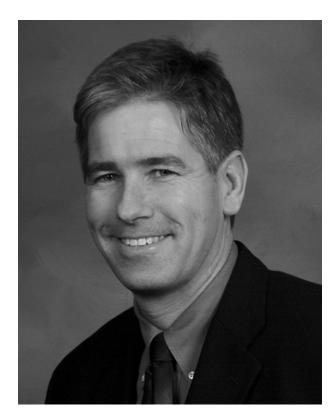
Collaborative Health Care

How Chiropractors began working in a Community Health Centre in Ottawa



Neil B. Baskerville, MHA, PhD (Candidate)
Department of Applied Health Sciences
University of Waterloo, Waterloo, Ontario



Dirk Keenan, BA, DC*
Carlington Community & Health Services Centre
Ottawa, Ontario

Introduction

This paper describes the evolution of the first volunteer chiropractic clinic in Canada that was initiated within an Ottawa Community Health Centre. The authors describe the development, challenges and outcomes of introducing chiropractic care within a medical environment and demonstrate collaboration between Chiropractors and Interdisciplinary Health Care Provider Teams.

The use of chiropractic services has grown dramatically over the last 10 years for those who are able to pay for

^{*} Dr. Dirk Keenan, 303 Harmer Avenue, Ottawa, Ontario, K1Y 3B3, (613) 728-9414.

the services. Today 4.5 million Canadians annually have overcome the barriers of cost, regulation, and non-referral to find their way to chiropractors' offices to seek treatment (CIHI, 2002). On May 18 2004, the provincial government of Ontario announced that, beginning in the fall 2004, chiropractic services would be "de-listed" from the Ontario Health Insurance Plan (OHIP). This action terminated more than 30 years of public funding for chiropractic services of which OHIP covered approximately 25% of the cost. The provincial government estimated the direct cost savings to the government to be \$200 million over two years. The action to de-list chiropractic services has implications on access to, cost of and quality of care for Ontario residents (Deloitte & Touche Consulting Services [DTCS], 2004). The inability to pay for chiropractic services acts as a significant deterrent for lower income groups (Manga, 2000). These groups' health needs are typically served by Ontario Community Health Centres. The integration of chiropractors into Ontario Community Health Centres (CHC's) allows for equitable access to chiropractic services to treat neuromusculoskeletal disorders and attain equal or better health outcomes for lower income patients as compared to medical treatment services alone (Bronfort, et al., 2001; Kjellman, et al., 1999). Integration of chiropractic and physician services through collaboration has the potential to reduce health care costs and resolve health human resource problems (Nelson, et al., 2003; Manga, 2000).

Historically, community health center (CHC) funding has included medicine, nurses, nutritionists, nurse practitioners, social workers, chiropody, and other para-medical professionals as part of the health promotion, disease prevention and health care of CHC clients. Clients needing treatment and physical rehabilitation of the spine are not able to obtain these services within CHC's, which necessitates external specialty appointments. Appointments are not easily made, as language issues and delays in initial consultations due to waiting lists make the timely assessment and treatment of spinal syndromes challenging. The cost of chiropractic services beyond that covered by OHIP also poses a significant barrier to CHC clients. In addition, research shows that new chiropractic patients have often been in the public system for six months and have not obtained relief from symptoms before finding their way to a chiropractor (Kirby, 2001). For lower income groups this represents six months of ineffective treatment, six months of discomfort, six months of unnecessary suffering, and six months of additional expense to the system.

Back pain is one of the leading causes of disability in Canada. Badley et al. (1995) found from an analysis of the 1990 Ontario Health Survey that musculoskeletal disorders ranked first in prevalence as the cause of chronic health problems, long-term disabilities, and consultations with health professionals, and that they ranked second for restricted activity days and use of both prescription and non-prescription drugs. A recent national survey by Environics Research (April, 2003) found that 66% of Canadians suffered from back pain in the last year. Of those 30% indicated that their pain lasted a month or more and 16% indicated that it was chronic. In addition, 55% cited cost as a barrier to seeking treatment, usually because of lack of coverage by provincial health plans or employee benefit plans. Evidence also suggests that musculoskeletal disorders are associated with rising age, lower levels of schooling, lower income and unemployment (Badley & Ibanez, 1994); population attributes that are identical to the majority of clients served by Ontario CHCs (Abelson & Lomas, 1990). Fifteen per cent of back pain sufferers report losing time off work ranging from a few days to a month or more and it is estimated that musculoskeletal disorders cost society a total of \$16.4 billion in direct (treatment and rehabilitation) costs and lost productivity (Environics Research, 2003). Only a third of patients with back pain are treated by chiropractors or other allied health professionals in Ontario per year (Aker et al., 1993; Environics Research, 2003). There is a great opportunity to improve the access to chiropractic services given the overwhelming evidence on the effectiveness and cost-effectiveness of chiropractic care (Hurwitz, et al., 2002; Bronfort, et al., 2001; Manga, 2000; Manga & Angus, 1998; Stano & Smith, 1996; Meade, et al., 1995; Manga, et al., 1993). The growing interest in complementary and alternative medicine (CAM) within mainstream medicine for degenerative and lifestyle conditions provides the impetus for closer investigation of the impact of an integrated and collaborative model of chiropractic care and the benefits to CHC clients, providers and the health care system (Menke, 2003).

In Ontario, the Primary Care Implementation Steering Committee (1997) reported that the integration of health service delivery could ensure continuity of care, optimise

effective and cost-effective care, address manpower shortages and promote health. Similarly, Leatt (2002) recommended in the synthesis of Federal Health Transition Fund studies on integrated service delivery that implementation of the integration agenda by government and health professions be accelerated. Finally, Romanow (2002) identified continuity and coordination of health care services as important underlying themes for a complete and effective primary care delivery system. Despite the recommended push to avoid duplication and integrate primary health care delivery across providers, there are still very few examples of integrated, collaborative practice involving chiropractic in the primary care system (D'Astofo, 2002). Several strategies have been proposed and evaluated to facilitate collaboration between health professional groups and their integration into primary care (Way & Jones, 1994; Kates, et al., 1997; Zwarenstein, et al., 1998; Way, et al., 2001). However, the establishment of collaborative practice between physicians and chiropractors in multidisciplinary settings, particularly in the United States, has met with varied success (Cooper & McKee, 2003; Triano, et al., 1997) Barriers to successful collaboration include provider competition and bias, philosophical differences, physicians' lack of knowledge of chiropractic interventions, lack of interdisciplinary practice models or frameworks, lack of evidence to support clinical efficacy, habitual bias, cultural bias and prejudice, legislative barriers, consumer attitudes, and lack of funding for services (Menke, 2003; D'Astofo, 2002; Sicotte, et al., 2002; Pelletier, et al., 1999; Astin, et al., 1998). Much of the failure to collaborate and integrate services stems from poor communication and coordination among health care workers (Shortell, et al., 1993; Leatt, 2002; Romanow, 2002).

The benefits from introducing chiropractic care into CHC's through an integrated primary health care provider collaborative care model include decreased waiting lists and waiting periods for some specialty referrals due to availability of chiropractic care for musculo-skeletal complaints. Studies have shown that patients have high satisfaction with chiropractic care compared to other approaches and that costs associated with treatment of lower back pain are less than medicine/physiotherapy (Menke, 2003; Hertzman-Miller, et al., 2002; Carey, et al., 1995; Shekelle, et al., 1995; Cherkin & MacCornack, 1989; Stano, 1993; Stano & Smith, 1996; Mosley, et al.,

1996; Manga, 2000). For example, reduction in the demand for advanced radiographic imaging as well as laboratory testing of blood and urine will result in cost savings to the health care system since chiropractors typically rely chiefly on less costly plain film imaging for diagnostic purposes. Reduced referrals for surgery and for pharmaceutical care associated with the introduction of chiropractic care into the CHC environment would be cost saving to the health care system. Finally, primary health care practitioners within CHC's may be able to reduce their case load by providing access to physical treatments to a population with health concerns that may not respond well to pharmacologically based treatments.

In January of 1997 the Eastern Ontario Chiropractic Society agreed to recruit chiropractors who would cover 9 treatment hours a week in a local community health centre. The chiropractors aim was to create a successful project in the Ottawa Community Health Centre that could serve as a model of collaboration in multi-disciplinary health care which would for the first time include chiropractors. The project involved the implementation of an interdisciplinary health care delivery strategy within a CHC setting using evidence-based clinical care guidelines (Canadian Chiropractic Association, 2002) to improve the level of collaboration between CHC health care providers and chiropractors. Looking back, Community Health Centres were in retrospect an obvious place to start. Over 75 of these health centres operate throughout Ontario providing a large menu of social and health services to their clients including medicine, chiropody, nursing, social work, counseling, physiotherapy, and psychiatry.

Developing consensus

One might assume that the doctors and staff of the CHC would be extremely pleased with the idea of having chiropractic care available, at no charge, to their clients. That was not the initial reaction we received. There were a few meetings required to answer questions and deal with concerns. To aid in the process of introducing the concept of the inclusion of chiropractic care into a community health centre, we presented a document to explain the protocols that we would use with patients, identify the risks, the types of conditions we would be treating, our scope of practice, and our treatment procedures. For everyone at the CHC, working with chiropractors would

be a new experience. For most of the chiropractors at that time, working in a multi-disciplinary environment would be a new experience for them as well. After the second meeting, a social worker on the committee representing the Carlington Community Health centre asked why we would want to take on an unpaid position in their CHC. As a group, we spoke to the idea of making a critical difference for the patients that had no access to a service that we felt was extremely important.

Finding a champion

The CHC's in Ottawa approach decisions through consensus building and we were fortunate to have a champion in the form of the Michael Birmingham, the Executive Director. Dr Michael Birmingham had been a chiropractic patient and understood the scope and effectiveness of chiropractic. He saw as well, that the physicians and nurse practitioners of the Carlington Community and Health Services Centre, would likely be more open to working with chiropractors because they were used to working multiple health disciplines, and treating more complex patients with many special needs and unique concerns.

On our team we had a chiropractor, who was also a family physician. It becomes easier to speak with the physicians about the benefits of chiropractic care, when we had a physician on our team who could confidently speak to our expertise in the diagnosis and treatment of patients within our scope of practice. Dr. Jeff Balon's role in highlighting the chiropractic case for the committee of medical doctors in the health centre was a significant factor in the speed in which we were able to gain their eventual support.

The unique patients of Community Health Centres

The patients served at community health centres in Ottawa included victims of incest, psychiatric patients, new Canadians, landed immigrants, transsexuals, and even victims of torture. It was thought that the chiropractor's set of skills and abilities might be very helpful in assisting in the health concerns of this very complex patient population. Like patients everywhere, Carlingtons' clients had issues around pain, disability, and musculo-skeletal problems that made them especially open to the services of chiropractors. More over, this population was generally unemployed or the working poor. There were

no financial resources available to them to receive chiropractic care without some type of funding. As a result, up until the chiropractors offered their services at no charge, there was no chiropractic treatment available to them.

Fiscal creativity

Community Health Centres operate on a very tight fiscal budget. Each program is allocated dollars and in many cases, programs are only funded from year to year. For the chiropractic clinic, there was no budget available, so the pilot had to be self-funded. OHIP funds were not available because of the agreements between the city and the CHC that required all funding to remain within the budget of social services only. As a result, no money could exchange hands and OHIP could not be billed. All chiropractic services had to be donated if they were going to be rendered.

The project was to last a minimum of 12 months. We lacked x-ray services so patients had to be sent to one of the local chiropractic offices with x-ray for OHIP only. There were no additional treatment rooms available, so a conference room was fashioned to hold a chiropractic table. There was no money available for the start up costs, so the Ontario Chiropractic Association and the Rotary Club of West Ottawa were approached and \$7000.00 was raised to get the clinic started with supplies and equipment.

Beginnings

The clinic was launched in May of 1997 in conjunction with spinal health week. A small budget was found to fund a position for a part-time receptionist who acted as a clinic coordinator. We were fortunate enough to have Dr. Jan Kemp, the OCA president at the opening as well as Dr. Robert Cushman the medical officer of health, and a few local politicians. We were interviewed by CBC radio and we had coverage in the local community newspaper. It was an exciting time because for the first time, chiropractic care was available in a community health centre and as well, chiropractors of the Eastern Ontario Chiropractic Society were in complete agreement and were following through on helping to create health choices for those patients with limited financial means who needed chiropractic.

Despite little or no advertising, the clinic patient roster grew fairly rapidly. Within a few short months, the clinic was fully booked and patients were reporting high satisfaction with the doctors who volunteered. It is interesting to note that in surveys of patients, the chiropractic program scored as high in patient satisfaction as any of the other programs and in fact, during the five years in operation there were only two complaints, both from the same patient. When reviewing the clinic operation and the large number of different chiropractors who volunteered, the potential for problems and conflicts with an oftenchallenging patient population, it was a significant accomplishment.

Measuring impact

A number of initiatives took place during the five-year operation. Two retrospective interviews of patients, chiropractors, physicians, nurse practitioners, and coordinators were taken to evaluate the clinic's efficiency and success. Several presentations at inter clinics, informal meetings, and luncheons were also a part of the ongoing attempts to improve communication and patient care. Alan Rock, Federal Health Minister at the time, during a special visit to tour Carlington, was made aware of the special contribution the chiropractors were making. The patients themselves provided a series of testimonials that were used to help bring attention to the clinic and its' unique patient population. Many of these were mailed to the provincial minister of health during earlier periods of difficulty with the Ontario government. From those experiences, the Community Health Centres became aware of chiropractic and its' unique niche in health care. The interest in having chiropractic care in other community centres was noted in the questions and inquiries that were fielded by the executive director at Carlington. This relationship was very positive and the CHC association of Ottawa-Carleton became a strong supporter of the chiropractic profession in a letter to the ministry of health and the premier because of the relationships that was created at Carlington.

Challenges

Any volunteer clinic has its share of challenges. We saw fewer doctors volunteering and burnout becoming a problem for a few doctors that could never say no. Some times the clinic had to close at the last minute and there were no doctors in reserve to go in if a chiropractor was sick or was delayed. Some patients were, for many reasons, somewhat unreasonable in terms of treatment needs and made demands that had to be managed carefully. The final reality came in the fall of 2003 when the looming cuts that needed to be made within the CHC started to impact the salary of the chiropractic health assistant that was being paid out of the CHC budget. Her salary was necessary to help keep the operation going smoothly. The chiropractic assistant's job was to interface with the patients, the CHC staff, the volunteer chiropractors, and the various levels of management. The assistant held the clinic together and without a paid assistant, the volunteer clinic could not continue. During the five year span, we were fortunate to have three excellent women who managed to keep patients, doctors, and Carlington Staff happy and engaged. Those three women were often the center of every issue and problem that took place and in most cases, handled most issues on their own smoothly and professionally.

In spite of the excellence of our staff and our volunteer chiropractors, the difficulty of keeping a volunteer clinic going after 5 years was becoming apparent. Some of the chiropractors themselves were becoming tired of volunteering with no end in sight. The patients were happy with the care and very grateful, but it was becoming more difficult to reassure them that the clinic was going to stay open. With funding cuts, we had to open fewer days form 9 per month to 6 and sometimes less. It was difficult because we knew that the clinic could not sustain itself indefinitely in its' present form. Something had to change. We began to mentally prepare ourselves for the possibility of closure of the clinic. It was, to be honest, a low point for everyone.

A new opportunity

Early in the spring we were advised by the Ontario Chiropractic Association, the Ontario Government launched it's own special health transitions fund which was a multi-million dollar fund to identify and study new methods of delivering health care with an emphasis on collaboration. We felt that our earlier work and the clinic's current activity could be very helpful in convincing evaluators that our proposed study could be useful in assessing the impact on health care that would take place with chiropractic services being introduced into a community health centre. We were able to create an excellent study team from the many relationships that had been created through the clinic. This



Five year Clinic Anniversary: From left to right, representing the OCA Drs. Dennis Mizel, Dirk Keenan, Paul Newton, Jacques LaQuerre, Geoffry Outerbridge, Mr. Garry Guzzo MPP, Jeff Balon, Bud Keenan, Eric Jackson, and Laurie Spratt.

team drafted a proposal that was ultimately accepted after several anxious months of waiting.

In the winter of 2004 the Carlington Clinic of Chiropractic closed its doors to patients. A letter was sent to them to let them know that the following summer the clinic would re-open and a funded clinic with one chiropractor would open in its place. The remaining months were needed to allow an impressively credentialed study team made up of chiropractors, medical doctors, epidemiologists, health economists and social scientists to design a study that would incorporate chiropractic services into three community health centres in Ottawa. The study team would review the literature on chiropractic and its' impact on health outcomes and create a study design to evaluate the impact of chiropractic care on that community of patients, health care practitioners, chiropractors, and health care costs. That study, involves two centres and began in August of 2004 to continue for an additional 20 months. The study award was significant. Over eight hundred and eighty thousand dollars would become available for us to study chiropractic within a community health centre.

Lessons learned

At the end of the day, the chiropractors succeeded in getting funding for their clinic, as well as funding for an

additional clinic that was created because of their tremendous success at Carlington. The experience provided an opportunity for collaboration with health care colleagues and a chance to contribute towards new health outcomes research in an unstudied population demographic. Two chiropractors eventually were hired to staff the community health centres and they are now accepted as contributing members of the health care team in those centres.

Summary

The activities of Eastern Ontario Chiropractic Society could be seen as a model that could be duplicated for chiropractors in the profession that are interested in advancing the interdisciplinary opportunities for the profession.

Acknowledgements

The authors gratefully acknowledge the chiropractors of the Eastern Ontario Chiropractic Society and the Members and Staff of the Carlington Community and Health Services Centre for their support in this project.

References

Abelson, J, Lomas J. Do health service organizations and community health centres have higher disease prevention and health promotion levels than fee-for-service practices?. CMAJ 1990; 142(6):575–581.

- Aker P, Hagino C, Mior S. Utilization of Chiropractic Services in Ontario, Canada. Abstracts of Original Research 1993: World Federation of Chiropractic.
- Astin JA, Marie A, Pelletier KR, Hansen E, Haskell WL. A review of the incorporation of complementary and alternative medicine by mainstream physicians. Arch Intern Med 1998; 158:2303–2310.
- Badley EM, Ibanez D. Socioeconomic risk factors and musculoskeletal disability. J Rheumat 1994; 21(3):515–522.
- Badley EM, Webster GK, Rosooly I. The impact of musculoskeletal disorders in the population: are they just aches and pains? Findings from the 1990 Ontario Health Survey. J Rheumatol 1995; 22:733–739.
- Baldwin M, Cote P, Frank J, Johnson W. Cost-effectiveness studies of medical and chiropractic care for occupational low back pain: a critical review of the literature. The Spine Journal 2001; 1:138–147.
- Bergin B. The Carlington Chiropractic Clinic: An Operational Review and Recommended Action. Ottawa 2003: Author.
- Bronfort, G, Assendelft WJ, Evans R, Haas M, Bouter L. Efficacy of spinal manipulation for chronic headache: a systematic review. J Manipulative Physiol Ther 2001; 24(7):457–466.
- Bronfort G, Haas M, Evans RL, Bouter LM. Efficacy of spinal manipulation and mobilization for low back pain and neck pain: a systematic review and best practice synthesis. The Spine Journa 2004; 4:335–356.
- Canadian Chiropractic Association. (2002). Clinical Guidelines for Chiropractic Practice in Canada. Retrieved 05 30, 2003, from http://www.ccachiro.org/client/cca/ccaweb.nsf/web/home+page+engli sh?OpenDocument
- Canadian Institute for Health Information (CIHI). Health Care in Canada 2002. Ottawa: Canadian Institute for Health Information.
- Carey TS, Garrett J, Jackman A, McLaughlin C, Fryer J, Smucker DR. The outcomes and costs of care for acute low back pain among patients seen by primary care practitioners. New England Journal of Medicine 1995; 333:913–917.
- Chaudhary MA, Stearns SC. Estimating confidence intervals for cost-effectiveness ratios: an example from a randomized trial. Statistics in Medicine 1996; 15:1447–458.
- Chaudhary MA, Stearns SC. Estimating confidence intervals for cost-effectivness ratios: An example from a randomized trial. Statistics in Medicine 1996; 15:1447–1458.
- Cherkin DC, MacCornack FA. Patient evaluations of low back pain care from family physicians and chiropractors. Western Journal of Medicine 1989; 150(3):351–355.
- Cooper RA, McKee HJ. Chiropractic in the United States: Trends and issues. Milbank Q 2003; 81(1'):107–138.
- Coyle D, Davies L, Drummond MF. Trials and tribulations. Emerging issues in designing economic evaluations alongside clinical trials. International Journal of Technology Assessment in Health Care 1998; 14:135–144.

- D'Astofo CJ. The Next Step? What it would take to integrate chiropractic into the hospital and primary care systems of Ontario. Canadian Chiropractor 2002, pp. 14–17. Retrieved 05 31, 2003, from http://www.canadianchiropractor.ca/News.htm?CD=652&ID=1542
- Deloitte & Touche Consulting Services. (2004). Impact of delisting chiropractic services. Toronto: Deloitte & Touche LLP
- Drummond MF, O'Brien B, Stoddart GL, Torrance GW. Methods for the Economic Evaluation of Health Care Programmes 1999 (2nd ed.). Oxford, Great Britain: Oxford University Press.
- Efron B, Tibshirani RJ. An Introduction to the bootstrap. New York 1993: Chapman & Hall.
- Environics Research. Life in Canada a Pain in the Back: National Survey. (April, 2003). Retrieved 06 23, 2003, from http://www.canada.com/health/
- Evans WK, Coyle D, Gafni A, Walker H. Which cancer clinical trials should be considered for economic evaluation? Selection criteria from the National Cancer Institute of Canada's Working Group on Economic Analysis. Chronic Diseases in Canada 2003; 24(4):11.
- Goossens M, Rutten-van Molken M, Vlaeyen J, van der Linden S. The Cost Diary: A Method to measure direct and indirect costs in cost-effectiveness research. Journal of Clinical Epidemiology 200; 53:688–695.
- Grimshaw J. Shirran L, Thomas R, Mowatt G, Fraser C, Bero L, et al. Changing provider behaviour: An overview of systematic reviews of interventions. Medical Care 2001; 39(8):(suppl)), II–2–II–45.
- Hertzman-Miller RP, Mergenstern H, Hurwitz EL, Yu F, Adams AH, Harber P, et al. Comparing the satisfaction of low back pain patients randomized to receive medical or chiropractic care: Results from the UCLA low-back pain study. American Journal of Public Health 2002; 92(10):1628–1633.
- Hurwitz EL, Morgenstern H, Harber P, Kominski GF, Belin TR, Yu F, et al. A randomized trial of medical care with and without physical therapy and chiropractic care with and without physical modalities for patients with low back pain: 6 month follow-up outcomes from the UCLA back pain study. Spine 2002; 27(20):2193–2204.
- Kates N, Craven M, Crustolo AM, Nikolaou L, Allen C. Integrating mental health services within primary care: A Canadian program. General Hospital Psychiatry 1997; 19(5):324–332.
- Kirby, M. (2001). Presentation to the Standing Senate Committee on Social Affairs, Science and Technology. Retrieved 05 30, 2003, from http://www.ccachiro.org
- Kjellman GV, Skargren EI, Oberg BE. A critical analysis of randomised clinical trials on neck pain and treatment efficacy. A review of the literature. Scand J Rehabil Med1999; 31(3):139–152.

- Koopmanschap MA, Rutten FF. A practical guide for calculating the indirect cost of disease. Pharmaeconomics 1996; 10:440–466.
- Korthals-de Bos I, Hoving JL, van Tulder MW, Rutten-van M, Ader HJ, de Vet H, et al. Cost effectiveness of physiotherapy, manual therapy, and general practitioner care for neck pain: economic evaluation alongside a randomized controlled trial. BMJ 2003; 326:911.
- Korthals-de Bos I, van Tulder M, van Dieten H, Bouter L. Economic evaluations and randomized trials in spinal disorders: Principles and methods. Spine 2004; 29(4):442–448.
- Leatt P. (2002). Integrated Service Delivery: Synthesis Series, Sharing the Learning: The Health Transition Fund. Retrieved 05 30, 2003, from http://www.hc-sc.gc.ca
- Logan J, Harrison MB, Graham ID, Dunn K, Bissonnette J. Evidence-based pressure-ulcer practice: The Ottawa Model of Research Use. Canadian Journal of Nursing Research 1999; 31(1):37–52.
- Manga P. Economic case for the integration of chiropractic services into the health care system. J Manipulative Physiol Ther 2000; 23(2):118–22.
- Manga P, Angus D. (1998). Enhanced Chiropractic Coverage Under OHIP as a Means of Reducing Health Care Costs, Attaining Better Health Outcomes and Achieving Equitable Access to Health Services. Retrieved 05 30, 2003, from http://www.chiropractic.on.ca/main.html
- Manga P, Angus D, Papadopoulous C. (1993). The effectiveness and cost-effectiveness of chiropractic management of low-back pain. Richmond Hill, Ontario: Kenilworth Publishing.
- Meade TW, Dyer S, Browne W, Frank AO. Randomised comparison of chiropractic and hospital outpatient management for low back pain: Results from extended follow-up. British Medical Journal 1995; 311:349–351.
- Menke JM. Principles in integrative chiropractic. Journal of Manipulative and Physiological Therapeutics 2003; 26(4):254–271.
- Millar W. Use of alterntative health care practitioners by Canadians. Canadian Journal of Public Health 1997; 88(3):154–158.
- Mior SA, Barnsley J, Ashbury F, Boon H, Haig R, Abeygunawardena H. (November, 2002). Designing a Model for Collaborative Health Care Delivery: Chiropractic Services and Primary Care Networks. Final Report Submitted to Ministry of Health and Long Term Care.
- Mosley CD, Ilana GC, Arnold RM. Cost-effectiveness of chiropractic in a managed care setting. The Amercian Journal of Managed Care 1996; 2:280–282.
- Nelson CF, Metz D, Legorreta A, LaBrot T. (2003, May). Effects of Inclusion of a Chiropractic Benefit on the Utilization of Health Care Resources in Managed Health Care Plan. World Federation of Chiropractic 7th Biennial Congress. Orlando, Florida.

- Netting FE, Williamns FG. Case manager-physician collaboration: implications for professional identity, roles, and relationships. Health Soc Work 1996; 21(3):216–224.
- Pelletier KR, Astin JA, Haskell WL. Current trends in the integration and reimbursement of complementary and alternative medicine by managed care organizations (MCOs) and insurance providers: 1998 update and cohort analysis. Amer J Health Promotion 1999; 14(2):125–133.
- Romanow RJ. (2002). Building on Values: The Future of Health Care in Canada Final Report. Commission on the Future of Health Care in Canada. Ottawa, Ontario: Health Canada.
- Shekelle PG, Markovich M, Louie R. Factors associated with choosing a chiropractor for episodes of back pain care. Medical Care 1995; 33:842–850.
- Shortell SM, Gillies RR, Anderson DA, Mitchell JB, Morgan KL (1993). Creating organized delivery systems: the barriers and facilitators. Hospital and Health Services Administration, Winter, 447–466.
- Sicotte C, D'Amour D, Moreault MP. Interdisciplinary collaboration within Quebec Community Health Centres. Soc Sci Med 2002; 55(6):991–1003.
- Stano M. A comparison of health care costs for chiropractic and medical patients. J Manipulative Physiol Ther 1993; 16(5):291–299.
- Stano M, Smith M. Chiropractic and medical costs of low back pain. Medical Care 1996; 34(3):191–204.
- Stewart AL, Hays RD, Ware JE. The MOS short-form general health survey. Reliability and validity in a patient population. Medical Care 1998; 26(7):724–735.
- Thompson SG, Barber JA. How should cost data in pragmatic tirals be analysed? BMJ 2000; 320:1197–1200.
- Triano JJ, Hansen DT. Chiropractic and quality care, are they exclusive?. QME Quarterly 2000; 3(1):6–15.
- Ware JE. SF-36 Health Survey Update. Spine 2000; 25(24):3130–3139.
- Way DO, Jones LM. The family-physician nurse practitioner dyad: indications and guidelines. CMAJ 1994; 151(1):29–34.
- Way D, Jones L, Baskerville B, Busing N. Primary health care services provided by nurse practitioners and family physicians in shared practice. CMAJ 2001; 165(9):1210–1214.
- Weeks J. The emerging role of alternative medicine in managed care. Drug Benefit Trends 1997; 9(4):14–16, 25–28.
- Willan AR, O'Brien BJ. Sample size and power issues in estimating incremental cost-effectiveness ratios from clinical trials data. Health Economics 1999; 8:203–211.
- Zwarenstein M, Bryant W, Baillie R, Sibthorpe B. (1998). Interventions to promote collaboration between nurses and doctors [Cochrane Review]. In the Cochrane Library. Oxford: Update Software.