



The Chiropractic Profession

Basic Facts, Independent Evaluations, Common Questions Answered

“The chiropractic profession is assuming its valuable and appropriate role in the health care system in this country and around the world. As this happens the professional battles of the past will fade and the patient at last will be the true winner.”

*Wayne Jonas, MD, Director (1995-1998), National Center for Complementary and Alternative Medicine, US National Institutes of Health, Bethesda.*¹

A. Introduction

CHIROPRACTIC (Greek: done by hand) is a health care profession concerned with the diagnosis, treatment and prevention of disorders of the neuromusculoskeletal system and the effects of these disorders on general health. There is an emphasis on manual techniques, including joint adjustment and/or manipulation, with a particular focus on joint subluxation/dysfunction.²

Chiropractic arose as a separate profession in the United States in the 1890s. Until the 1950s the profession was in its early developmental stages and largely North American. In the 1960s and 1970s the foundations were laid for broader mainstream acceptance of the profession – improved educational and licensing standards, significant research, texts and scientific journals, and legal recognition and regulation in all US states and various other countries.

Today, more than 110 years after its birth, chiropractic is taught and practiced throughout the world. The profession’s central art of spinal adjustment/manipulation, once challenged by medical authorities as suspect and unscientific, now has proven effectiveness. To quote Scott Haldeman, MD, DC, PhD, a California neurologist and leading scientific authority in the field:

“There is now little dispute amongst knowledgeable scientists that manipu-

lation is of value in the management of back pain, neck pain and headaches that make up 90% or more of all patients who seek chiropractic care.”³

2. Dr. Wayne Jonas, quoted above, was like most medical doctors when he was appointed Director of the NIH office responsible for US government-funded analysis of and research into the main complementary and alternative medicine (CAM) professions, including chiropractic. He knew little about the chiropractic profession, had a prejudice against chiropractors from his medical school background, and referral of a patient by him in his medical practice to a chiropractor “was simply not in my repertoire of care”.¹

However, working with the profession and its research agenda at the NIH “gradually my prejudice was softened” he reports. He next received chiropractic treatment for neck pain, and later found and began referring patients to a network of doctors of chiropractic in his area. Within five years he was willing to say that “I have seen at all levels



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This issue of *The Chiropractic Report*, which updates a similar one in 2008, provides current summary information on the chiropractic profession for others in the health care system – MDs, nurses and other professionals, health care managers, and patients. Subscribers may photocopy the Report for use with them, or order additional original copies at \$1.00 each plus shipping. For full information and orders visit www.chiropracticreport.com or contact Sandra Brown at the email address or telephone number given on page 8.



Courtesy: British Chiropractic Association

the truth of the statement by the Agency for Health Care Policy and Research report that ‘*chiropractic has undergone a remarkable transformation.*’ So have I.”

In 2010 many other medical leaders and organizations have undergone a similar change of attitude, and continuing research and patient demand have fuelled a rapid integration of chiropractic and medical services in the US and many other countries. Chiropractic services are now found in the hospital system at Harvard University and at military and veterans’ administration hospitals throughout the United States.

3. Despite this, however, much bias remains. As Jonas says, “deep prejudice is hard to change”. This is particularly true where economic interests are at stake – which is very much the case in chiropractic and medical treatment of patients with the common complaints of back and neck pain and headache.

One of the most outspoken critics of chiropractic today is the physical medicine and rehabilitation specialist Edzard Ernst, MD PhD, in the UK. He writes internationally to suggest that chiropractic manipulation is harmful and inappropriate. This is simply wrong on the scientific evidence and current clinical guidelines, which find spinal manipulation to be safe, appropriate and a recommended first option for the treatment of patients with the most common forms of neck and back pain⁴.

His work is dismissed by respected medical authorities, such as the UK orthopedic surgeon and back pain authority Gordon Waddell, as “inter-professional confrontation under the guise of scientific objectivity.”⁵

However, many people considering their treatment options, and many health professionals advising them, may have concerns about the safety, effectiveness and the role of chiropractic care because of seemingly knowledgeable critics such as Ernst. So, what is the status and role of the chiropractic profession in health care in 2010?

This Report now presents basic facts, the findings of government inquiries - in a world too full of unresearched opinions and partisan claims the best government inquiries present the most reliable evidence - and then answers common questions that arise when other professionals discuss chiropractic.

B. Basic Facts

4. Principles and Practice. The relationship between structure, especially of the spine and musculoskeletal system, and function, especially as coordinated by the nervous system, is central to the profession’s approach to treatment, health and well being. Philosophically there is an emphasis on the mind/body relationship in health and the natural healing powers of the body. This represents a biopsychosocial philosophy of health, rather than a biomedical one.

Research demonstrates that the primary reasons patients consult chiropractors are back pain (approximately 60-70%), other musculoskeletal pain such as neck pain, shoulder, extremities and arthritic pain (20%) and headaches including migraine (5-10%). A small majority (5%) present with a wide variety of conditions caused, aggravated or mimicked by neuromusculoskeletal disorders (e.g. cervicothoracic angina, dysmenorrhoea, respiratory and digestive dysfunctions, irritable baby syndrome/ infantile colic).

There is also an emphasis on health promotion and early return to activities for injured patients. The focus on patient education and patient empowerment, as research now shows, is an important factor in the success of chiropractic management and the high levels of patient satisfaction reported.⁶⁻⁸

5. International Growth. Although the chiropractic profession was first established in North America, and is still most populous there with approximately 70,000 doctors of chiropractic (DCs) in the US and 8,000 in Canada, it is now present in over 100 countries and in all world regions. It is well-established in Europe, and in countries such as Denmark, Norway and Switzerland it is more integrated into mainstream health care services than in North America. National associations of chiropractors in 85 countries are members of the World Federation of Chiropractic (WFC – www.wfc.org), a non-governmental organization in official relations with the World Health Organization.

6. Law. The practice of chiropractic is regulated by law in some 40 national jurisdictions – see the summary under About Chiropractic/Legal Status at www.wfc.org. In the Middle East, for example, regulation by legislation exists in Cyprus, Iran, Israel, Saudi Arabia and the United Arab Emirates. In many

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countries where the profession is established practice is recognized and legal under general law. Common features of scope of practice in all jurisdictions with legislation are:

- Primary care (direct contact with a patient)
- The right and duty to diagnose, including the right to perform and/or order and read diagnostic imaging.

7. Education. Common international standards of education have been achieved through a network of international accrediting agencies that began with the US Council on Chiropractic Education (CCE), recognized by the US Office of Education since 1974. These standards have been adopted by the World Health Organization in the *WHO Guidelines on Basic Training and Safety in Chiropractic (2005)*, now available in 11 languages⁹.

Entrance requirements vary according to country, but are a minimum of three



Students training for cervical adjustment/ neck manipulation.

Courtesy: Life College West

years university credits in qualifying subjects in North America. The chiropractic college undergraduate program has a minimum of 4 full-time academic years and is followed by postgraduate clinical training and/or licensing exams in many countries. Postgraduate specialties include nutrition, orthopedics, pediatrics, radiology, rehabilitation and sports chiropractic. Table 1 summarizes the subjects taught in a typical chiropractic undergraduate education program.

In former times most DCs graduated from US colleges, but there are now more educational programs in other countries (26) than in the US (18). Whereas most chiropractic schools in the US are in private colleges, most internationally are within the university system (e.g. Australia, Brazil, Canada, Chile, Denmark, Japan, Korea, Malaysia, Mexico, South Africa, Spain, Switzerland, the UK).

Government and independent medical inquiries have found that chiropractic

undergraduate training is of equivalent standard to medical training in all pre-clinical subjects.^{10,11} This is now clear, for example, at the University of Southern Denmark in Odense and the University of Zurich in Switzerland where chiropractic and medical students take the same basic science courses together for three years before entering separate streams for clinical training.

8. Research. A main reason for the increased growth and success of the chiropractic profession during the past generation has been research establishing the effectiveness and cost-effectiveness of its services. This has been for chiropractic in general but also specifically for spinal manipulation. Therefore for example in the two dominant areas of chiropractic practice:

a) *Back Pain.* Since the 1990s evidence-based national clinical guidelines for the management of acute and chronic low-back pain, prepared by expert interdisciplinary panels in the US,¹² UK,¹³ and various other countries,^{14,15} have recommended spinal manipulation, NSAIDs, patient education and motivation, and early return to activity as an appropriate first line of management for patients with non-specific or common mechanical back pain. Spinal manipulation has now been recommended also in European Back Pain Guidelines,¹⁶ and in practice guidelines from the American College of Physicians and American Pain Society¹⁷.

Large multicentre trials supported by the British Medical Research Council and published in the *British Medical Journal* have reported that chiropractic management and the addition of skilled manipulation are more effective and cost-effective than usual or best medical care.^{18,19} These results are now supported by a new trial from medical and chiropractic researchers at the University of British Columbia in Canada which has won the 2010 Outstanding Paper Award for Medical and Interventional Science from the North American Spine Society (NASS).²⁰

Bishop, Quon et al. compared 2 protocols for the management of patients with acute low-back pain – usual family physician-directed care and care according to current clinical practice guidelines (reassurance and avoidance of passive treatments; acetaminophen; four weeks of lumbar chiropractic spinal manipulative therapy). The guide-

Table 1. WHO Guidelines – Sample four-year, accredited chiropractic education

Category I (A) Subjects taught in a typical semester-based chiropractic program, by year and number of hours

Division	First year (hours)	Second year (hours)	Third year (hours)	Fourth year (hours)	
Biological Sciences	Human Anatomy (180)	Pathology (174)	Lab Diagnosis (32)	Clinical Nutrition (26)	
	Microscopic Anatomy (140)	Lab Diagnosis (40)	Toxicology (12)	Community Health (40)	
Clinical Sciences	Neuroanatomy (72)	Microbiology & Infectious Disease (100)	Orthopaedics & Rheumatology (90)	Clinical Psychology (46)	
	Neuroscience I (32)	Neuroscience II (85)			Neuro. Diagnosis (40)
	Biochemistry (112)	Nutrition (60)			Diagnosis & Symptomatology (120)
	Physiology (36)	Immunology (15)			Differential Diagnosis (30)
Clinical Sciences	Normal Radiographic Anatomy (16)	Intro. Diagnosis (85)	Arthritis & Trauma (48)	Child Care (20)	
	Radiation Biophysics and Protection (44)	Intro Bone Pathology (48)		Female Care (30)	
Chiropractic Sciences	Chiropractic Principles I (56)	Chiropractic Principles II (60)	Chiropractic Principles III (42)	Geriatrics (20)	
	Basic Body Mechanics (96)	Chiropractic Skills II (145)	Clinical Biomechanics (100)	Abdomen, Chest & Special Radiographic Procedures (40)	
	Chiropractic Skills I (100)	Spinal Mechanics (40)	Chiropractic Skills III (145)	Integrated Chiropractic Practice (90)	
Clinical Practicum	Observation I (30)	Observation II (70)	Auxiliary Chiropractic Therapy (60)	Jurisprudence & Practical Development (50)	
			Introduction to Jurisprudence & Practice Development (16)		
Research			Applied Research & Biometrics (32)	Internship (750)	
Totals	914	962	1207	Clerkships: Auxiliary Therapy (30); Clinical Lab (20) Clinical X-ray: Technology (70); Interpretation (70) Observer IV (30)	
				Research Investigative Project	

Total hours of full-time study over four years: 4465 plus research project

lines-based treatment was associated with significantly greater improvement²⁰.

b) *Neck Pain and Headache*. In the 1990s multidisciplinary expert panels in Canada²¹, and the US²² reviewed the current evidence on risks and benefits of various treatments and specifically recommended cervical manipulation and mobilization for patients with common categories of head and neck pain, including motor vehicle accident victims with Grades I-III whiplash-associated disorders.

Those reviews were updated by the Bone and Joint Decade 2000-2010 Task Force on Neck Pain and its Associated Disorders, an international expert panel led by neurologist Scott Haldeman, MD DC PhD from the University of California at Irvine. Its report, published in the two leading spine journals *Spine*²³ and *The European Spine Journal*,²⁴ is described by medical leaders in *Spine* as a “major milestone for musculoskeletal science” that will have “a significant impact on the way in which neck pain is perceived, treated and studied around the world”. Spinal manipulation and mobilization are recommended as safe, effective and appropriate treatment approaches for most patients with disabling neck pain (Grade 2 under the Task Force’s new classification), whether traumatic or non-traumatic in origin. (For further comment on safety see para 22)

There is now a clear anatomical basis for headache arising from dysfunction in the cervical spine (cervicogenic headache), this being direct connective tissue bridges between the dura and the muscles and ligaments in the upper cervical spine,²⁵ and good RCT evidence of the effectiveness of chiropractic management.^{26,36,37}

C. Government Inquiries

9. All formal government inquiries into chiropractic since the 1970s have found contemporary chiropractic health care safe, effective, cost-effective and recommended licensure and government funding. They have all criticized the level of antipathy and misinformation between the chiropractic and medical professions (with faults on both sides) and expressly called for cooperation in the interests of patients.

10. **New Zealand.** Government inquiries, like research, are of widely varying quality and some deserve little credibility. Of importance are the qualifications of the commissioners, the terms of reference, the procedures adopted for hearing and testing evidence, and the degree of opportunity to hear all relevant evidence. On these criteria the most comprehensive and detailed independent examination of chiropractic ever undertaken was that in New Zealand in 1978/79.

The Commission’s 377-page report, *Chiropractic in New Zealand*²⁷ had obvious authority and balance. It followed judicial hearings then extensive investigations by the Commission in New Zealand, the United States, Canada, England and Australia. See Table 2 for some of the principal findings.

At the commencement of its Report the Commission acknowledged frankly that it was “faced with a contest on the one hand between organized medicine, assisted by the physiotherapists, and on the other hand the chiropractors” and that “at the end of it all little could be said either for or against chiropractic that had not been placed before us”. It then concluded:

“By the end of the Inquiry we found ourselves irresistibly,

and with complete unanimity, drawn to the conclusion that modern chiropractic is a soundly-based and valuable branch of health care in a specialized area neglected by the medical profession.”

The Commission, answering the basic question before it, recommended that there be government funding for chiropractic services.

12. **Sweden.** In Sweden in 1987, at a time when there was no legislation regulating the practice of chiropractic and the problem of both formally and informally trained persons practising under the title of ‘kiropractor’, a government commission conducted a detailed investigation of chiropractic education, had the scientific literature assessed by university medical faculty, and members commissioned a demographic survey by Statistics Sweden. The Commission reported that those with a doctor of chiropractic (DC) degree “should become registered practitioners and be brought within the National Insurance system in Sweden” – which subsequently happened.

It also found that “DCs follow a 4-5 year course of university level training . . . in its pre-clinical parts . . . found to be the equivalent of Swedish medical training”. They have “competence in differential diagnosis” and should be regulated on a primary care basis. Consistent with what was said in New Zealand, the Commission said that “measures to improve cooperation between chiropractors, registered medical practitioners and physiotherapists are vital” in the public interest.⁹

13. **Canada.** In the Province of Ontario, where doctors of chiropractic have been licensed by law since 1927, the government commissioned two studies of the profession in the 1990s.^{8,28} The first, by health economists Manga et al. from the University of Ottawa, reviewed all international data on the management of back pain and reported that, on grounds of comparative cost-effectiveness, safety and patient satisfaction, there was “an overwhelming case in favour of much greater

Table 2

NZ Commission – Principal Findings

- Chiropractic is a branch of the healing arts specialising in the correction by spinal manual therapy of what chiropractors identify as biomechanical disorders of the spinal column. They carry out spinal diagnosis and therapy at a sophisticated and refined level.
- Chiropractors are the only health practitioners who are necessarily equipped by their education and training to carry out spinal manual therapy.
- Spinal manual therapy in the hands of a registered chiropractor is safe.
- The education and training of a registered chiropractor are sufficient to enable him/her to determine whether there are contra-indications to spinal manual therapy in a particular case, and whether the patient should have medical care instead of or as well as chiropractic care.
- Spinal manual therapy can be effective in relieving musculoskeletal symptoms, such as back pain and other symptoms known to respond to such therapy, such as migraine.
- In a limited number of cases where there are organic and/or visceral symptoms, chiropractic treatment may provide relief, but this is unpredictable, and in such cases the patient should be under concurrent medical care if that is practicable.
- In the public interest and in the interests of patients, there must be no impediment to full professional cooperation between chiropractors and medical practitioners.
- The responsibility for spinal manual therapy training, because of its specialised nature, should lie with the chiropractic profession. Part-time or vacation courses in spinal manual therapy for other health professionals should not be encouraged.

use of chiropractic services in the management of low-back pain.”²⁸

The government referred the Manga Report and other issues relative to better integration of chiropractic services into the healthcare system to a Ministry of Health Chiropractic Services Review Committee (CSRC). In its November 1994 report the CSRC recommended that various financial and other barriers to access to chiropractic services in Ontario be removed, that university chiropractic education should be publicly funded, and that the government should develop a formal health human resources (manpower) plan reflecting the now established role for chiropractic.²⁸

14. United Kingdom. Two important reports on chiropractic since the early 1990s have been the Kings Fund Report, which provided the basis for new legislation on chiropractic supported by the British Medical Association, and the report in 2000 from the House of Lords’ Select Committee on Science and Technology titled *Complementary and Alternative Medicine*.²⁹ The latter accepted that chiropractic was a leading discipline complementary to medicine, with an important role in the UK health care system.

D. Common Questions

15. The Chiropractic Subluxation. Medical critics have sometimes alleged that the chiropractic subluxation, the spinal lesion that is a focus of chiropractic treatment, has no objective existence at all. This is said to be confirmed by the fact that medical radiologists cannot see such subluxations on x-ray. The position is complicated by the fact that modern medicine has a competing definition of ‘subluxation’.

Subluxation is the term given by chiropractors to an entity with these essential elements:

- Abnormal function (movement) in a spinal joint.
- Neurological and vascular involvement;
- Sometimes, but not necessarily, a structural (static) displacement of a vertebra.

It is essentially a functional entity, involving restricted vertebral movement in one or more planes of motion, and unless there is structural misalignment is no more visible on imaging than a limp or headache or any other functional problem.

The concept of subluxation is not unique to chiropractic. Its equivalents are the ‘osteopathic lesion’ in osteopathy, and the ‘segmental blockage’ of the European manual medical school. On account of the confusion of terminology, and the artificial barriers to understanding this can create, many chiropractors today simply refer to ‘spinal dysfunction’ in interprofessional communications. There is irony in this as Terrett explains, because medical authors during the 18th and 19th centuries used subluxation in the chiropractic sense.³⁰

16. Chiropractic and Medicine — Incompatible or Complementary? At the individual level today there is widespread cooperation between the chiropractic and medical professions in education, research and practice. Medical association ethics against referral of patients are now a thing of the past. However many MDs with little direct knowledge of contemporary chiropractic education and practice still suspect – like Dr. Jonas, mentioned at the beginning of this article, 15 years ago – that chiropractors have an incompatible and unscientific approach to treatment.

One source of this concern is the range of conditions treated

by chiropractors – see para 18. Another is anecdotes about or experience of unprofessional behaviour by individual practitioners. MDs and DCs see and hear each other’s worst cases. However a further powerful source is medical politics, exposed in the US in 1987 in the landmark case of *Wilk vs American Medical Association (AMA)*³¹. It is not widely known that:

- In the *Wilk Case*, litigation between a representative group of chiropractors and the AMA and affiliated organizations, the AMA was found to have breached antitrust laws during 1966-1980 in conspiring to restrict cooperation between individual MDs and DCs in order to eliminate chiropractic as a competitor in the U.S. health care system. A patient care defence advanced by the AMA, alleging justifiable concerns about the practice of chiropractic, failed. The court found itself obliged to make a direct ruling on credibility against the AMA on this matter.
- Significantly, in the present context, the court also found that the basis of the AMA’s illegal boycott of chiropractic was the calculated portrayal of chiropractors as unscientific, cultist and having a philosophy incompatible with scientific medicine.

Those feeling that the contemporary chiropractic profession is not science-based and complementary to medical care should reflect upon the sources of their information and what direct evidence they have to contradict the findings of independent government investigations and the experience of many MDs now working in integrated or collaborative clinical practice with DCs – which is clearly what patients want.

Summary comments are:

a) In the US this trend began almost 20 years ago in 1992 when the American College of Physicians, in its influential *Annals of Internal Medicine*, first published research supporting spinal manipulation and asking MDs to reappraise the role of the chiropractic profession.³² In the same year *The Journal of Family Practice*, endorsed by the American Academy of Family Physicians, in an article by Curtis and Bove from the University of Chapel Hill, North Carolina, encouraged family physicians to “re-evaluate their relationship with chiropractors” and provided guidelines for referral.³³

Three perceived problems – the education of chiropractors, including ability to diagnose; lack of scientific evidence of effectiveness of chiropractic manipulation; and potential danger from manipulation, especially cervical manipulation – were answered and dismissed as unfounded.



A patient positioned for a lumbar adjustment.

Courtesy of Tom Bergmann, DC

b) In the US, chiropractic services have been introduced and funded throughout the military and veterans' administration health care systems since 2002. The National Naval Medical Center in Bethesda, the President's hospital, has had a Chiropractic Department for the past 10 years. The prominent CAM researcher David Eisenberg, MD MPH has led the integration of chiropractic and medical services within the Harvard University teaching hospitals.

c) Such integration of chiropractic and medical services is seen in many other countries. It is more established than in North America in countries such as Denmark and Switzerland where chiropractors are educated in publicly-funded universities, where they share many of their pre-clinical courses with medical students, and where there is general funding for chiropractic services within the public health care system. In Saudi Arabia Dr. Amy Bowzaylo, a doctor of chiropractic, is Director of Physical Medicine and Rehabilitation at the Saad Specialist Hospital, supervising 35 medical and other health professionals including six DCs.

d) Since the 1980s sports chiropractors have been part of sports medicine teams at international events including the Olympic Games. At the Vancouver Winter Olympics and Paralympics this year there were 24 chiropractors on the host medical team serving all athletes alongside the MDs, PTs and athletic trainers. Similar arrangements are in place for the 2012 London Summer Olympics.

In summary, good contemporary chiropractic and medical practice are fully complementary, and mutual respect and collaborative practice are much desired by patients.

17. Over-treatment/Patient Dependency/Frequency of Treatment. Some DCs over-treat and put their interests before those of their patients, but most do not — if they did there would not be the impressive evidence of cost-effectiveness (see para 19) and patient satisfaction⁶⁻⁸ that exists. This problem exists for all professions. Points that can only be touched upon in the space available are:

- The view that manipulation either works in one or two treatments or not at all, which came from the British medical approach in the 1960s, has now been rejected by everyone familiar with the literature and this field of practice. Current thinking originated in the US with a 1991 RAND expert panel with a majority of medical specialists, who concluded that:

“For acute, uncomplicated low-back pain, an adequate trial of spinal manipulation is a course of two weeks for each of two different types of spinal manipulation (four weeks total) after which, in the absence of documented improvement, spinal manipulation is no longer indicated.”³⁴

On a basis of three treatments per week this represents a course of 12 treatments for a patient with acute, uncomplicated low-back pain. If there is documented improvement care may continue, otherwise it should not. Management will typically also involve other interventions such as exercise and education.

- Some conditions require ongoing treatment, as in medicine and physical therapy. This is readily apparent if one thinks of the nature of spinal disorders and the impact of continuing with a lifestyle that aggravates them. Pain and disability are managed rather than cured.

18. Conditions Treated. Studies in North America, Europe and Australia report that approximately 85% of chiroprac-

tic practice is for musculoskeletal pain, with low-back pain the predominant presenting complaint. Another 5-10% is for headache, concerning which there is a growing body of research evidence of effectiveness.³⁵⁻³⁷

The remaining 5% includes a wide variety of disorders aggravated or caused in part by spinal lesions. This is the 5% that concerns many MDs who have little exposure to manipulative health care. Much could be said here, but central issues are:

a) No responsible chiropractor today claims to cure organic disease through spinal adjustment. There is no research to support such a claim. However, clinical experience suggests that vertebrogenic pain and subluxation play an often unsuspected role in many conditions.

b) The claims of DCs in this area, and their clinical experiences, are shared by all professions engaged in spinal manual therapy – including medicine, osteopathy and physiotherapy. Lewit, a Prague neurologist who has been the leader of the manual medicine movement in Europe since the 1970s and whose major text is available in English, writes at length of his experimental and clinical experience using spinal manipulation to treat patients with dysfunction in the spine and locomotor system and concomitant respiratory problems, digestive problems, gynaecological disorders, migraine, vertigo/dizziness and other conditions.³⁸

c) Although much more research is required before definite claims can be made, there are now randomized controlled trials reporting sound clinical results following chiropractic adjustment of patients with conditions as diverse as hypertension³⁹ and irritable baby syndrome.⁴⁰ It must be emphasized that this is for sub-groups of patients with clearly restricted spinal motion at relevant spinal levels. The prime reason for chiropractic treatment of the spine or vertebral column is always a spinal functional disorder, not a visceral disorder.

19. Cost-Effectiveness. For patients with common or mechanical back pain and neck pain/headache there is now a change from extensive diagnostic testing, rest, medication for pain control and surgical intervention based on *structural pathology* as in traditional medical practice, to exercise, manual treatments, early mobilization of patients and education about the spine and lifestyle, based on *functional pathology*. It is this new common understanding, arising from the research of the 1980s to 1990s, together with pressure from patients and payors, that underlies the new level of cooperation between the chiropractic and medical professions.

This management approach is not only effective but highly cost-effective. Summary comments on the evidence are:

a) *Back and Neck Pain.* The most current and authoritative review is that by Niteesh Choudhry, MD, PhD, Harvard Medical School and Arnold Milstein, MD, MPH, Chief Physician, Mercer Health and Benefits, San Francisco titled *Do Chiropractic Physician Services for Treatment of Low-Back and Neck Pain Improve the Value of Health Benefit Plans (2009)*⁴². Milstein is also Medical Director of the Pacific Business Group on Health (PBGH), the largest employer healthcare purchasing coalition in North America. They conclude that “chiropractic care for low-back and neck pain is highly cost-effective, and represents a good value in comparison to medical physician care and to widely accepted cost-effectiveness thresholds. . . . (chiropractic care) is likely to achieve equal or better health outcomes at a cost that compares very favorably to most therapies that are routinely covered in US health benefits plans”.

b) *All Neuromusculoskeletal (NMS) Disorders*. The above evidence relates to back and neck pain. There is now careful evidence from US health economists analyzing data from managed care plans that chiropractic management provides substantial savings for patients with a broad range of neuromusculoskeletal complaints including headache.⁴³⁻⁴⁵

In a 2004 study of four years' data from a large California HMO published in the *AMA's Archives of Internal Medicine*, the 700,000 plan members with chiropractic and medical benefits had lower overall costs per person than the 1 million plan members with identical medical benefits – but medical benefits only. The members with a chiropractic benefit elected to choose and substitute chiropractic care for a wide range of 654 ICD-9 codes covering NMS disorders such as spinal pain, rib disorders, neck pain and headache, extremity problems and myalgias and arthralgias.^{44,45} Adding a chiropractic benefit reduced overall healthcare cost.

22. Safety. The two safety issues raised by medical associations at most inquiries into chiropractic practice have been the safety of treatment and risks from delayed diagnosis. Both alleged dangers have never been substantiated as significant and, in a chapter devoted to safety, the New Zealand Commission concluded that chiropractic treatment “is remarkably safe”. Support for that conclusion for both neck and low-back manipulation is found in the recent expert systematic reviews already referred to.

The one area of concern that requires more detailed comment here, because media debate based upon individual and anecdotal cases of stroke has raised both public and medical concern, is the risk of vertebrobasilar artery injury leading to stroke (VBA stroke) associated with neck manipulation. On this:

a) The risk of VBA stroke associated with chiropractic cervical or neck manipulation is extremely remote – this is a rare form of stroke. The generally quoted and accepted risk rate since a RAND Corporation report on the subject in 1996 has been one case per million treatments or .0001%.

b) The recent BJD Neck Pain Task Force already mentioned has provided the first definitive evidence on actual risk rate and causation. Cassidy, Boyle et al. analyzed a Canadian government database covering over 109 million person years that recorded all primary medical care provider (PCP) and chiropractic (DC) visits and all VBA stroke admissions in the Province of Ontario for the eight years from April 1993 to March 2002.

Using case control and case crossover comparisons, they report that the very slightly increased VBA stroke risk rate for neck pain patients consulting a PCP or DC, as opposed to the general risk rate in the community, is exactly the same whether the patient receives medical care from a PCP or chiropractic neck manipulation from a DC. This is true if one looks at the data at one day, one week or four weeks after the medical or chiropractic treatment received.⁴⁶

Cassidy, Boyle et al. conclude that the similar but very slight increased risk of VBA stroke “is likely due to patients with headache and neck pain from VBA dissection seeking care before their stroke. We found no evidence of excess risk of VBA stroke associated with chiropractic care compared to primary care.” They explain that any motion can lead to stroke where there has already been damage to a vertebral artery

and the foundation for stroke has been laid – “a chiropractic manipulation or even simple range of motion examination by any practitioner” can lead to release of an embolus and stroke. In these circumstances stroke is ‘associated with’ rather than ‘caused by’ the examinations or treatments.

c) It is now known from case reports in the international literature that many trivial movements are associated with VBA stroke – such as turning the head to reverse a vehicle and looking up to see an object or while painting the ceiling.⁴⁷ In contrast, millions of athletes and others expose their necks to sudden and often violent movements daily without experiencing any problems. Think of what you see in boxing rings or on football fields or in hockey arenas. There are many neck movements in sports, vehicle driving and other activities of daily living involving much greater forces than turning to reverse a car or receiving joint manipulation.

The best research on actual forces reaching the vertebral artery during neck manipulation, from Walter Herzog, PhD and colleagues at the University of Calgary, reports that the force is no greater than that experienced during normal range of motion diagnostic testing as commonly employed by MDs, DCs and PTs.⁴⁸ Herzog et al. conclude, as does the BJD Neck Pain Task Force, that by any standards neck manipulation is a safe treatment.

E. Conclusion

21. In 1979 a New Zealand Commission of Inquiry, after looking at the matter more thoroughly than anyone before or since, decided that the history of opposition of organized medicine to chiropractic was based on three main factors—the history of chiropractic, lack of knowledge coupled with misinformation about modern chiropractic theory and practice, and unprofessional conduct by some chiropractors.

Since that time many developments have led to new common ground. There are, however, continuing misunderstandings. This review seeks to dispel them and give impetus to the growing integration of chiropractic and medical services – an integration, as already noted, that is much desired by patients. **TCR**

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