



Professional Notes

Pediatric Care – Best Practices

The October issue of *JMPT* has a focus on pediatric care, and features a new best practices guide from Hawk, Schneider, Ferrance et al. and various new research studies.

Hawk et al. produce the findings of an international multidisciplinary consensus panel of 37 clinicians and researchers in what are the first evidence-based best practice recommendations for pediatric chiropractic care.

The authors acknowledge that there is currently little high-quality research evidence in this field of chiropractic practice. This lack of conclusive evidence “does not imply ineffectiveness” and an evidence-based approach supports a therapeutic trial of care where chiropractic management is consistent with:

- Such research as there is
- Clinical experience
- Patient/parent preference

Best practices are then given in areas such as clinical history, examination and

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Cost-Effectiveness Revisited

A New Report from US Health Economists

A. Introduction

AS THE UNITED STATES FACES the prospect of major reform to its healthcare system a dramatic new expert study from leading US health economists from Mercer Health and Benefits and Harvard University analyses chiropractic management of back and neck pain and reports:

- “Almost half of US patients with persistent back pain” seek chiropractic care.
- “Low-back and neck pain are extremely common conditions that consume large amounts of healthcare resources”.
- **Effectiveness:** chiropractic care is *more effective* than other modalities for treating low-back and neck pain”.
- **Cost-effectiveness:** when considering effectiveness and cost together, chiropractic physician 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 for the treatment of low-back and neck pain is likely to achieve equal or better health outcomes at a cost that compares very favourably to most therapies that are routinely covered in US health benefits plans. As a result, the addition of chiropractic coverage for the treatment of low-back and neck pain at prices typically payable in US employer-sponsored health benefits plans will likely increase value-for-dollar. . . .”¹

2. It is now over 15 years since the first study of the cost-effectiveness of chiropractic care by health economists. This was by Manga and Angus from the University of Ottawa, Canada in 1993. In a comprehensive, government-funded report titled *The Effectiveness and Cost-*

*Effectiveness of Chiropractic Management of Low-Back Pain*² they concluded:

“In our view, the constellation of the evidence of:

- (a) The effectiveness and cost-effectiveness of chiropractic management of low-back pain.
- (b) The untested, questionable or harmful nature of many current medical therapies.
- (c) The economic efficiency of chiropractic care for low-back pain compared with medical care.
- (d) The safety of chiropractic levels.
- (e) The higher satisfaction levels expressed by patients of chiropractors together offers an overwhelming case in favour of much greater use of chiropractic services in the management of low-back pain”.

Since then there has been much new data and research, much of which is referred to in the new Mercer Report, which deals not only with back pain but also neck pain.

The study of cost-effectiveness in healthcare and how to capture potential savings in real healthcare systems is much more complex than one might think. This month we look at the issues and the evidence. We start, however, with a review of the Mercer Report – which illustrates how this is no field for amateurs.

B. Mercer Report

3. On one hand healthcare is an intimate relationship between a healthcare provider and a patient. On the other hand it is a massive market place where a patient’s access to the provider of his/her choice depends upon policy decisions by governments, employers and the health benefits experts who advise them. Over the past 50 years, as employer and government spending on

healthcare has risen voraciously, a vast new world of health economics, health benefits consulting and healthcare administration has arisen – limiting the independence of and often frustrating patients and providers.

Mercer Health and Benefits, based in the US but with 4,000 employees and 150 offices in North America, Europe, the Middle East, Asia and Australia/New Zealand, is the global leader in health benefits consulting to large employers. It has the largest market share – 10% of the employer market – in the US. It is just one division of Mercer, which has 19,000 employees providing a range of business consulting services.

Arnold Milstein, MD, MPH, who holds degrees in economics, medicine and health services planning from Harvard, Tufts and the University of California, Berkeley is Chief Physician in Mercer at San Francisco and described by Mercer as its “national thought leader”.

He is also Medical Director of the Pacific Business Group on Health (PBGH), the largest employer health-care purchasing coalition in North America. He is as influential as anyone in managed care program innovation and design, a field in which he has extensive publications and a number of national awards, and he serves on the Permanent Advisory Commission for the US federal Medicare program.

Niteesh Choudhry, MD, PhD is an Assistant Professor at Harvard Medical School where a focus of his research is pharmaco-economics – the clinical and economic effects of different patterns of drug use. His medical degree is from the University of Toronto, his PhD in health policy at Harvard was in statistics and evaluative sciences.

Choudhry and Milstein are the authors of the October 12, 2009 Mercer Report which is titled *Do Chiropractic Physician Services for Treatment of Low-Back and Neck Pain Improve the Value of Health Benefit Plans*.

4. At a time of impending healthcare reform this report from foremost experts was commissioned by a consortium of chiropractic organizations seeking authoritative, independent assessment of the evidence on the cost-effectiveness of chiropractic care for patients with neck and back pain in the US healthcare system as it actually exists. This consortium, named The

Foundation for Chiropractic Progress (www.f4cp.org), includes the American Chiropractic Association, the International Chiropractors’ Association, the Congress of Chiropractic State Associations and is supported by many other colleges, associations, corporations and individuals as listed at the website. President of the Foundation is Mr. Kent Greenawalt President, Foot Levelers.

The complete Mercer Report may be found at the Foundation’s website www.f4cp.org.

5. **Introduction.** Choudhry and Milstein introduce the report by documenting the economic impact of back and neck pain, quoting figures such as:

- In a 2002 survey 26% of US adults reported back pain in the previous 3 months, 13% neck pain. Life time prevalence of back pain is estimated to be 85%.
- Annual spending on spine-related problems is an estimated \$85 billion in the US – after adjustment to account for inflation this represents an increase of 65% in absolute dollars compared with 1997.
- Treatment options “are diverse ranging from rest to surgical reconstruction”, and chiropractic care is “widely used in the US with almost half of all patients with persistent back pain seeking out this modality of treatment”.

A “vast scientific literature” has now evaluated the *effectiveness* of chiropractic treatment for patients with “common types of back and neck pain” say Choudhry and Milstein, and supports these conclusions:

- “chiropractic care is at least as effective as other widely used therapies for *low-back pain*”;
- chiropractic care when combined with other modalities, such as exercise, appears to be more effective than other treatments for patients with *neck pain*”.

However *cost-effectiveness* “remains incompletely evaluated in the US”. It is “promising”, but the studies have design or methodological shortcomings. For example:

- Two large California studies of patients with chiropractic coverage included in their benefit plans found reduced cost and use of imaging/surgery/in-patient hospitalizations but had selection bias. Patients themselves chose whether to have chiropractic or medical care. Comparability of patients in treat-

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ment groups and removal of selection bias are only guaranteed when patients are randomly assigned to treatment.

- A recent University of California, Los Angeles (UCLA) back pain trial comparing the cost of medical and chiropractic care reported higher cost for chiropractic care but “excluded important costs included those associated with surgery”, invalidating its findings.

6. **Purpose.** As a result the purpose of the Mercer study was to look at the international evidence, including higher quality European trials, to construct “an economic model . . . to estimate the likely impact on healthcare spending from extending chiropractic coverage for (back and neck pain) in US health benefit plans”.

7. **Method.** This is where things become more complex for those of us outside the arcane world of health economics. In summary:

- (a) Choudhry and Milstein use what is

now a standard measure of effectiveness for health economists – quality-adjusted life years (QALYs). This is a measure which assesses the impact of a given treatment on both the quality and length of a patient’s life. It is the measure also used, for example for the UK BEAM trial³ referenced in the Mercer Report and discussed further below. (See para 16).

(b) First they calculate the *effectiveness* of different treatments (medical, chiropractic, physical therapy led exercise) in QALYs using the combined or pooled results of the best research evidence).

(c) Next they calculate the cost of each different course of care, using unit prices paid by US insurers for treatment of neck and back pain. Those unit prices were here calculated from billing data from Mercer covering 80 large employer health benefit plans and almost 3 million member lives.

(d) The difference in *cost-effectiveness* of different treatments is then calculated by dividing the difference in cost by the difference in effectiveness.

(e) Interventions with a cost-effectiveness ratio per QALY below US\$50,000 are considered to be cost-effective. In other words if using drug A as opposed to drug B for hypertension, or chiropractic care with manipulation as opposed to best medical care for back or neck pain, produces one QALY for under \$50,000 it is cost-effective. (One QALY represents one additional year of life at full health.)

(f) The studies and data used in this analysis apply to patients with low-back and neck pain from all causes except “non-fracture or malignancy”. In other words the study includes, for example, those with disc herniation.

(g) Finally, because European evidence was included, the Mercer Report assumes that the “relative effectiveness” of chiropractic and medical treatment (i.e. the difference in effectiveness) in the US is broadly comparable with that in Europe.

8. Results. Tables 1 and 2 are from the Mercer Report and illustrate the cost-effectiveness of different treatments for back and neck pain. For back pain:

(a) At \$2,431 chiropractic care costs \$75 more than medical care over one year

(b) However in QALYs it is more effective by 0.04. That means a cost per 1.00 QALY of \$1,827. As a cost of \$50,000

Table 1: Cost-effectiveness of treatments for low back pain

Treatment arm	1-year Values		Difference Relative to Medical Physician Care		Incremental Cost Effectiveness Ratio versus Medical Physician Care*
	Cost	Efficacy (QALYs)	Cost	Efficacy (QALY)	
Medical physician care	\$2,355	0.168	—	—	—
Chiropractic physician care	\$2,431	0.659	\$75	0.04	\$1,837
Physiotherapy-led exercise	\$3,192	0.635	\$837	0.02	\$49,210
Manipulation and Physiotherapy-led exercise	\$2,507	0.651	\$152	0.03	\$4,591

* lower is better; QALY = quality-adjusted life year

Table 2: Cost-effectiveness of treatments for neck pain

Treatment arm	1-year Values		Difference Relative to Medical Physician Care		Incremental Cost Effectiveness Ratio versus Medical Physician Care*
	Cost	Efficacy (QALYs)	Cost	Efficacy (QALY)	
Medical physician care	\$579	0.77	—	—	—
Chiropractic physician care	\$277	0.82	-\$302	0.05	Cost-saving
Exercise	\$952	0.79	\$373	0.02	\$18,665

* lower is better; QALY = quality-adjusted life year

per QALY represents good cost-effectiveness this means that chiropractic care compares “extremely favorably to the cost-effectiveness of most widely-used therapies”, say Choudhry and Milstein, “and suggests that offering chiropractic care for low-back pain is a very good value relative to widely accepted thresholds. . . .”

(c) A combination of manipulation and physiotherapy-led exercise is also much more cost-effective than medical physician care, though not quite so much as chiropractic care, but physiotherapy-led exercise has more cost, slightly less efficacy, and less cost-effectiveness.

They acknowledge that, on a complete analysis, chiropractic care for back pain may in fact cost less overall. It is known from studies that they cite that chiropractic patients use less medication than medical patients, but because they are unable to calculate these savings accurately they omit them.

With respect to neck pain:

(a) Chiropractic care has even better results – there are better clinical results (measured in QALYs) at an average lower cost of \$302 per patient than medical physician care.

(b) Management of neck pain by chiropractic care, say Choudhry and Milstein after doing the mathematics, “is estimated to save \$6,035 per QALY”.

(c) US health benefit plans generally require the patient to make a co-payment for chiropractic care, and only pay a unit price of an average of \$22 for a chiropractic treatment. Choudhry and Milstein calculate that even if a health benefit plan offered a fee of \$100 per chiropractic visit there would still be improved results at significantly less cost – a saving of \$5,875 per QALY.

(d) Reported, but not shown in Table 2, is the conclusion that “if exercise therapy were provided by chiropractors instead of physiotherapists, one year costs would fall from \$952 to \$464 for those plan beneficiaries seeking care for neck pain, resulting overall in savings of \$114 per beneficiary”.

C. Understanding Cost-Effectiveness

9. Unlike the Mercer Report, many studies of cost-effectiveness have been by health science researchers without expertise in this field. Problems include poor matching of patients, failure to include all costs, invalid attribution of costs and inadequate sample size. Relevant costs that must be incorporated, for example, are:

(a) Direct costs of care. These include, in the context of the present discussion, all health care costs generated as a result

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imaging, manual care, red flags for referral or co-management, and prevention and wellness visits.

One benefit of the consensus process, the authors acknowledge, was identification of priority areas for additional research. For examples of recent pediatric research see the studies from Dr. Lise Hestbaek (Denmark), Dr. Sue Weber Hellstenius (Sweden) and Dr. Joyce Miller (UK), all of whom were on the consensus panel, briefly reviewed below.

(Hawk C, Schneider M, Ferrance RJ et al. (2009) *Best Practices Recommendations for Chiropractic Care for Infants, Children, and Adolescents: Results of a Consensus Process* J Manipulative Physiol Ther 32: 639-647)

Danish Survey

A survey and editorial from Danish chiropractic researchers Lise Hestbaek, DC, PhD, Annette Jorgensen, DC and Jan Hartvigsen, DC, PhD report that research into pediatric issues is now a priority at the Nordic Institute of Chiropractic and Clinical Biomechanics at the University of Southern Denmark – and why this is so. Hestbaek et al. note that there is a general increased focus on the health of children and adolescents because lifestyle diseases such as cardiovascular disease and diabetes have been shown to begin early in life. However this applies equally to musculoskeletal health, for which it is now known:

- Cumulative lifetime incidence of back pain is already at the adult level in late adolescents.
- Significant back pain in childhood is a strong predictor of back pain later in life.
- Musculoskeletal problems are associated with both physical and psychological consequences, are a barrier to participation in physical activity/sports and are therefore important to wider public health goals. Prevention of musculoskeletal problems also prevents inactivity/obesity/cardiovascular and other problems.

The new survey was of all chiropractic clinics in Denmark (230) over a one month period and had a 84% response rate (193). Findings include:

- There was an average of approximately 4 pediatric patients (up to age 17) per clinic per month, but 1 clinic out of 4 (26%) had no pediatric patients during the survey month.
- Under age 2 most patients had a primary complaint of excessive crying/infantile colic, with 20% referred by the National Board of Health health visitors/nurses.
- Over age 2 musculoskeletal complaints were most common (75% amongst teenagers) with headache (20%) next most common.
- Most teenagers were referred by family/friends with 11% referred by medical doctors (7%) and physiotherapists (4%).
- Of those with musculoskeletal complaints 2 in 3 had experi-

enced symptoms for more than one year before seeking chiropractic care, and 39% used analgesics.

No profession has assumed the responsibility of researching, preventing and managing spinal and musculoskeletal problems in childhood and the Danish researchers offer insights on what they will be doing and what the profession as a whole could do to meet this need.

(Hestbaek L, Jorgensen A, Hartvigsen J (2009) *A Description of Children and Adolescents in Danish Chiropractic Practice: Results from a Nationwide Survey* J Manipulative Physiol Ther 32: 607-615)

Sweden – Neck Pain/Headache

A study of 131 students aged 10-13 from a Swedish school by Sue Weber Hellstenius DC, MSc reports that 52 (40%) had recurrent neck pain and/or headache. The purpose of this study was to see if, as has been reported in adults, there was an association between persistent neck pain/headache and cervical joint dysfunction (CJD) in preadolescents. There was. While most students, symptomatic or not, had CJD in the upper cervical spine as assessed by an experienced chiropractor, there was significantly greater CJD in the lower cervical spine also for those students with persistent pain.

(Weber Hellstenius SA (2009) *Recurrent Neck Pain and Headaches in Preadolescents Associated with Mechanical Dysfunction of the Cervical Spine: A Cross-Sectional Observational Study with 131 Students* J Manipulative Physiol Ther 32: 625-634)

England – Persistent Crying/Colic

Miller and Phillips report the first follow-up survey to assess long-term effects of chiropractic management of infants with persistent crying/infantile colic. Parents were asked about relevant behaviours according to the existing research – frequency of temper tantrums, interaction with other children, speed of falling asleep and frequency of waking at night.

117 former colic patients treated with low-force chiropractic manual therapy with success (measured by crying diary and parent report) and released from care by age 12 weeks, and now aged 2-3, were compared with 111 toddlers who attended nearby childcare clinics but did not receive chiropractic care. There were significant differences in both feed patterns and frequency of temper tantrums. For example where 60% of the treatment group “rarely had temper tantrums” 76% of the non-treatment group had them daily – with 40% having 3 or more tantrums daily.

(Miller JE, HL Phillips (2009) *Long-Term Effects of Infant Colic: A Survey Comparison of Chiropractic Treatment and Nontreatment Groups* J Manipulative Physiol Ther 32: 635-638)

Chiropractic Education – International Expansion

France and Switzerland. Last year there were new chiropractic schools in France, where the Institut Franco-Européen de Chiropratique (IFEC) in Paris opened a second campus in Toulouse, and in Switzerland at the University of Zurich .

News and Views

Mexico and Spain. In September/October second schools of chiropractic have opened in each of Mexico and Spain. In Mexico the first school has been the Universidad Estatal del Valle de Ecatepec (UNEVE), a state university in Ecatepec in the State of Mexico immediately north of Mexico City. This was developed in the 1990s in partnership with Northwestern University of Health Sciences of Bloomington, Minnesota and in recent years has also partnered with Parker College of Chiropractic of Dallas, Texas which provides a faculty enrichment program at its campus in Dallas.

UNEVE has been such a success that the State of Mexico has now funded a second school 2 hours to the north in Toluca, the state capital. The Universidad Estatal del Valle de Toluca (UEVT) commenced its first class with 60 students in September. For the meantime UNEVE Rector, Dr. Jose Angel Fernandez, serves in that capacity for UEVT also.

Spain opened its first chiropractic school at the Royal University Center Maria Cristina in Escorial near Madrid two years ago with support from the Spanish Chiropractors Association (AEQ), the European Chiropractors Union and the Anglo-European College of Chiropractic in Bournemouth, UK. Head of Chiropractic Studies is Dr. Ricardo Fujikawa, DC, MD, a Palmer Graduate from Brazil who was formerly Clinic Director at the School of Chiropractic at FEEVALE University in Brazil. In October the Barcelona College of Chiropractic (BCC) enrolled first students. The BCC is a private college of chiropractic with strong public university links. Development of the school has been led by Dr. Adrian Wenban, BCC Director, supported by the AEQ, and the BCC plans to apply for candidate status with the European Council of Chiropractic Education (ECCE) before the end of the year.

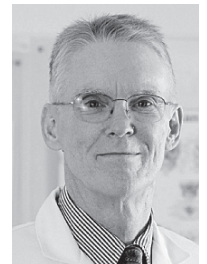
Chile and Malaysia. Last month the Universidad de Las Américas in Santiago, Chile announced it will receive first students at its new school of chiropractic in March 2010. Dean of Chiropractic will be Dr. Rodrigo Pinochet (*right*), a graduate from of the Anglo-European College of Chiropractic Conversion Program held for kinesiologists in Chile in 2005-06. Dr. Pinochet currently serves as Director of Health Sciences at the university.



The Universidad de Las Américas is a private university owned by Laureate Education, which has over 500,000 students at its network of 45 universities in North America, Latin America, Europe and Asia. Some three years ago Laureate purchased the University Anhembi Morumbi in Sao Paulo, Brazil which has one of Brazil's two chiropractic programs: The curriculum and program in Chile will be based upon those at UAM.



Earlier this year the International Medical University in Kuala Lumpur, Malaysia announced that it would enrol its first cohort of 40 chiropractic students in February, 2010. Head of Chiropractic will be Dr. Michael Haneline (*right*), formerly a faculty member at Palmer West in San Jose, California.



The IMU began in 1992 as Malaysia's first private medical college. Other honors degree courses at IMU include Dentistry, Nutrition & Dietetics, Medical Biotechnology, Psychology, Biomedical Science and Pharmaceutical Chemistry. Professor Haneline is a 1971 graduate of the Los Angeles College of Chiropractic. He holds a Master of Public Health degree from the California College for Health Sciences (2003) and has served as Secretary, Chiropractic Health Care Section American Public Health Association. He is widely published and has served as a peer reviewer and editorial review board member for many chiropractic and medical journals.



IMU Campus in Malaysia

For a list of all chiropractic colleges and contact information visit www.wfc.org and go to About Chiropractic.

Sports Chiropractic at Winter Olympics and World Games

Dr. Greg Uchacz, President, College of Chiropractic Sports Sciences (Canada) and Dr. Robert Armitage, Coordinator, Chiropractic Services, 2010 Vancouver Winter Olympics have recently announced that there will be 24 sports chiropractors from Canada serving all athletes at the Vancouver Winter Olympic and Paralympic Games next February. Canada's Olympic teams have had chiropractors on their core sports medicine team since 1998 but what is new this time – and a first at an Olympic Games – is that chiropractors will be at the central treatment facilities for athletes of all teams.

Similarly there was a FICS team of 28 sports chiropractors from 13 countries at the 8th World Games held in Kaohsiung in Taiwan from August 16-26, 2009.

The World Games are part of the Olympic movement, using the 5 rings, but feature sports not yet admitted to the Olympic Games—such as ultimate frisbee, life saving, rugby sevens, sumo wrestling, archery, rhythmic gymnastics, ballroom dancing, and various ball sports.

More than 280,000 spectators watched the sports events and the opening and closing ceremonies. For more detailed reports and photographs of the World Games see the September FICS News under Publications at www.fics-sport.org.

of the chiropractic or medical management (e.g. diagnostic tests, medications, treatments on referral, hospital fees etc.)

(b) Costs arising from harm from treatment. These can be very significant in the area of back pain – for example subsequent surgeries and/or long-term reliance on medications after an initial failed surgery.

(c) Compensation costs for disability and time off work. For example medical care that costs \$600 inclusive of tests and medications, but leads to compensation costs of \$3,000 for time off work is not as cost-effective as chiropractic treatment that costs \$750 but avoids any compensation costs for lost time at work.

(d) Other indirect costs. These may be incurred by patients, their families or employers – e.g. travel and administrative costs, lost production.

10. Direct Costs. When Manga and Angus reviewed all the international evidence from workers compensation, employer and other data in 1998, in a follow-up to their first report five years earlier, they concluded that when a patient attends a medical doctor for back pain the physician's fees represent only 23% of total healthcare cost – the other 77% is the cost of other diagnostic tests and therapy/ specialist/ in-hospital services. With chiropractic care the chiropractor's fees represent 80% of total health care cost – only 20% is secondary health-care cost.⁴

The best comparative evidence on direct and complete health care costs appeared in two studies by Stano and Smith, US health economists, analyzing records from the Michigan health benefits consulting firm MedStat Systems Inc. which then monitored coverage for 2 million patients across the US^{5,6}. Their analyses were for the 2 year period July 1988 to June 1990. In summary:

i. The studies look at chiropractic and medical use and costs for 208 ICD-9 code diagnoses for various conditions in patients who were equally free to choose medical or chiropractic care for these conditions under the terms of their employment health benefits plans. The entire claims history and all costs for these patients were known.

ii. After regression analysis to ensure matching populations in all material respects (e.g. severity of complaints, age, sex, location, relation to insurance plan – employee or dependent, insurance plan type, similar access to, and similar deductibles for chiropractic and medical care, etc.), the study group was 7,077 patients.

iii. Medical care costs were significantly higher. For the 9 high-frequency ICD-9 codes most typically used by both chiropractic and medical doctors, mostly involving back and sacroiliac disorders including disc degeneration and sciatica, medical payments were 47% higher for outpatient care, 61% higher for total care.

11. Indirect Costs – Compensation. An additional significant area of cost savings under chiropractic care is compensation. Because of better earlier results, far fewer patients experience long-term (chronic) pain, time off work and disability under chiropractic care than under medical care. The better designed workers' compensation studies show this quite dramatically. Jarvis, Phillips et al. reported that workers in Utah with similar back injuries (identical ICD-9 codes) had approximately 10 times the number of days off work on average (20.7 versus

2.4) and compensation costs (\$668.39 vs \$68.38) if they chose medical rather than chiropractic care.⁷

Ebrall, looking at comparable injured workers in the State of Victoria, Australia in the 1990-91 compensation year, reported average payments per claimant of \$963.47 for chiropractic patients (health care cost \$571.45, compensation cost \$392.02) and \$2,308.10 for medical patients (health care cost \$738.17, compensation \$1,569.93).⁸ The higher compensation costs for medical patients reflected the fact that more medical patients developed chronic pain (11.6%) than chiropractic patients (1.9%).

US health economists Johnson and Baldwin, in a study for the Zenith National Insurance Company of 850 California workers who completed an episode of back pain in the years 1991-1993, also concluded that substantial savings were possible from shifting the care of workers compensation back pain patients to chiropractors.⁹ Total claim costs were reduced by approximately 20% (\$1,526 for chiropractic patients and \$1,875 for medical patients) when workers with equivalent injuries chose chiropractic care. Most of the savings came from earlier return to work and lower indemnity costs.

12. Total Savings. Manga and Angus conclude that there is a 20-60% total cost saving – direct and indirect costs – when a matched group of patients receive chiropractic care rather than medical care for back pain. If this is true it is of large economic significance. The actual primary treatment costs in the acute or initial stage are typically higher for chiropractic care, because there is more intensive intervention. But this results in substantial savings in secondary health care costs (fewer specialist services, surgeries, hospitalizations) and compensation costs.

13. A Workplace Study – Advantage to Individual Employers. In a real life trial of the cost benefits of introducing chiropractic services in the workplace in the UK, two companies with 750 employees referred employees complaining of neck/arm or back/leg pain for chiropractic treatment over a period of two years in 1994/95. The companies subsidized the cost of care in the expectation of better effectiveness, patient satisfaction and overall cost savings. The results were rewarding – extremely high self-rated improvement and patient satisfaction, and an 18% net saving of costs in the first year (30% saving in disability/sickness payments, less 12% for the treatment costs subsidized). There was almost a 40% net saving in the second year.¹⁰

14. Savings under Managed Care. Even in a US managed care environment, where there are protocols to control all costs carefully, there may be substantial savings with chiropractic care for back and neck pain patients. Mosley analyzed claims over 12 months in a Louisiana HMO in which patients were permitted direct access to either a primary gatekeeper MD or a participating doctor of chiropractic.¹¹ Direct health care costs per chiropractic patient were only 70% of costs per medical patient over a range of identical ICD-9 diagnoses – in other words a saving of 30%. Clinical results were equivalent. Surgical rates were similar in this instance, but medical patients incurred much higher imaging and medication costs. In summary, as might be expected given the chiropractic profession's more conservative approach to management – encouraging patients to keep active and maintain normal lifestyle rather than stop, rest and rely upon medication, the research confirms the superior cost-effectiveness of chiroprac-

tic management of common neuromusculoskeletal disorders in traditional and managed care practice settings.

15. Substitution of Cost and Barriers to Care. Even if chiropractic care is cost-effective for back and neck pain patients two large issues arise for third party payors and their health benefits advisors:

(i) If a chiropractic benefit is given to patients, will it be an 'add-on' cost, similar for example to a dental benefit and most other benefits, and therefore increasing overall costs even though it is cost-effective in itself, or will chiropractic services given under the benefit truly 'substitute' for more expensive medical care?

(ii) In the real health care world, will it work? Will many or most patients be willing to consult a chiropractor? Will structural barriers limit access to chiropractic services – for example geographical availability, interprofessional referral problems, administrative features such as higher co-payments that hinder access to chiropractic services.

In 2004 the American Medical Association's *Archives of Internal Medicine* published results from a large new study from Legorreta et al¹² that addressed these questions. This four-year study of comprehensive data from 1.7 million members of a managed care network in California, providing medical services only for 1 million members but the same medical services plus chiropractic services for 700,000 members, reports:

(a) Virtually all chiropractic services used by plan members with access to them were used in direct substitution for medical services.

(b) This applied not only for back pain but for all conditions seen by chiropractors – over a range of 654 ICD-9 Codes covering neuromusculoskeletal (NMS) disorders such as spinal pain, rib disorders, headache, extremity problems and myalgias or arthralgias.

(c) A large number of those with access to medical and chiropractic benefits were willing to choose, and did choose, chiropractic care. Of those with NMS complaints, 34.4% or approximately 1 in 3 used chiropractic care. For back pain, both uncomplicated and complicated, 45.9% or nearly half chose chiropractic care.

(d) The 700,000 patients with the added chiropractic benefit had significantly lower claims costs per person than the other 1 million not only for back pain and NMS problems but also for total health care costs. At the most conservative estimate the overall annual saving was \$16 million.

With back pain, for example, the savings in the 700,000 cohort with chiropractic care available were:

- Overall cost reduced by 28%.
- Reduced hospitalization of 41%.
- Reduced back surgeries of 32%.
- Reduced cost of medical imaging of 37%.

The above figures, however, underestimate the actual and potential savings. The study addressed the consequences of adding a chiropractic benefit – *whether or not it was used*. It compared total costs for the 700,000 cohort with medical and chiropractic benefits (Cohort M+ C) with those in the 1 million medical benefits only cohort (Cohort M) – not just the patients in Cohort M+ C who used chiropractic care. The majority of those in the 700,000 Cohort M+ C who made a claim for back pain actually saw a medical doctor on the

same basis as those in Cohort M– and those medical costs are included in the above figures. And, again, medication costs were not included.

16. Collaborative Care. In the California study slightly more than half of those patients who had a chiropractic benefit still chose to see a medical doctor first. If patients do so, and their family doctors then refer them to a chiropractor for manipulation and/or exercise, is that still more cost-effective than best medical care? That was one of the central questions posed in the UK Back Pain Exercise and Manipulation Trial (BEAM trial) sponsored by the British Medical Research Council and published in the British Medical Journal in 2004.³

The short answer is yes. The BEAM trial, highly regarded and much relied upon in the Mercer Report, involved 1,334 patients with persistent back pain (every day for at least 28 days) associated with significant loss of function (a score of 4 or more on the Roland Morris Disability Questionnaire). They were referred into the trial from 14 representative family or general medical practice centres across the UK, and were randomly assigned to 1 of 4 treatment groups:

(a) **Best care in general practice.** This was care in accordance with current UK national back pain guidelines except that there was no use of physical treatments. Management involved avoidance of bed rest, encouragement to continue normal activities, medication for pain and education on self-management partly through provision of a 23 page booklet titled *The Back Book*.

(b) **Best care plus exercise program.** The program was a 60 minute structured session led by experienced physiotherapists, 8 sessions over 4-8 weeks with a final session after 12 weeks.

(c) **Best care plus spinal manipulation.** Manipulation was by chiropractors, osteopaths and specialist physical therapists with at least 2 years experience. There were up to 8 treatment sessions over 12 weeks.

(d) **Best care plus manipulation plus exercise program.**

Results were:

(a) When manipulation alone, or in combination with a class-based exercise program was added to best medical care, patients had better recovery in the short term (3 months) and longer term (12 months).

(b) "Spinal manipulation is a cost effective addition to 'best care' for back pain in general practice" and "manipulation alone probably gives better value for money than manipulation followed by exercise."

(c) There were "no serious adverse events" following spinal manipulation.

The 17-member multidisciplinary BEAM Trial team concluded that the trial "shows convincingly" that manipulation is cost-effective and that it should be made generally available to back pain patients through the British National Health Service (NHS).

Although an earlier related trial from the British Medical Council reported that back pain patients achieved significantly better results from chiropractic treatment than physiotherapy treatment,¹³ there was no separate reporting of effectiveness of chiropractic, osteopathic and physiotherapy manipulation here. Research funding constraints prevented follow-up of patients for longer than 12 months and the BEAM trial

acknowledges that if patients had continued to show the additional benefit from manipulation after 12 months “the cost-effectiveness of both manipulation and combined treatment may be better than we have reported”.

D. Conclusion

16. The Mercer Report is the latest in a now compelling line of evidence supporting the conclusion that offering patients choice of equal access to chiropractic and medical care for spinal problems in a health benefits plan – whether sponsored by an employer or government – is cost-effective. The best evidence is for back pain, neck pain and cervical headache. Chiropractors suggest that further evidence will demonstrate similar cost-effectiveness for a much wider range of health problems related to dysfunction in the neuromusculoskeletal system.

It is the earlier Manga Report however that lists clearly all 5 criteria that justify not only the availability but also the promotion of coverage of chiropractic services within a health benefits package:

a. Effectiveness

b. Cost-effectiveness

c. Safety. The Mercer Report relies upon and references the Bone and Joint Decade Neck Pain Task Force Report in early 2008 which reported compelling evidence that manipulation of the cervical spine is both safe and appropriate.¹⁴

d. Patient satisfaction. Studies consistently report very high patient satisfaction rates for chiropractic treatment, higher than for other healthcare providers for patients with back and neck pain.^{15, 16}

e. Patient preference. In many countries there is now an established level of demand for chiropractic services.

It is these attributes that have led to greatly increased integration of chiropractic services in health plans and health care systems during the past decade, perhaps most notably within the US military and veterans administration healthcare systems since 2001. This is for integrated chiropractic and medical management of patients with neuromusculoskeletal disorders. The Mercer Report will clearly accelerate this trend. **TCR**

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