Does Chiropractic Fit into Evidence-Based, Integrative Animal Health Care? ... and Is it Being Taught with an Evidence-Based Educational Approach?

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Is there scientific evidence that supports the use of animal chiropractic? Is the use of chiropractic health care for humans or animals scientifically valid? Questions like these are thought provoking and controversial, but they must be asked. This paper will explore these questions and the issues created by them. Too many times, the concepts and beliefs of both the supporters and adversaries of chiropractic express statements they claim as fact, or fiction, with absolutely no basis in evidence; scientific or otherwise.

DEFINITIONS:

United States law defines "**scientifically valid research**" as "applied research, basic research, and field-initiated research in which the rationale, design, and interpretation are soundly developed in accordance with principles of scientific research."[3]

"**Basic Research** is driven by a scientist's curiosity or interest in a scientific question. The main motivation is to expand man's knowledge, not to create or invent something. There is no obvious commercial value to the discoveries that result from basic research."[4]

"**Applied Research** is designed to solve the practical problems of the modern world, rather than to acquire knowledge for knowledge's sake. One might say that the goal of the applied scientist is to improve the human [animal] condition."[4]

"Basic research lays down the foundation for the applied science that follows."[4] Dr George Smoot of the Lawrence Berkeley National Laboratory says, "People cannot foresee the future well enough to predict what's going to develop from basic research. If we only did applied research, we would still be making better spears."[4]

Field-Initiated Research is "basic research or applied research in which specific questions and methods of study are generated by investigators (including teachers and other practitioners) and that conforms to standards of scientifically valid research."[5]

Chiropractic is a human health care system as determined by and in the curriculums of Institutions approved by the of the Council on Chiropractic Education (CCE)[6] and the Association of Chiropractic Colleges (ACC)[7].

Animal Chiropractic is the application of the combination of chiropractic and veterinary knowledge and skills as taught in a basic animal chiropractic course at a school that has been approved by the International Veterinary Chiropractic Association (IVCA)[8] and/or the American Veterinary Chiropractic Association (AVCA)[9]. These courses have curricula that has been written and drafted by chiropractors that have graduated from CCE (Council on Chiropractic Education)[6] accredited chiropractic colleges and/or universities and veterinarians that have graduated from AVMA (American Veterinary Medical Association)[10] accredited veterinary colleges and/or universities.

An **Animal Chiropractor** is a licensed chiropractor or a licensed veterinarian that has successfully completed post-graduate education at one of the above mentioned basic animal chiropractic courses.

What Determines if Something Is Scientifically Valid?

That question can be interpreted and answered many ways. For reference, this paper will be addressing the issue by using the standards set by the United States Department of Education[1] and the National Research Council (NRC)[2].

THE STANDARDS OF SCIENTIFICALLY VALID RESEARCH

Is animal chiropractic research scientific? Can animal chiropractic research be scientific? According to the National Research Council (NRC)[2], science is the same in all fields of study, whether it is chemistry, economics or education. What determines the scientific quality of a research study is the degree to which the study follows the principles that underlie science. The NRC identified six guiding principles for scientific research. The actual principles are quoted here verbatim from the NRC[2,11] **(BOLD):**

PRINCIPLE 1: POSE SIGNIFICANT QUESTIONS THAT CAN BE INVESTIGATED EMPIRICALLY.

Empirical research involves investigation that uses observations to guide conclusions.

PRINCIPLE 2: LINK RESEARCH TO RELEVANT THEORY.

PRINCIPLE 3: USE METHODS THAT PERMIT DIRECT INVESTIGATION OF THE QUESTION.

This principle means that the research method should be appropriate to the research question. The method or design used in a particular investigation does not itself make the study scientific, and methods in the abstract cannot be judged to be more or less scientific either.

PRINCIPLE 4: PROVIDE A COHERENT AND EXPLICIT CHAIN OF REASONING.

Conclusions about the results of research are based on inferential reasoning. This means that researchers make logical judgments based on the results of their research and on conclusions from prior research. There is no one, linear way to reason scientifically, but in general terms it must be coherent, explicit and persuasive to the skeptical reader.

PRINCIPLE 5: REPLICATE AND GENERALIZE ACROSS STUDIES.

Replication means that a researcher who uses the same study method in the same situations or contexts as another researcher can make the same observations and obtain the same results. (Alternatively, the same researcher can obtain the same results on two different occasions.) Generalization refers to how much the results can be replicated in different contexts and with different populations. When the results of a study can be replicated and generalized, the results can be trusted more than results from studies without these characteristics. Usually, many research studies are needed to produce a body of knowledge that provides this information.

PRINCIPLE 6: DISCLOSE RESEARCH TO ENCOURAGE PROFESSIONAL SCRUTINY AND CRITIQUE.

Through this principle, the National Research Council emphasizes that the accumulation of scientific knowledge depends on its dissemination to

members of the scientific community for professional critique. Researchers should submit their reports to journals and publications that require peer review. Presentations on research at professional conferences also provide the opportunity for critique.

IS CHIROPRACTIC HEALTH CARE SCIENTIFICALLY VALID?

All too often it is said that chiropractic is not scientific. For years organizations like the American Medical Association (AMA), The American College of Surgeons, and The American College of Radiology, conspired to destroy the profession of chiropractic in the United States; including undermining Chiropractic schools, undercutting insurance programs for Chiropractic patients, concealing evidence of the effectiveness of Chiropractic care, subverting government inquiries into the effectiveness of Chiropractic and promoting other activities that would control the monopoly that the AMA had on health care.[12]

In October 1976, Chester Wilk, D.C. and four other chiropractors filed suit against these organizations.[24] The plaintiffs charged that the AMA and its officials, including Dr. Sammons, instituted a boycott of chiropractors in the mid-1960s by informing AMA members that chiropractors were unscientific practitioners and that it was unethical for a medical physician to associate with chiropractors. The purpose of the boycott was to contain and eliminate the chiropractic profession. This conduct constituted a conspiracy among the AMA and its members and an unreasonable restraint of trade in violation of Section I of the Sherman Act.[13] The AMA sought to spread the boycott to other medical societies. Other groups agreed to participate in the boycott by agreeing to induce their members to forego any form of professional, research, or educational association with chiropractors. In 1966, the AMA adopted an anti-chiropractic resolution. This resolution, recommended by the AMA Board of Trustees and adopted by the House of Delegates, called chiropractic an unscientific cult. This label implicitly invoked Principle 3 of the AMA's Principles[14] which made it unethical for a physician to associate with an unscientific practitioner. In 1967, the AMA Judicial Council issued an opinion under Principle 3 specifically holding that it was unethical for a physician to associate professionally with chiropractors. (The Judicial Council is now known as the Council on Judicial and Ethical Affairs) "Associating professionally" would include making referrals of patients to chiropractors, accepting referrals from chiropractors, providing diagnostic, laboratory, or radiology services for chiropractors, teaching chiropractors, or practicing together in any form. This opinion was published in the 1969 Opinions and Reports of the Judicial Council of the AMA ("1969 opinions") which was widely circulated to members of the AMA.

The New Zealand Report[15] was heavily relied upon by the plaintiffs to show that chiropractic was a valid health care profession. The Report was published in 1979 after nearly two years of investigation including 78 days of public hearings, 15 days of closed sessions, and visits to medical and chiropractic establishments both in New Zealand and other English-speaking countries. The New Zealand Report developed into the most comprehensive and detailed independent examination, at that time, of chiropractic ever undertaken in any country. The focus of the investigation was to consider whether health and accident benefits should be made for chiropractic services. When the Report was commissioned, it was believed it would take a month or two at the most to resolve the issues, but it took nearly two years, generating over 3600 pages of testimony under Oath from numerous witnesses and thousands of pages documents submitted from organizations and private parties from around the world.

The commission went into the study with “the general impression that chiropractic was an unscientific cult not to be compared with orthodox medicine or paramedical services”. By the end of the study in 1979, the commission reported itself “irresistibly and unanimously drawn to the conclusion that modern chiropractic is a soundly based and valuable branch of health care in a specialized area” and that “modern chiropractic is far from being an unscientific cult.” Several other important findings came as results this study. They were: Chiropractors are the only health practitioners who are specifically 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 enable him/her to determine whether spinal manual therapy is needed in a particular case, and whether the patient should have medical care instead of or as well as chiropractic care. Spinal therapy can be effective in relieving musculoskeletal symptoms such as back pain, and other symptoms known to respond to such therapy, such as migraine headaches and in a limited number of cases where there are organic and/or visceral symptoms, chiropractic treatment may provide relief, but this is not predictable, and in such cases the patient should also be under medical care.[15]

There are some questions to the scientific validity of the New Zealand Report's conclusions. A review of the Report prepared by the United States Congress' Office of Technology Assessment questioned the applicability of the New Zealand findings to the United States and finds "serious problems" in the Report's treatment of safety and efficacy issues. Some say the OTA review may be biased because it was prepared by a doctor of medicine, but the courts disregards these conclusory allegations. The OTA’s primary criticism of the Report is not that its conclusions are wrong, but that they are not based upon well-designed, controlled clinical trials. Regarding the efficacy of chiropractic, the New Zealand Commission considered only five randomized trials. Of these, only two involved chiropractic services -- each of which contained significant design flows. The OTA review concluded: "There is a strong hint that spinal manipulation has efficacy in the immediate relief of back pain and other kinds of pain that goes beyond placebo effect. However, this can only be considered suggestive without further research." With respect to the question of chiropractic safety, the OTA review -- after disparaging as "not evidence" anecdotal accounts in the medical literature purporting to show chiropractic is unsafe -- stated it was unable to find any well designed study. It concluded, consistent with this finding, that the New Zealand Report's review of the safety issue was "unsatisfactory."[16]

On August 24, 1987, after endless wrangling in the courts, U.S. District Court judge Susan Getzendanner ruled that the AMA and its officials were guilty, as charged, of attempting to eliminate the chiropractic profession. The federal appellate court judge ruled that the AMA had engaged in a “lengthy, systematic, successful and unlawful boycott” designed to restrict cooperation between MDs and chiropractors in order to eliminate the profession of chiropractic as a competitor in the United States health care system.”[12.24]

The Judge’s opinion also stated that, “There also was some evidence before the Committee that chiropractic was effective - more effective than the medical profession in treating certain kinds of problems such as workmen's back injuries. The [AMA] Committee on Quackery was also aware that some medical physicians believed chiropractic to be effective and that chiropractors were better trained to deal with musculoskeletal problems than most medical physicians.”[17]

The plaintiffs in the Wilk suit clearly wanted a judicial pronouncement that chiropractic is a valid, efficacious, even scientific health care service. The answer to that question at the time

could only be provided by a well designed, controlled, scientific study such as the one urged by the United States Congress' Office of Technology Assessment in its review of the New Zealand Report. Since that time, 1979, many other government reports and research institutes have studied and restudied chiropractic; most often due to the payment of fees to chiropractors by insurance companies. Almost all of the findings in these studies have shined a positive light on chiropractic health care at the best; and at the least, like the Wilk case, "could never scientifically disprove the use of chiropractic diagnosis and treatment."[18] Following are examples of these studies.

In 1991, RAND, one of the most prestigious centers for research in public policy, established a multi-disciplinary panel of neurologists, medical orthopedists and chiropractors, to rate the appropriateness of manipulation for low back conditions. This study was a meta-analysis which is defined as a statistical technique that combines results from clinical trials to provide an overall measure of effect. The important part of this study was that for the very first time in history, a multidisciplinary panel including representatives from the medical community went on record saying that not only is chiropractic "an appropriate treatment for certain low back conditions" but that "there are considerably more randomized control trials supporting chiropractic validity than there are for medicine."[19] The Rand Corporation's groundbreaking analysis of spinal manipulation directly influenced the Agency for Healthcare Research and Quality to include positive recommendations on spinal manipulation in its 1994 clinical practice guidelines on low-back pain. This federal agency issues such guidelines to help the medical community improve the quality of health care in the United States. In a 2001 Rand Brief, Paul Shekelle, M.D., director of RAND's Southern California Evidence-Based Practice Center, stated "In the last decade of the 20th century, chiropractic has begun to shed its status as a marginal or deviant approach to care and is becoming more mainstream."[20]

In 1992-1993, the Mercy Conference was established consisting of a 9 member steering committee which then established a consensus group of 35 chiropractors of substantially different backgrounds broken down into 14 committees. Along with these doctors, there were another 100 doctors that acted as consultants. The Mercy Guidelines for Chiropractic Quality Assurance and Practice Parameters[21], which is the result of this conference, utilized a rating system which was modified from a system developed by the American Medical Association. Procedures were judged in descending order of approval: Established - top level, Promising, Equivocal, Investigational, Doubtful, and Inappropriate - worst level of approval. They rated high velocity, low amplitude adjustments as: Established for back pain, Established for other neuro-musculoskeletal disorders and Equivocal for other purposes.

The Manga Report; A Study to Examine the Effectiveness and Cost-Effectiveness of Chiropractic Management of Low-Back Pain was a study commissioned by the Ministry of Health in Ontario, Canada, (August 1993) carried out by independent health economists at the University of Ottawa led by Dr. Pran Manga. This group reviewed all of the international evidence on low back pain: the cost, description of services, evidence of effectiveness and chiropractic management, evidence of cost effectiveness, evidence of patient satisfaction, and survey design. Highlights of the summary include: a) "Spinal manipulative therapy (SMT) applied by DC's was safer and MORE (emphasis mine) effective than medical treatments for low back pain. Evidence shows that many medical therapies are of questionable validity or are clearly inadequate...chiropractic manipulation is safer than medical management of low-back pain (LBP). There was no research that demonstrated or even implied that chiropractic SMT is unsafe in the treatment of LBP." b) "Overwhelming evidence exists in the literature showing

DC management of LBP is more cost effective than medical management." And c) "Literature shows patient satisfaction for LBP intervention is highest with chiropractic care." The panel recommended that: a) Chiropractic care should be fully covered under the state health plan. b) Chiropractic services should be fully integrated into the health care system. c) Chiropractors should be employed by tertiary hospitals in Ontario. d) Chiropractors should be the 'gatekeepers' in the Ontario worker's compensation system. e) Government funding should be extended for further research and public funding for inclusion of chiropractic education in university system. f) Government should take all reasonable steps to ensure cooperation between providers. [22]

In 1990, a 10 year multi-center trial comparing chiropractic and hospital outpatient management of 741 patients with acute and chronic mechanical low back pain was undertaken by the British Medical Research Council in England utilizing the most highly respected clinical trials available in the scientific community. The results of this study were reported in the June 2, 1990 issue of The British Medical Journal . Among other things, this study concluded: a) Chiropractic treatment was significantly more effective, particularly for patients with chronic and severe pain b) Results were long-term, i.e. the benefit of chiropractic treatment became more evident throughout the follow-up period of two years c) The superior results for chiropractic patients were not a result of trial errors or placebo d) The study provided considerable support to the New Zealand Commission's findings.[23]

Over the past two decades research into the efficacy and safety of chiropractic care has exploded. Journals such as the Journal of Manipulative and Physiological Therapeutics (JMPT),

The Council on Chiropractic Guidelines and Practice Parameters (CCGPP) announced that the literature syntheses published in the Journal of Manipulative and Physiological Therapeutics (JMPT) have now been accepted for inclusion in the National Guideline Clearinghouse (NGC) and are available at www.guideline.gov. The NGC is a comprehensive database of evidence-based clinical practice guidelines and related documents. NGC is an initiative of the Agency for Healthcare Research and Quality (AHRQ), U.S. Department of Health and Human Services.

The Council on Chiropractic Guidelines and Practice Parameters (CCGPP)[27], was formed in 1995 at the behest of the Congress of Chiropractic State Associations (COCSA) and with assistance from the American Chiropractic Association, Association of Chiropractic Colleges, Council on Chiropractic Education, Federation of Chiropractic Licensing Boards, Foundation for the Advancement of Chiropractic Sciences, Foundation for Chiropractic Education and Research, International Chiropractors Association, National Association of Chiropractic Attorneys and the National Institute for Chiropractic Research.

The CCGPP's mission is to provide consistent and widely adopted chiropractic practice information, to perpetually distribute and update this data, as is necessary, so that consumers and others have reliable information on which to base informed health care decisions.

CCGPP was also delegated to examine all existing guidelines, parameters, protocols and best practices in the United States and other nations with a chiropractic lens. Participation and process has been as transparent as possible and a major goal is to represent a diverse cross-section of the profession on the projects that CCGPP has been involved in.

Six members were appointed to represent the Congress of Chiropractic State Associations (COCSA). Other members were appointed by the organizations that created CCGPP. The CCGPP is a steering organization comprised of 21 individuals. 16 are chiropractors with one in

education, one in research and 14 in full-time private practice. There is a vendor representative, a representative from chiropractic colleges and attorneys representing the National Association of Chiropractic Attorneys, as well as a public member. A research commission with several dozen members reports to and is supervised by CCGPP.

THE CCGPP GATHERS AND EXAMINES VAILABLE RESEARCH AND THEN RATES IT. IT IS THEN COMPILED IN A SUMMARY DOCUMENT FOR THE CHIROPRACTIC PROFESSION AND OTHER RELATED STAKEHOLDERS. THE INFORMATION CONTAINED IN THE EIGHT CLINICAL CHAPTERS COVERED IN THIS PROJECT BEING ASSEMBLED BY CCGPP IS A LITERATURE SYNTHESIS A literature synthesis is an academically rigorous analysis of all the available scientific literature on a specific topic. Reviewers use internationally accepted tools to rate each article according to specific criteria. These include the type of study (randomized controlled trial, case series, etc), the quality of the study, size of the study and many other factors which influence the credibility and strength of the study's conclusions. Each reviewer independently rates all the available articles, and the ratings are compared among the members of the review team. When there is disagreement among the reviewers regarding the conclusions, a formal consensus process is followed to arrive at an overall conclusion upon which all reviewers can agree. The resulting conclusions do not represent the reviewers' own beliefs but rather what the literature actually supports. A literature synthesis is a starting point. It indicates only what we can conclude with supportable, scientific evidence. Appropriate therapeutic approaches will consider the literature synthesis as well as clinical experience, coupled with patient preferences in determining the most appropriate course of care for a specific patient.

CURRENT AND MODERN RESEARCH MODELS FOR CHIROPRACTIC CARE

(For Additional Research Specific to the Science of Chiropractic, See Appendix 2, 3, and 4.)

IS THERE A BODY OF SCIENTIFIC RESEARCH THAT SUPPORTS CHIROPRACTIC CARE FOR ANIMALS?

(For Additional Research Specific to Current Evidence in Animal Chiropractic, See Appendix 5.)

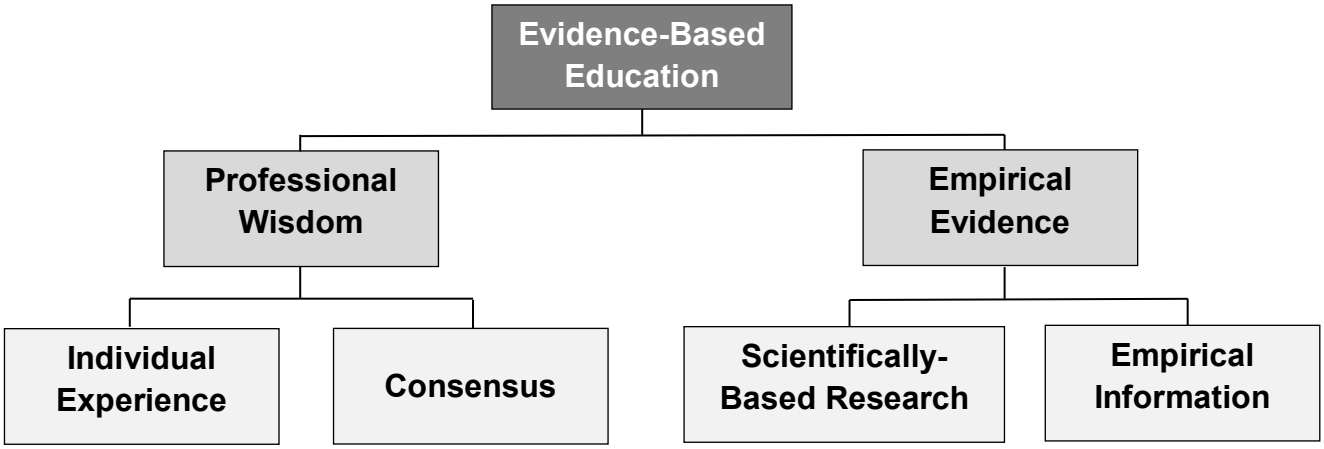
WHAT IS EVIDENCE - BASED EDUCATION?

Much of the following is taken from a power-point presentation: Evidence-Based Education (EBE), by Grover J. (Russ) Whitehurst, Assistant Secretary, Educational Research and Improvement, United States Department of Education.

Evidence-Based Education (EBE) is simply the integration of **professional wisdom** with the best available **empirical evidence** in making decisions about how to deliver instruction. Why are both needed? Without professional wisdom, education cannot adapt to local circumstances or operate intelligently in the many areas in which research evidence is absent or incomplete. Without empirical evidence, education cannot resolve competing approaches, generate cumulative knowledge, or avoid fad, fancy, and personal bias.

Professional wisdom is the judgment that individuals acquire through experience and consensus views. Increased professional wisdom is reflected in numerous ways, including the effective identification and incorporation of local circumstances into instruction.

Empirical Evidence is scientifically-based research from fields such as psychology, sociology, economics, and neuroscience, especially from research in educational settings. Empirical data on performance is used to compare, evaluate, and monitor progress.



(For Additional Research Specific to the Evidence-Based Education, See Appendix 1.)

DISCUSSION:

An interesting side to the before-mentioned OTA report is another report they published, Assessing the Efficacy and Safety of Medical Technologies. One example of the inadequacies of the scientific medical community follows: "In summary, mammography is a screening tool for early detection of breast cancer that has been widely used as a result of studies in the 1960's. Questions about its safety have recently been raised, and it has become a controversial technology. Many believe that technological improvements make it efficacious and safe for all women, but there is no scientific information derived through controlled studies to support such a view."[16] This appears to support Dr. David Eddy's, professor of health policy at Duke University, article in the British Medical Journal that only about 15% of medical interventions are supported by valid scientific evidence, and that one reason is that only about 1% of articles in biomedical journals are scientifically sound and another reason is that many treatments have never been assessed at all. He states that most confident statements in texts and medical journals have simply been handed down generation to generation.[17,25]

ABOUT THE AUTHOR

Dr. Dennis Eschbach attended St. Louis University and completed his undergraduate and post-graduate studies at Logan College of Chiropractic; receiving a Bachelor of Science in Human Biology and a Doctorate in Chiropractic. He is a licensed Chiropractor, certified in Advanced Animal Chiropractic by the AVCA, member and past board member of the AVCA, certified in Animal Chiropractic by the IVCA, member of the IVCA, and has had over 24 years experience in employing Animal Chiropractic Care in his private practice and over 18 years

experience in teaching animal chiropractic. He is part owner and Administrator of Options for Animals College of Animal Chiropractic, was a lead instructor in Animal Chiropractic at the Healing Oasis Wellness Center, was a visiting tutor in Animal Chiropractic at the Post-Graduate Foundation in Veterinary Science at the University of Sydney, Australia and was part of the initial team that set up the Masters Degree in Animal Chiropractic at the Royal Melbourne Institute of Technology in Melbourne, Australia. Dr. Eschbach currently teaches and lectures for institutions around the world; and on a regular basis at Options for Animals in the USA, the International Academy of Animal Chiropractic in Sittensen, Germany and at the International Academy of Animal Chiropractic presented at the Anglo-European College of Chiropractic in Bournemouth, England. He has written several books, including Principles and Practice of Basic Animal Chiropractic Adjusting Techniques & Treating the Quadruped with Basic Technique.

REFERENCES

1. United States Department of Education, www.ed.gov.
2. Nation Research Council (NRC), www.nationalacademies.org/nrc.
3. United States Law. Title 42, The Public Health and Welfare; Chapter 129, National and Community Service; National and Community Service Grant Program; General Provisions. 42 USCS§ 12511.
4. Lawrence Berkeley National Laboratory
5. United States Law. Title 20, Education; Chapter 76, Education Research, Statistics, Evaluation, Information, and Dissemination; Education Sciences Reform. 20 USCS § 9501 (12).
6. Council on Chiropractic Education (CCE), www.cce-usa.org.
7. Association of Chiropractic Colleges (ACC), www.chirocolleges.org.
8. International Veterinary Chiropractic Association (IVCA), www.i-v-c-a.com.
9. American Veterinary Chiropractic Association (AVCA), www.animalchiropractic.org.
10. American Veterinary Medical Association (AVMA), www.avma.org.
11. Feuer, Michael and Lisa Towne, The Logic and the Basic Principles of Scientific Based Research. Paper submitted to the National Research Council's Committee on Scientific Principles in Education Research.
12. United States Federal Appellate Courts, Chiropractic Antitrust Suit Wilk, et al., v. AMA, et al.
13. United States Federal Government Sherman Act, July 2, 1890, ch. 647, 26 Stat. 209, 15 U.S.C. § 1–7
14. The AMA Principles of Medical Ethics. (Now Principles 3, 5 & 6) http://www.ama-assn.org/ama/pub/physician-resources/medical-ethics/code-medical-ethics/principles-medical-ethics.shtml
15. "The New Zealand Report", the 1979 New Zealand Government investigation into chiropractic.
16. http://www.chiro.org/Wilk/
17. Chiropractic Antitrust Suit Wilk, et al., v. AMA, et al. (opinion p.7)
18. Chiropractic Antitrust Suit Wilk, et al., v. AMA, et al. (opinion p.12)
19. *The Appropriateness of Spinal Manipulation for Low-Back Pain; Project Overview and Literature*, Paul G. Shekelle, Alan H. Adams, Mark R. Chassin, Eric Hurwitz, Reed B. Phillips, Robert H. Brook, Rand Corporation, 1992

20. Changing Views of Chiropractic …and a National Reappraisal of Nontraditional Health Care, Rand Corporation, 2001.
21. *The Mercy Guidelines for Chiropractic Quality Assurance and Practice Parameters*, National Guidelines Clearinghouse (NGC), www.guideline.gov.
22. The Manga Report; A Study to Examine the Effectiveness and Cost-Effectiveness of Chiropractic Management of Low-Back Pain, The Ontario Ministry of Health, August, 1993.
23. *Low back pain of mechanical origin: randomised comparison of chiropractic and hospital outpatient treatment*, T W Meade, S Dyer, W Browne, J Townsend, and A O Frank, BMJ Jun 1990
24. http://www.chiro.org/Wilk/
25. Eddy, Dr. David, The British Medical Journal, October, 1991.
26. Chiropractic Research Alliance is a federally registered 501(c)3 non-profit organization dedicated to the advancement of Chiropractic through high quality research. www.chiropracticresearchalliance.org.
27. The Council on Chiropractic Guidelines and Practice Parameters (CCGPP); www.ccgpp.org.
28. Assessing the Efficacy and Safety of Medical Technologies, Congress of the United States Office of Technology Assessment, 1978. (p. 42)
29. *Changing Views of Chiropractic …and a National Reappraisal of Nontraditional Health Care*. Rand Corporation Research Brief, 2001.