health economic results favouring chiropractic management of LBP."

**Enhanced Chiropractic Coverage Under OHIP as a Means for Reducing Health Care Costs, Attaining Better Health Outcomes and Achieving Equitable Access to Health Services Report to the Ontario Ministry of Health, 1998**

Expenditure to improve access to chiropractic services, and the changed utilization patterns it produces, will lead to very substantial net savings in direct and indirect costs. Direct savings to Ontario's health care system may be as much as \$770 million, will very likely be \$548 million, and will be at least \$380 million. The

corresponding savings in indirect costs - made up of the short and long term costs of disability - are \$3.775 billion, \$1.849 billion and \$1.255 billion.

## **The Agency for Health Care Policy and Research**

On December 8, 1994, The Agency for Health Care Policy and Research (AHCPR) of the U.S. Department of Health and Human Services, released an extensive study of diagnostic and treatment methods for acute low back pain. The 23-member committee of medical doctors, nurses, chiropractic doctors, experts in spine research, physical therapists, a psychologist, an occupational therapist and a consumer representative -- concluded, among other things, that:

- spinal manipulation is a recommended treatment for acute low back problems in adults;
- conservative treatment such as manipulation should be pursued -- in most cases -- before surgical interventions are considered;
- prescription drugs such as oral steroids, antidepressant medications and colchicine are not recommended for acute low back problems.

## **The Effect of Spinal Manipulation in the Treatment of Cervicogenic Headache. Journal of Manipulative and Physiological Therapeutics 1997; 20(5): 326-330.**

Of 53 individuals who were diagnosed with cervicogenic headaches 28 individuals in the group received high speed, low amplitude spinal manipulation in the cervical spine two times a week for three weeks. The rest of the group received low level laser to the upper cervical region and deep friction massage in the lower cervical/ upper thoracic region two times a week for three weeks. For those who received spinal manipulation treatment the amount of headache hours per day decreased 69%, while for those receiving laser treatment the decrease was only 37%. Intensity of headache decreased 36% for those receiving manipulations and 17% for those receiving laser treatment. The use of pain relievers went down 36% for those receiving manipulations and was unchanged for those receiving laser treatment.

## **Comparative Efficacy of Conservative Medical and Chiropractic Treatments for Carpal Tunnel Syndrome: A Randomized Clinical Trial. Journal of Manipulative and Physiological Therapeutics 1998; 21(5): 317-326.**

This study sought to compare the effects of chiropractic care and conventional medical care for managing carpal tunnel syndrome. 91 patients with confirmed symptoms of carpal tunnel syndrome were divided into two groups. One group received decreasing amounts of ibuprofen over three weeks. The other group received manipulation of bony joints and soft tissues of the upper extremities and spine. The patients improvement was monitored through self-reports and analyses of the vibrometric sensibility of the hands. There was improvement in comfort, finger sensation and nerve conduction in both groups. For right hands affected by carpal tunnel the group who received medical care improved by 1.37 decibels according to the vibrometric tests. Those receiving chiropractic care improved by 3.05 decibels.

## **Single-blind randomized controlled trial of chemonucleolysis and manipulation in the treatment of symptomatic lumbar disc herniation. European Spine Journal 2000; 9:202-207.**

Forty patients with confirmed sciatica were treated with either osteopathic manipulation treatment or chemonucleolysis. The pain endured by the patient was measured at 2 weeks, 6 weeks and one year. After a year patients from both groups were very similar in recovery. However, at 2 and 6 weeks those receiving manipulations reported greater improvement.

**Low back pain of mechanical origin: randomized comparison of chiropractic and hospital outpatient treatment. British Medical Journal 1990; 300(2): 1431-1437.**

741 patients who had neither been treated in the past month nor had contraindications to spinal manipulation were treated by either doctors of chiropractic or with conventional hospital outpatient treatment for management of low back pain. Using the Oswestry scale, which quantifies pain, patients reported back on their improvement at six weeks, six months, one year and two years. At two years chiropractic care resulted in a 7% benefit over hospital care.

**Spinal Manipulation vs. Amitriptyline for the Treatment of Chronic Tension-type Headaches: A Randomized Clinical Trial. Journal of Manipulative and Physiological Therapeutics 1995; 18(3): 148-154).**

This study compared the effects of spinal manipulation and pharmaceutical treatments for chronic tension headaches. Four weeks following the cessation of treatment the pharmaceutical group demonstrated no improvement from the baseline. In the spinal manipulation group headache intensity dropped 32% frequency dropped 42% and there was an overall improvement of 16% in functional health status.

**North Carolina Back Pain Project. New England Journal of Medicine 1995; 333(14): 913-917.**

This study sought to compare patients' recovery and satisfaction for those with acute low back pain receiving care from the following six groups: urban primary care physicians, rural primary care physicians, urban doctors of chiropractic (DCs), rural DCs, orthopedic surgeons and primary care providers at a group model HMO. After six months functional recovery, return to work, and complete back pain recovery were similar for all groups. Satisfaction with care was highest for those visiting DCs.

**Patient satisfaction with chiropractic care. Journal of Manipulative and Physiological Therapeutics 1993; 16(1): 25-32.**

341 new and returning chiropractic patients in Minnesota and Wisconsin completed a patient satisfaction questionnaire. Overall, patients demonstrated a high level of satisfaction with their doctors of chiropractic. 84% of respondents felt their chiropractic care was "just about perfect." 97% agreed or strongly agreed that they would "recommend this doctor to a friend or relative."

**Primary care - Cost effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain: economic evaluation alongside a randomized controlled trial**

British Medical Journal - April 2003

- The manual therapy group showed a faster improvement than the physiotherapy group and the general practitioner care group up the 26 weeks, but differences were negligible by follow up at 52 weeks.
- The cost effectiveness ratios and the cost utility ratios showed that manual therapy was less costly and more effective than physiotherapy or general practitioner care.
- Manual therapy (Spinal mobilization) is more effective and less costly for treating neck pain than physiotherapy or care by a general practitioner.
- The clinical outcome measures showed that manual therapy resulted in faster recovery than physiotherapy and general practitioner care up to 26 weeks.

## **Cost-Effectiveness of Chiropractic Care in a Managed Care Setting**

American Journal of Managed Care 1996;2

- In our evaluation, all patients were HMO members who could access care only through participating physicians or chiropractors
- The rate of diagnostic imaging in the chiropractic group was 4.9%, versus 16.5% in the nonchiropractic group.
- Overall costs per patient were \$539.33 for the chiropractic group versus \$774.06 for the nonchiropractic group (note: 1995 data)
- Chiropractic care was substantially more cost-effective than conventional care, yet had similar clinical outcomes for back and neck pain.
- The authors conclude that properly managed chiropractic care can yield outcomes, in terms of surgical requirements and patient satisfaction, that are equal to those of non-chiropractic care, at a substantially lower cost per patient.

## **Integration and Reimbursement of Complementary and Alternative Medicine by Managed Care and Insurance Providers: 2000 Update and Cohort Analysis**

Alternative Therapies, Jan./Feb. 2002, Vol. 8, No. 1

- Consumer demand for CAM is motivation for more MCOs and insurance companies to assess the clinical and cost benefits of incorporating CAM.
- Providers identified “consumer demand” as the most critical factor underlying their decision to offer CAM coverage.
- Companies surveyed in the present study tended to rate “retaining existing enrollees” as being more important than in previous years.
- It is equally certain that there is a rapidly growing consumer demand for CAM.
- More research on clinical efficacy and cost outcomes is needed to incorporate CAM responsibly into conventional healthcare. Emphasis on what is validated by sound clinical and cost outcomes research rather than what is considered “alternative” versus “conventional” will be critical for reducing excessive medical utilization and containing rising medical care costs.

## **Economic Case for the Integration of Chiropractic Services into the Health Care System**

Journal of Manipulative and Physiological Therapeutics,  
February 2000

- There is solid and impressive economic and related justification for the desired integration. Chiropractic care is a cost-effective alternative to the management of neuromusculoskeletal conditions by other professions. It is also safer and increasingly accepted by the public, as reflected in the growing use and high patient retention rates. There is much and repeated evidence that patients prefer chiropractic care over other forms of care for the more common musculoskeletal conditions. The public interest will be well served by this transformation. Musculoskeletal disorders and injuries are the second and third most costly categories of health problems in economic burden-of-illness studies.
- The integration of chiropractic care into the health care system should serve to reduce health care costs, improve accessibility to needed care, and improve health outcomes. The overall conclusions of a recent review were that the vast majority of studies and the methodologically better studies showed that chiropractic costs were significantly lower than medical costs for back problems.
- Chiropractic-managed patients reported a higher degree of satisfaction with their care than medically managed patients.
- There is an extensive body of literature demonstrating that chiropractic care for NMS disorders is effective, although there are studies that question or dispute this finding. Suffice it to say that there is not nearly as much nor as convincing evidence for the effectiveness of medical management of these conditions. Additionally, there is a strong compelling consensus that chiropractic care is safer, and patient satisfaction is much higher than for other professions.
- All of these observations point to a clear need for greater integration of chiropractic care into the wider health care system.
- High out-of-pocket payment is a major deterrent to the use of chiropractic services. The patients are steered toward medical doctors, resulting in higher costs and often sub-optimal health outcomes.

## **NEW STUDY PROVIDES PROOF OF CHIROPRACTIC'S COST-SAVING IMPACT ON MEDICARE PROGRAM**

A new study of Medicare cost data completed in June by the well-known Washington, DC-based firm Muse & Associates helps prove the cost-saving impact that chiropractic care has on the current federal Medicare program. The study, titled "Utilization, Costs, and Effects of Chiropractic Care on Medicare Program Costs," is the first study of its type to compare the global, per capita Medicare expenditures of chiropractic patients to those of non-chiropractic patients receiving care in the federal Medicare program. The study utilizes data obtained from Medicare's Standard Analytical Files for 1999--the most recent year cost data is available for analysis.

### **The study specifically found that:**

- beneficiaries who received chiropractic care had lower average Medicare payments for all Medicare services than those who did not (\$4,426 vs. \$8,103)
- beneficiaries who received chiropractic care averaged fewer Medicare claims per capita than those who did not
- beneficiaries who received chiropractic care had lower average Medicare payments per claim than those who did not

The report utilized data compiled by the CMS, and focuses on Medicare beneficiaries with primary diagnoses of selected musculoskeletal, dislocations, sprains and strains of joints and adjacent muscle conditions. The data, derived from CMS'1999 figures, indicates that approximately 5.8 million beneficiaries had a Medicare claim with a principal diagnosis of at least one of the selected medical conditions listed above. Of these individuals, about 1.5 million (26.8 percent) received chiropractic care and 4.3 million (73.2 percent) were treated by other types of providers.

The report's conclusion suggests that decreased access to chiropractic services would increase the Medicare program's costs. In addition, the report found that, overall, beneficiaries who used chiropractic services had lower medical doctor costs. Due to these cost savings, the report suggests that during any congressional debate on Medicare reform, consideration should be given to providing increased access to chiropractic care. In addition, the study suggests that some savings would probably accrue in the Medicare program if access to chiropractic services were increased in concert with a Medicare prescription drug benefit.

### **The study's executive summary states:**

"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."

## Florida Paying Too Much For Medical Workers' Comp? Study Reveals Huge Savings If Chiropractic Care More Effectively Used

On January 1, 1997, a new Florida Workers' Compensation statute mandated that "medically necessary remedial treatment, care, and attendance be rendered to claimants solely through managed care."<sup>1</sup> Chiropractors in Florida became aware that the new policy was greatly restricting their access to workers' compensation claimants. It followed that there were fewer referrals for chiropractic, which led to the supposition that chiropractic's cost-saving impact on job-related musculoskeletal injuries had been greatly diminished.

To assess the full impact of the statute on chiropractic, the Florida Chiropractic Association (FCA) contracted a national research firm, to:

- trace recent trends in the number of musculoskeletal workers' compensation claims treated by chiropractic before and after Jan. 1, 1997;
- assess costs of musculoskeletal claims treated by chiropractic physicians versus those treated by conventional medicine; and
- investigate improvements to health care delivery that have resulted from expanded access to chiropractic care in various health care settings.<sup>1</sup>

The study reviewed the current scientific literature on the cost effectiveness of chiropractic care in workers' compensation, which revealed that substantial cost savings as high as 60 percent can be measured for health care and disability when chiropractic care is applied to low back and other musculoskeletal injuries; that chiropractic care has shown "results in reduced lost-work-time and fewer long-term disabilities."

Perhaps the most compelling part of the study was **Exhibit 1**:

**Exhibit 1**  
**Estimate of Potential Savings to the Florida Workers' Compensation System through Expanded Use of Chiropractic Care 1994-1999**

	Lower Back Cases <sup>a</sup>	Other Cases <sup>b</sup>	Total, Selected Injuries
Number of Non-Chiropractic Claims <sup>c</sup>	63,343	224,741	288,084
Total Non-Chiropractic Costs <sup>c</sup>	\$1,076,678,243	\$3,450,190,140	\$4,526,868,383
Non-Chiropractic Costs per Claim <sup>c</sup>	\$16,998	\$15,352	\$ 15,714
Chiropractic Costs per Claim <sup>d</sup>	\$7,309	\$9,522	\$9,035
Estimated Total Costs @ Chiropractic Rate <sup>e</sup>	\$462,973,987	\$2,139,983,802	\$2,602,957,789
Estimated (\$-Savings/Claim)	\$9,689	\$5,830	\$6,678
Estimated Total Savings @ Chiropractic Rate <sup>e</sup>	\$613,704,256	\$1,310,206,338	\$1,923,910,594

SOURCE: Florida Department of Labor and Employment Security, Division of Workers' Compensation, Claims and Medical Billing Data. (over)

<sup>a</sup> Includes contusions, sprains, strains, other specific injuries, other cumulative injuries, and multiple Injuries to the lower back.

<sup>b</sup> Includes contusions, fractures, lacerations, sprains, strains, and other specific injuries to single and multiple parts, excluding single body part injuries to the lower back.

<sup>c</sup> Total injury-specific claims and costs where less than 50% of professional fees were attributed to DCs.

<sup>d</sup> Average injury-specific cost per claim where 50% or more of professional fees were attributed to DCs.

<sup>e</sup> Total cost and savings that result when "non-chiropractic cost per claim" are adjusted to "chiropractic cost per claim."

**Exhibit 1** demonstrates what the chiropractic profession has been trying to say for decades. Notice that the average cost for low-back cases treated medically is \$16,998, while chiropractic care of the case is only \$7,309. This places medical costs per claim more than 2.3 times that of chiropractic care for the same types of cases.

The study explains the huge differences:

"Chiropractic treatment typically involves approximately 80 percent of charges as professional fees, and approximately 20 percent as secondary health costs. This is reversed with conventional medical treatment, approximately 23 percent for physicians' fees, and the remaining 77 percent for the more expensive secondary costs (Chapman-Smith, 2000)."<sup>1</sup>

The study concluded: "Implications for the Florida workers' compensation system are obvious. Low back pain is responsible for half of workers' compensation costs (Mootz, Franklin, & Stoner 1999). Past research clearly demonstrates the success and cost-effectiveness (inclusive of all direct costs) of chiropractic care compared to other common medical treatments for low back pain. Similar effectiveness and cost savings appear to occur with chiropractic treatment of numerous other work-related musculoskeletal conditions as well. Therefore, the state of Florida should reconsider current policy restricting access of workers' compensation claimants to chiropractic care, and take full advantage of this promising cost containment opportunity."<sup>1</sup>

*Reference* : Trends in chiropractic treatment of workers' compensation claimants in the state of Florida. Executive Summary, Feb. 8, 02. MGT of America ([www.mgtofamerica.com](http://www.mgtofamerica.com)).

## Study finds Chiropractic care most cost-effective for Texas worker's compensation claims

Last year the Texas Chiropractic Association commissioned an independent study to determine the effectiveness of chiropractic care on workers compensation patients. The national research/consulting firm MGT of America was hired to analyze about 900,000 workers compensation claims from 1996-2001.

Among the firm's findings:

- If the nearly 900,000 workers' compensation claims received from 1996 to 2001, only 14.6 percent of claimants were treated by doctors of chiropractic, and only 8.5 percent of those workers received more than half of their treatment from chiropractors.
- Chiropractic care accounted for only 12.5 percent of medical fees and 6.9 percent of the total workers' compensation costs. However, the firm noted that these figures did not include the costs of pharmaceuticals, because insurers are not required to provide such information to the Texas Workers' Compensation Commission (TWCC). If those costs were included, the percentage of costs related to chiropractic care would have been even lower.
- Lower back and neck injuries accounted for 38 percent of all claims costs. Chiropractors treated about 30 percent of workers with lower back injuries, but were responsible for only 17.5 percent of the medical costs and 9.1 percent of the total costs.
- If a worker received at least 75 percent of his or her care from a chiropractor, the total cost per claimant decreased by nearly one-fourth. If the chiropractor provided at least 90 percent of the care, the average cost declined by more than 50 percent.

Based on its analysis, the firm reached two noteworthy conclusions:

- **Chiropractic's medical costs are the lowest in the state's workers' compensation system.** "The existing body of research indicates that chiropractic is a cost-effective means of treatment for musculoskeletal injuries," the firm noted. "Chiropractic care is associated with lower medical costs and more rapid recovery in the overwhelming majority of studies concerning chiropractic care and workers' compensation costs." Data from the study also clearly linked increased use of chiropractic care with lower costs relative to lower back injuries.
- **Chiropractic cannot be blamed for the state's rising workers' compensation costs.** Based on the evidence, the firm found it "unlikely" that chiropractic could be held responsible for escalating costs: "Our analysis of TWCC claims data demonstrated that chiropractic currently plays a relatively small role in the system as a whole, and therefore could not be a significant force in driving costs ... to be a significant factor in driving costs, chiropractic would have to be demonstrated as a vastly more expensive means of treatment, or it would have to comprise a greater share of treatment in this system."

Chiropractic Treatment of Workers' Compensation Claimants in the State of Texas.  
Submitted to the Texas Chiropractic Association by MGT of America, Austin, Texas,  
February 2003.

## **The Economic Role of Chiropractic: Further Analysis of Relative Insurance Costs for Low Back Care**

Journal of the Neuromusculoskeletal System, Fall 1995

- The study consisted of retrospective analysis of 2 years of insurance claims data for 7077 patients with 9314 episodes of care.
- Outcome measures were represented by total insurance payments, total outpatient payments, and length of episodes.
- The results of the study indicated that total insurance payments were substantially greater for the medical physician-initiated episodes.
- Payments were nearly twice as great for the medically initiated cases and their outpatient payments were nearly 50% higher.
- The statistical estimates indicate that the costs of care for common low back disorders using a chiropractor as first-contact provider are substantially lower than episodes in which a medical physician is the first- contact provider, after controlling for differences in patients' insurance and other characteristics.
- When our results are considered together with the recognition by the Agency for Health Care Policy and Research (13) and others (14,15) of the clinical efficacy of chiropractic for low back problems, it is clear that chiropractic deserves careful consideration in the strategies adopted by employers and third-party payers to control health care spending.

**Blue Cross Lumbago Study  
Demonstrates Chiropractic's Effectiveness**

**Blue Cross/Blue Shield of Kansas - 1999**

- When sorted by the average cost per episode, chiropractic is more cost-effective than anesthesiology; neurosurgery; neurology; registered physical therapy; orthopedic reconstructive surgery; physical medicine and rehabilitation; and rheumatology.
- Eighty-nine percent of the chiropractic charges were for services related to the treatment, while only 45 percent of the family practice costs were related to treatment of the condition. The remainders of the costs were for expensive diagnostics.
- For each episode, the chiropractor provided 265 modalities. For each episode, the registered physical therapist provided 885 modalities: over three times as many units of physical therapy provided by RPTs than chiropractors.

# Research Synopsis

## Cost-Effectiveness Studies

**The costs and outcomes of chiropractic and physician care for workers' compensation back claims. *Journal of Risk and Insurance* 1999; 66(2): 185-205.**

This study was an analysis of cost, patterns of care and return to work statistics for workers treated by physicians or doctors of chiropractic. The study found that "chiropractors and physicians are equally effective in treating back pain and that neither group offers a clear advantage in terms of the costs of care or the total costs of a worker's compensation back claim."

**Chiropractic care of Florida workers' compensation claimants: Access, costs, and administrative outcome trends from 1994 to 1999. *Topics in Clinical Chiropractic* 2002; 9(4): 33-53.**

When examining specific cases involving low back problems if 50% or more of professional fees went to chiropractic care, the patient reached maximum medical improvement 28 days sooner than others. Average lower back claim cost for those visiting chiropractors was \$7309, however, for those visiting other providers the figure was nearly double at \$16,998.

**Cost Per Case Comparison of Back Injury Claims of Chiropractic Versus Medical Management for Conditions With Identical Diagnostic Codes *J Occup Med* 1991 (Aug); 33 (8): 847-852**

This workers' compensation study conducted in Utah compared the cost of chiropractic care to the costs of medical care for conditions with identical diagnostic codes. The study indicated that costs were significantly higher for medical claims than for chiropractic claims. The sample consisted of 3062 claims or 40.6% of the 7551 estimated back injury claims from the 1986 Workers' Compensation Fund of Utah. For the total data set, cost for care was significantly more for medical claims, and compensation costs were 10-fold less for chiropractic claims.

**Disabling Low Back Oregon Workers' Compensation Claims. Part II: Time Loss *J Manipulative Physiol Ther* 1991 (May); 14 (4): 231-239**

For claimants with a history of chronic low back problems, the median time loss days for MD cases was 34.5 days, compared to 9 days for DC cases. It is suggested that chiropractors are better able to manage injured workers with a history of chronic low back problems and to return them more quickly to productive employment.

**Chiropractic and Medical Costs of Low Back Care *Med Care* 1996 (Mar); 34 (3): 191-204**

This study compares health insurance payments and patient utilization patterns for episodes of care for common lumbar and low back conditions treated by chiropractic and medical providers. Using 2 years of insurance claims data, this study examines 6,183 patients who had episodes with medical or chiropractic first-contact providers. Multiple regression analysis, to control for differences in patient, clinical, and insurance characteristics, indicates that total insurance payments were substantially greater for episodes with a medical first-contact provider.

**Costs and Recurrences of Chiropractic and Medical Episodes of Low-back Care  
J Manipulative Physiol Ther 1997 (Jan); 20 (1): 5-12**

Total insurance payments within and across episodes were substantially greater for medically initiated episodes. Analysis of recurrent episodes as measures of patient outcomes indicated that chiropractic providers retain more patients for subsequent episodes, but that there is no significant difference in lapse time between episodes for chiropractic vs. medical providers. Chiropractic and medical patients were comparable on measures of severity; however, the chiropractic cohort included a greater proportion of chronic cases.

**Managed care preapproval and its effect on the cost of Utah worker compensation claims.  
Journal of Manipulative and Physiological Therapeutics 1997; 20(6): 372-376.**

5000 claims from 1986 and 5000 from 1989 were examined for injured individuals in the Utah Worker Compensation Fund. The study compared cost for those who received chiropractic care and those who received medical care. From 1986 to 1989 the cost of care for chiropractic increased 12% while medical care increased 71%. The replacement of wages increased 21% for those receiving chiropractic care and 114% for those receiving medical care.

**A comparison of medical and chiropractic management within the Victorian WorkCare scheme. Chiropractic Journal of Australia 1992; 22(2): 47-53**

This study reviewed claims made in a twelve-month period involving work related mechanical low-back pain. Management by chiropractic care and medical care were compared. 39% of claims reviewed for individuals visiting chiropractors required compensation days while 78% of claims for those visiting medical doctors required compensation days. The average number of compensation days need for those visiting chiropractors was 6.26 days and 25.56 days for those visiting medical practitioners.

**Preliminary findings of analysis of chiropractic utilization in the workers' compensation system of New South Wales, Australia. Journal of Manipulative and Physiological Therapeutics 1995; 18(8): 503-511.**

In this study researchers analyzed WorkCover Authority data from New South Wales. Of 1289 cases reviewed 30% had back problems. 12% employed chiropractic care for spinal injury workers compensation claims. The total payments for all cases using chiropractic and physiotherapy care was \$25.2 million which was 2.4% of the total payments. When 20 claims were chosen at random the average chiropractic cost of care was \$299.65, while the average medical cost was \$647.20. A trend in data collected was noticed that when greater than 60% of total cost of treatment came from chiropractic care the number of days missed from work was 9.5. When less than 60% of total cost of treatment came from chiropractic care the number of days missed from work was 50.3.

**Cost per case comparison of back injury claims of chiropractic versus medical management for conditions with ideal diagnostic codes. Journal of Occupational Medicine 1991; 33(8): 847-852.**

This study is a comparison of cost between medical doctors and doctors of chiropractic providers for injuries related to the back. The average number of treatments for medical claims was 4.93 as compared to 12.89 for chiropractic claims. The average days of care was 34.25 for medical claims and 54.49 for chiropractic claims. Average compensation cost for work time lost was \$668.39 for medical claims and \$68.38 for chiropractic claims. Average cost of care for medical was \$684.15 and \$526.84 for chiropractic claims.

## **Risks Associated with Spinal Manipulation**

The American Journal of Medicine May 2002

- Estimates of the incidence of serious complications range from 1 per 2 million manipulations to 1 per 400,000.
- Estimates of the incidence of serious adverse events from published case reports and case series are about 1 adverse event per 1 to 2 million treatments.
- Estimates from insurance claim data suggested that among U.S. Chiropractors there is 1 stroke per 2 million manipulations.
- It has been argued that there is far less risk associated with spinal manipulation than with other treatments for the same conditions. For instance, one analysis concluded that there was no evidence that nonsteroidal anti-inflammatory drugs (NSAIDs) were any more effective than spinal manipulation, but the risk of serious complications (e.g., gastrointestinal ulcer) or death was between 100 and 400 times greater with NSAIDs. In another review, estimates of serious gastrointestinal events from NSAIDs were 1 per 1000 patients, whereas complications of cervical manipulations were 5 to 10 per 10 million treatments.

**The gastrointestinal safety of the COX-2 selective inhibitor etoricoxib  
assessed by both endoscopy and  
analysis of upper gastrointestinal events.**

American Journal of Gastroenterology 2003 Aug; 98(8)

- In the endoscopy study, the cumulative incidence of ulcers  $\geq 3$  mm at 12 wk in the ibuprofen group (17%) was significantly higher than in the etoricoxib group (8.1%); similar results were seen for ulcers  $\geq 5$ mm. IN the placebo group, the rate of ulcers  $\geq 3$ mm was 1086%.

## What are the Risk of Chiropractic Neck Treatments?

Journal of Manipulative and Physiological Therapeutics October 1995

- Approximately 5 million cervical manipulations from 1965 to 1980 at The National College of Chiropractic Clinic in Chicago, with out a single case of vertebral artery stroke or serious injury.
- A survey at the Canadian Memorial Chiropractic College outpatient clinic where more than a half-million treatments were given over a nine-year period, again without serious incident.
- The authors concurred, “the risk of serious neurological complications [from cervical manipulation] is extremely low, and is approximately one or two per million cervical manipulations.” The “one in a million” estimate was echoed in another extensive literature review performed by the RAND Corporation.
- A calculation of that NCMICs 24,000 DCs performs some 43,000,000 cervical manipulations per year. If this leads to 20 strokes, that’s a rate of less than one stroke per 2 million cervical manipulations.
- He concluded that a reasonable estimate of risk is 1 serious neurological complication per 3,000,000 neck manipulations.
- They estimated a risk of 1 CVA per 1,320,000 cervical spine treatments sessions.
- Numerous recent studies have found that spinal manipulation provides superior clinical outcomes compared to conventional care for neck and back complaints. Dozens of other studies have shown chiropractic care to be more cost-effective and more preferred by patients than medical care for several conditions.
- The highest rated, large-scale, randomized trial comparing manipulative therapy to general practitioner management (including NSAIDs) in the treatment of back and neck pain was performed by Koes (19). He found manipulative treatment significantly superior, with the advantages for the group treated with manipulation persisting even at the 12-month follow-up.
- Ironically, despite their well-documented risks and widespread use, the evidence supporting the effectiveness of NSAIDs for neck pain is extremely limited. IN a recent review of medications used for neck pain, the authors noted that the current standard of accepted practice “may rest on a quagmire of possibly valid, but unproven, treatments” (20). Even though NSAIDs are considered to be a well-established treatment for musculoskeletal pain, in a recent Medline search (1966 to 1996), we were unable to located even a single randomized, controlled trial examining the use of NSAIDs specifically for neck pain.
- If you drive about 8 miles each way to get to your chiropractic appointment, you have a statistically greater risk of being killed or seriously injured in a car accident getting to the office than of having a serious complication from your treatment.

## **Efficacy and Risks of Chiropractic Manipulation: What Does the Evidence Suggest?**

Integrative Medicine 1998 Vol. 1, No. 2

- For cervical manipulations, the estimated risk for serious complications is 6.39 per 10 million manipulations
- In conclusion, the evidence for manipulation must be seen in the context of the evidence for other therapies. In that context, the evidence is as equally strong for manipulation as for many widely used procedures, and in some cases, the evidence is superior.
- The physician is also strongly advised to meet with local chiropractors and find one whose approach would complement and integrate well with his or her own approach.

# The Risk of NSAID's

"Conservative calculations estimate that approximately 107,000 patients are hospitalized annually for nonsteroidal anti-inflammatory drug (NSAID)-related gastrointestinal (GI) complications and at least 16,500 NSAID-related deaths occur each year among arthritis patients alone. The figures of all NSAID users would be overwhelming, yet the scope of this problem is generally under-appreciated."

## **Recent Considerations in Nonsteroidal Anti-Inflammatory Drug Gastropathy ; The American Journal of Medicine; July 1998**

UK Study – 1.9% of NSAID users were admitted to the hospital each year with upper gastrointestinal emergencies. The NSAID attributable emergency admissions in UK is about 12,000 with 2,500 deaths. Study showed for a group of 100,000 people there would be 24 emergency admissions and about five deaths in any one year.

## **Emergency admissions for upper gastrointestinal disease and their relation to NSAID use. Aliment Pharmacol Ther 1997 11(UK)**

We thus calculated the total number of NSAID-associated hospital admissions for gastrointestinal PUB [Perforations, Ulcers and Bleeding] in the GKV [German statutory health-insurance fund] to be 10,700 per year, necessitating 157,000 hospital days and total costs of DM 125 million. 1,100 to 2,200 fatal cases in the GKV annually were thus expected. Multiplying these figures by a factor of 1.1 provides estimates for the entire German populations."

Consequences and Costs of NSAID-Induced Gastropathy in Germany", Akt Rheumatol, 1999, Vol. 24

"During periods of concomitant use of diuretics and NSAIDs, a 2-fold increased risk of hospitalization for CHF [Congestive Heart Failure] was found compared with periods of diuretic used only. Patients with a history of heavy diuretic use showed an increased risk. This may lead to the hypothesis that an existing condition of CHF that

is being treated with diuretics is challenged by the introduction of NSAIDs."

## **NSAIDs Associated With Increased Risk of Congestive Heart Failure in Elderly Patients Taking Diuretics.", Archives of Internal Medicine, May 25, 1998**

"... the annual number of hospitalizations in the United States for serious gastrointestinal complications is estimated to be at least 103,000. At an estimated cost of \$15,000 to \$20,000 per hospitalization, the annual direct costs of such complications exceeds \$2 billion."

## **The New England Journal of Medicine, June 17, 1999**

"These results led the investigators to suggest that in the United States the syndrome of NSAID-associated gastropathy accounts for at least 2600 deaths and 20,000 hospitalizations each year in patients with rheumatoid arthritis alone."

## **Nonsteroidal Anti-Inflammatory Drugs – Differences and Similarities", The New England Journal of Medicine, June 13, 1991**

"Overall death estimates are similarly disquieting. Conservative calculations, counting only excess deaths, indicate that about 7,600 deaths/year in the United States are attributable to NSAID use. The Food and Drug Administration suggests even higher figures, estimating NSAID use accounts for 10,000 to 20,000 deaths/year. These figures are comparable to Hodgkin's disease or acquired immunodeficiency syndrome and represent a serious problem."

## **NSAID Gastropathy: The Second Most Deadly Rheumatic Disease? Epidemiology and Risk Appraisal", Journal of Rheumatology, 1991, (Supplement 28)**