The comparative public benefit of radiography in a chiropractic practice.

How radiography kept within a chiropractic office may provide the public with a safer, less expensive "one-stop" patient-centered musculoskeletal management approach, from diagnosis through to treatment. Below is a review of the international studies that favorably compare chiropractic financial cost of care to equivalent medical cost of care and the comparative risk of harm from comparable treatment interventions.

While chiropractic will not always replace the need for surgery or medication, this data does recognize the:

a) *relevant clinical treatment role for chiropractic with the listed condition*
b) *comparative benefit financially for this condition under chiropractic*
c) *potential reduction in patient harm from treatment when under chiropractic vs medical care.*

Introduction:

Any analysis regarding the risk of *any* clinical assessment procedure (radiography) cannot be disconnected from the risk vs. benefit of the subsequent treatment protocols that follow. Here we provide a more complete disclosure of the comparative benefit-risk ratio of chiropractic vs. medical treatment options for the same patient presenting with the same condition. The relevance here is that these presenting conditions are commonly assessed through *chiropractic radiography* and *medical radiography.* The list includes neck pain, back pain, spinal stenosis, whiplash, disc protrusion, cervical spine radicular pain, sciatica".

The document by the US Department of Health and Human Services, Agency for Health Care Policy and Research; Chiropractic in the United States: training, practice, and research (32) states" recent evidence-based review of conservative and surgical interventions for acute back pain failed to identify any interventions supported by multiple high-quality scientific studies. Thus despite the poor quality of many of the studies evaluating its effectiveness, there is as much or more evidence for the effectiveness of spinal manipulation as for other non-surgical treatments for back pain. At present, however, comparative data for these largely low-risk (manipulative) therapies (in relation to surgery) are not available.

Anthony L. Rosner Phd (31) summarized the dangers of chiropractic care by outlining "more precise estimates of serious complications from cervical manipulations have recently been estimated to be 6 per 10 million manipulations, with fatal occurrences estimated at the rate of 3 per 10 million manipulations. (79) This rate pales in comparison to NSAID-related gastropathies resulting in death; assuming that each patient receives an average of 10 manipulations in treatment, death rates after cervical manipulations calculate to anywhere between *1/100 to 1/400,* the rates seen in the use of NSAIDs for the same

condition. (52) (53) It is also far below the risk of death from such voluntary and everyday activities as power boating, pregnancy, taking contraceptive pills, or automobile driving. (80) One would imagine that we have lost our perspective on the entire issue of benefit-to-risk ratios here".

He further added, " the risks of surgery to the spine are often ignored. Some authors present selective information that fails to account for the fact that death rates for lumbar spine operations have been reported to be 300 times higher than the rate produced by cerebrovascular accidents in spinal manipulation (54) (55) for cervical surgeries, recent death rates have been estimated to be 700-fold greater". (54)

"With the recent association of cerebrovascular accidents with rotational maneuvers applied to the upper neck, (81) (82) accident rates produced by spinal manipulations in this region may now be anticipated to decrease. The accident rate in using medications (decidedly non-chiropractic), on the other hand, is often shown to have *increased* rising 2.5-fold for hospital inpatients and jumping 8.5-fold for outpatients. (83)

The actual number of iatrogenic complications specifically ascribed to chiropractic has been shown in the literature to be significantly overestimated, because of the fact that the practitioner actually involved is in many cases was a non-chiropractor. Rather, a major portion of these accidents has occurred at the hands of a practitioner with inadequate professional training but incorrectly represented in the medical literature as a chiropractor (57)

Content:

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(18 studies)

SECTION TWO: Chiropractic clinical relevance/therapeutic comparisons
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SECTION THREE: Chiropractic health promotion/patient satisfaction outcomes
(6 studies)

SECTION FOUR: Medical harm in musculoskeletal-care
(38 studies)

SECTION FIVE: Excessive reliability on external randomized control trials
(10 studies)

SECTION ONE: Favorable financial cost study comparisons

1. Comparing the costs between provider types of episodes of back pain care. Rosner A**. *Spine Journal.*** 1995;20:2595–2598.

2. Cost per case comparison of back injury claims of chiropractic versus medical management of conditions with identical diagnostic codes. ***J Occup Med.*** Jarvis KB, Phillips RB, Morris EK. 1991;33:847–852.

3. Enhanced chiropractic coverage under OHIP as a means of reducing health care costs, attaining better health outcomes and achieving equitable access to health services. Manga P. ***Report to the Ontario Ministry of Health.*** 1998;.

4. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. Carey TS, Garrett J, Jackman A, MacLaughlin C, Fryer J, Smucker DR, et al**. *N Engl J Med.*** 1995;333:913–917.

5. Cost Minimization Analysis of Low Back Pain Claims Data for Chiropractic Vs Medicine in a Managed Care Organization Brian Grieves, J. Michael Menke, Kevin J. Pursel **Journal of Manipulative and Physiological Therapeutics** November 2009 (Vol. 32, Issue 9, Pages 734-739)

6. The Selection Effects of the Inclusion of a Chiropractic Benefit on the Patient Population of a Managed Health Care Organization Craig F. Nelson, R. Douglas Metz, Thomas M. LaBrot, Kenneth R. Pelletier **Journal of Manipulative and Physiological Therapeutics** March 2005 (Vol. 28, Issue 3, Pages 164-169)

7. Chiropractic and medical costs of low back care. Stano M, Smith M**. *Med Care.*** 1996;34:191–204.

8. Mechanical low-back pain: a comparison of medical and chiropractic management within the Victorian WorkCare Scheme. Ebrall P. ***Chiropr J Austr.*** 1992;22:47–53.

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10. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners, chiropractors, and orthopedic surgeons. Carey TS, Garrett J, Jackman A, MacLaughlin C, Fryer J, Smucker DR, et al. ***N Engl J Med.*** 1995;333:913–917

11. **The Manga Report;** A Study to Examine the Effectiveness and Cost-Effectiveness of Chiropractic Management of Low-Back Pain Funded By The Ontario Ministry Of Health *written by:* Pran Manga, Ph.D.□Douglas E. Angus, M.A.□Costa Papadopoulos, MHA□4 William R. Swan, B.Comm. August 1993

12. Comparative Analysis of Individuals With and Without Chiropractic Coverage: Patient Characteristics, Utilization, and Costs Antonio P. Legorreta; R. Douglas Metz; Craig F. Nelson; Saurabh Ray; Helen Oster Chernicoff; Nicholas A. DiNubile
Arch Intern Med, Oct 2004; 164: 1985 - 1992.

13. **The AMI Study** 1999-2002, found decreases of: 43 percent in- hospital admissions per 1,000; 58.4 percent in hospital days per 1,000; 43.2 percent in outpatient surgeries and procedures per 1,000; and, 51.8 percent in pharmaceutical costs. It noted that: "The AMI experience seems to indicate that a non-pharmaceutical/nonsurgical orientation can reduce overall health care costs significantly and yet deliver high quality care."
2003-2005. The results of the original study were confirmed, with demonstrated decreases of 60.2 percent in in-hospital admissions, 59 percent in hospital days, 62 percent in outpatient surgeries and procedures, and 85 percent in pharmaceutical costs.

14. **The Stano Study**: Oakland University Economics Professor Dr. Miron Stano, **Journal of Manipulative and Physiological Therapeutics** June 1993 found that, when costs of advanced imaging and referrals to physical therapists and other providers were added, chiropractic care costs for chronic patients were 16 percent lower than medical care costs. If the study would have included hospitalization or surgical costs, two very expensive medical treatments for low-back pain, or over-the-counter medications, the savings from chiropractic would have been even greater. Additionally, chiropractic patients showed an advantage over medical patients in pain, disability, and satisfaction outcomes.

15. **The Procedures Study:** This study demonstrates that chiropractic care leads to lower costs by reducing the rates of surgery, advanced imaging, inpatient care, and plain-film radiographs in patients with low-back and neck pain. The study examined the claims data from a managed care health plan over a four-year period. The use rates of the high-cost procedures mentioned above were compared between employer groups with and without a chiropractic benefit. For patients with both low back and neck pain, the use rate of all four of these categories was lower in the group with chiropractic coverage. The study concludes: "Among employer groups with chiropractic coverage compared with those without such coverage, there is a significant reduction in the use of high-cost and invasive procedures for the treatment of back pain."

16. Spinal Manipulation Gives Value for Money: **British Medical Research Council (MRC)** Trial Finds Adding Spinal Manipulation and Exercise to GP Care Provides Relief

(and Cost-effectiveness) for Back Pain British Medical Journal 2004 (Dec 11); 329 (7479)

17. Cost-Effectiveness of Chiropractic Care in a Managed Care Setting. **American Journal of Managed Care Study** *Carrie D. Mosley; Ilana G. Cohen, DC; Roy M. Arnold, MD, MHA* Published Online: February 29, 1996

18. **The Utah Study**: compared the cost of chiropractic care to the cost of medical care for conditions with identical diagnostic codes and found that cost was almost 10 times higher for medical than for chiropractic claims. Also, the number of work days lost was nearly ten times higher for those who received medical care.

SECTION TWO: Chiropractic clinical relevance and therapeutic comparisons:

19. Treatment of Neck Pain: Noninvasive Interventions: Results of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders Eric L. Hurwitz, Eugene J. Carragee, Gabrielle van der Velde, Linda J. Carroll, Margareta Nordin, Jaime Guzman, Paul M. Peloso, Lena W. Holm, Pierre Côté, Sheilah Hogg-Johnson, J. David Cassidy, Scott Haldeman **Journal of Manipulative and Physiological Therapeutics** February 2009 (Vol. 32, Issue 2, Pages S141-S175)

20. Nonsurgical Interventional Therapies for Low Back Pain: A Review of the Evidence for an American Pain Society Clinical Practice Guideline Chou, Roger MD; Atlas, Steven J. MD, MPH; Stanos, Steven P. DO; Rosenquist, Richard W. MD Literature Review **Spine Journal** 1 May 2009 - Volume 34 - Issue 10 - pp 1078-1093

21. The effectiveness of physical modalities among patients with low back pain randomized to chiropractic care: Findings from the UCLA Low Back Pain Study Eric L. Hurwitz, Hal Morgenstern, Philip Harber, Gerald F. Kominski, Thomas R. Belin, Fei Yu, Alan H. Adams **Journal of Manipulative and Physiological Therapeutics** January 2002 (Vol. 25, Issue 1, Pages 10-20)

22. Acute low-back pain problems in adults. Rockville, Md: Agency of Health Care Policy and Research, Public Health Service, US Department of Health and Human Services; Bigos S, Bowyer O, Braen G, et al. 1994; Clinical Practice Guideline No. 14 **AHCPR publication** no 95–0642.

23 An Examination of Musculoskeletal Cognitive Competency in Chiropractic Interns B. Kim Humphreys, Andrew Sulkowski, Kevin McIntyre, Mark Kasiban, A. Neil Patrick **Journal of Manipulative and Physiological Therapeutics** January 2007 (Vol. 30, Issue 1, Pages 44-49)

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25. 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 Joanne Nyiendo, Mitchell Haas, Peter Goodwin ***Journal of Manipulative and Physiological Therapeutics*** May 2000 (Vol. 23, Issue 4, Pages 239-245)

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31. Chiropractic in the United States: training, practice, and research. xi:Rockville, Md: US Department of Health and Human Services, **Agency for Health Care Policy and Research**; Cherkin DC, Mootz RD editor. 1997;p. 1; 3, 6.

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Pain: A Prospective, Multicenter, Cohort Study ***Journal of Manipulative and Physiological Therapeutics*****,** Volume 30, Issue 6, Pages 408-418 S. Rubinstein, C. Leboeuf-Yde, D. Knol, T. de Koekkoek, C. Pfeifle, M. van Tulder

33. Manipulation in the Presence of Cervical Spinal Cord Compression: A Case Series Donald R. Murphy, Eric L. Hurwitz, Amy A. Gregory ***Journal of Manipulative and Physiological Therapeutics*** March 2006 (Vol. 29, Issue 3, Pages 236-244)

34. Management of acute lumbar disk herniation initially presenting as mechanical low back pain L.G.F. Giles***Journal of Manipulative and Physiological Therapeutics*** May 2000 (Vol. 23, Issue 4, Pages 294-296)

35. A Nonsurgical Approach to the Management of Patients With Cervical Radiculopathy: A Prospective Observational Cohort Study Donald R. Murphy, Eric L. Hurwitz, Amy Gregory, Ronald Clary *Journal of Manipulative and Physiological Therapeutics* May 2006 (Vol. 29, Issue 4, Pages 279-287)

36. Chiropractic management and manipulative therapy for MRI documented cervical disc herniations. *Journal of Manipulative and Physiological Therapeutics 1994;17:177-185*

37. Efficacy of spinal manipulation and mobilization for low back pain and neck pain: a systematic review and best evidence synthesis Gert Bronfort, Mitchell Haas, Roni L. Evans, Lex M. Bouter ***The Spine Journal*** May 2004 (Vol. 4, Issue 3, Pages 335-356)

38. Recruitment Methods and Costs for a Randomized, Placebo-Controlled Trial of Chiropractic Care for Lumbar Spinal Stenosis: A Single-Site Pilot Study Jerrilyn A. Cambron, Jennifer M. Dexheimer, Mabel Chang, Gregory D. Cramer*Journal of Manipulative and Physiological Therapeutics* January 2010 (Vol. 33, Issue 1, Pages 56-61)

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SECTION THREE: Chiropractic health promotion and patient satisfaction outcomes:

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SECTION FOUR: Comparitive Medical harm in musculoskeletal care (risks)

47. Randomized Trial A Randomized Placebo-Controlled Trial of Single-Dose IM Corticosteroid for Radicular Low Back Pain Friedman, Benjamin W. MD, MS; Esses, David MD; Solorzano, Clemencia RPh; Choi, Hong K. MD; Cole, Michael MD; Davitt, Michelle MD; Bijur, Polly E. PhD; Gallagher, E J. MD **Spine Journal**
15 August 2008 - Volume 33 - Issue 18 - pp E624-E629

48. Nonsteroidal Anti-Inflammatory Drugs: Balancing Benefits and Risks Saag, Kenneth G. MD; Cowdery, John S. MD **Spine Journal** July 1994 - Volume 19 - Issue 13 - ppg 1530-1534

49. Safety of Chiropractic Manipulation of the Cervical Spine: A Prospective National Survey ***("low risk")*** Thiel, Haymo W. DC, PhD; Bolton, Jennifer E. PhD; Docherty, Sharon PhD; Portlock, Jane C. PhD **Spine** 1 October 2007 - Volume 32 - Issue 21 - pp 2375-2378

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52. Risk of serious gastrointestinal complications related to the use of nonsteroidal anti-inflammatory drugs: a meta-analysis***. ("high risk")*** Gabriel SE, Jaakkimainen L, Bombardier C. ***Ann Intern Med.*** 1991;115:787–796.

53. A risk assessment of cervical manipulation vs NSAIDs for the treatment of neck pain***. ("low risk")*** Dabbs V, Lauretti W***. J Manipulative Physiol Ther.*** 1995;18:530–536.

54. Morbidity and mortality in association with operations on the lumbar spine. ***("high risk")*** Deyo RA, Cherkin DC, Loesser JD, Bigos SJ, Ciol MA. ***J Bone Joint Surg Am.*** 1992;74A:536–543.

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64. Increased Mortality and Cardiovascular Morbidity Associated With Use of Nonsteroidal Anti-inflammatory Drugs in Chronic Heart Failure Gunnar H. Gislason, MD, PhD; Jeppe N. Rasmussen, MD, PhD; Steen Z. Abildstrom, MD, PhD; Tina K. Schramm, MD; Morten L. Hansen, MD; Emil L. Fosbøl, MB; Rikke Sørensen, MD; Fredrik Folke, MD; Pernille Buch, MD, PhD; Niels Gadsbøll, MD, DMSc; Søren Rasmussen, MSc, PhD; Henrik E. Poulsen, MD, DMSc; Lars Køber, MD, DMSc; Mette Madsen, MSc; Christian Torp-Pedersen, MD, DMSc
Arch Intern Med. 2009;169(2):141-149.

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1107;

66. Complications and side effects of cervical and lumbosacral selective nerve root injections Christopher W. Huston, Curtis W. Slipman, Cyndi Garvin ***Archives of Physical Medicine and Rehabilitation*** February 2005 (Vol. 86, Issue 2, Pages 277-283)

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73. Comparison of 3 Physical Therapy Modalities For Acute Pain in Lumbar Disc Herniation Measured by Clinical Evaluation and Magnetic Resonance Imaging Zeliha Unlu, Saliha Tascı, Serdar Tarhan, Yuksel Pabuscu, Serap Islak ***Journal of Manipulative and Physiological Therapeutics*** March 2008 (Vol. 31, Issue 3, Pages 191-198)

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Heavner JE. Rampersaud YR, Moro ER, Neary MA, et al. **Spine Journal** (Phila Pa 1976). 2006 Nov 1;31(23):2758.

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77. Chiropractic management of a patient with lumbar spinal stenosis Gregory J. Snow ***Journal of Manipulative and Physiological Therapeutics*** May 2001 (Vol. 24, Issue 4, Pages 300-304)

78. A Randomized Controlled Trial Comparing 2 Types of Spinal Manipulation and Minimal Conservative Medical Care for Adults 55 Years and Older With Subacute or 68. Chronic Low Back Pain Maria A. Hondras, Cynthia R. Long, Ying Cao, Robert M. Rowell, William C. Meeker ***Journal of Manipulative and Physiological Therapeutics*** June 2009 (Vol. 32, Issue 5, Pages 330-343)

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84.Complications in Disk Surgery Clinical Orthopaedics and Related Research: July/August 1967 - Volume 53 - Issue - ppg 13-20
REYNOLDS, FRED C. M.D.

85. Complications of lumbar disc surgery Serdar Ozgen Deniz Konya M.Necmettin Pamir Volume 3, Issue 5, Supplement, Page 155 (September 2003)

SECTION FIVE: Limits to external randomized control trials

The following studies and publications present critical argument that evidence based care is not limited to external randomized control trials and meta-analysis but must include individual clinician decision-making.

86. What Constitutes Evidence for Best Practice? John J. Triano **Journal of Manipulative and Physiological Therapeutics** November 2008 (Vol. 31, Issue 9, Pages 637-643)

87. Demanding medical excellence: doctors and accountability in the information age, and its relevance to CRNAs and nursing. Gunn IP. A critique of Michael L. Millenson's book, AANA J. 1998;66:575–582.

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91. Fables or foibles: inherent problems with RCTs Anthony Rosner Journal of Manipulative and Physiological Therapeutics September 2003 (Vol. 26, Issue 7, Pages 460-467)

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93. Evidence-based medicine. Interpreting studies and setting policy. Woolf SH, George JN. **Hematol Oncol Clin North Am.** 2000;14:761–784

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