ENHANCED CHIROPRACTIC COVERAGE UNDER OHIP AS A MEANS OF REDUCING HEALTH CARE COSTS, ATTAINING BETTER HEALTH OUTCOMES AND ACHIEVING EQUITABLE ACCESS TO HEALTH SERVICES*

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February, 1998

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EXECUTIVE SUMMARY

1. The deterrent effect of existing copayments or user fees for chiropractic care is now very high, and represents a major barrier to access for most Ontarians. Patients are steered away from chiropractic care to medical management which is free under OHIP.

2. The OCA proposes improved access to chiropractic services through enhanced coverage under OHIP, specifically that OHIP would cover 75% of the fee per visit, 100% for the elderly and the poor. The additional sum required for this policy is $200 million by the third year, i.e. 2000.

3. This reform will result in the doubling of the proportion of the public that visits chiropractors in Ontario from 10% to 20%. It will also mean that these patients will visit chiropractors sooner for their problems. Currently 4 out of 5 chiropractic patients have had their disorders for over 6 months and many have already had extensive medical diagnosis and treatment.

4. Expenditure to improve access to chiropractic services, and the changed utilization patterns it produces, will lead to very substantial net savings in direct and indirect costs. Direct savings to Ontario's health care system may be as much as $770 million, will very likely be $548 million, and will be at least $380 million. The corresponding savings in indirect costs - made up of the short and long term costs of disability - are $3.775 billion, $1.849 billion and $1.255 billion.

5. The reasons why such substantial savings will accrue include:

    1) Approximately 95% of chiropractic practice in Ontario involves the management of patients with neuromusculoskeletal disorders and injuries.

    2) Musculoskeletal disorders and injuries are the second and third most costly categories of health problems in economic burden of illness studies. Musculoskeletal disorders are also among the most important reasons for activity limitations and short-term disability. They rank first in prevalence in chronic health problems and first as a cause of long-term disability.

    3) Musculoskeletal disorders rank first as a reason for consultation with a health professional in Ontario, and rank second as a reason for the use of prescription and non-prescription drugs.

    4) The poor and lower-middle income groups and the elderly are low users of chiropractic mainly due to the deterrent effect of the high copayments or user fees.

5) Yet the prevalence of neuromusculoskeletal conditions is highest among these socio-economic groups.

6) There is considerable empirical support for the cost-effectiveness and the safety of chiropractic management of musculoskeletal disorders. This means that chiropractic care can bring about improved health outcomes at a lower cost.

6. The proposed reform is consistent with the Government of Ontario's health care reform agenda and business plan.

7. The reduction in health care costs is consistent with the Government's emphasis on value for money and its objectives of reducing hospital and drug expenditure, and the fiscal objectives of reducing the deficit and the levels of taxation.

8. An interesting variation and an improvement on the OCA's proposed reform is to make the patient's first visit to a chiropractor free of any copayment. This would further enhance access and increase net savings.

9. The Ministry of Health of Ontario should employ chiropractors on a salaried basis in hospitals, community health centres, and long-term care institutions.

10. More workers with neuromusculoskeletal disorders covered by the Workers' Safety and Insurance Board should be channelled to chiropractic care.

11. Medical doctors and chiropractors are both substitutes for and complementary to each other in the management of neuromusculoskeletal conditions and injuries. Interprofessional relations between the two have improved over the years, and is evidenced by official pronouncements and greater inter-referral of patients between the two professions.

12. Significant reduction of health care costs, improved health outcomes, and equitable access to services are all important objectives for the Ontario health care system. Any one would be sufficient reason for the proposed reform in funding for chiropractic services. The fact that this reform meets all three objectives makes the case urgent and compelling.

INTRODUCTION

This is a special report written for the OCA in its continuing dialogue with the Ministry of Health of Ontario which, like all provinces in Canada, is considering major health care reform. The principal conclusion of the report is that greater OHIP coverage of chiropractic services is part of the solution to a set of three interrelated problems:

(a) high health care costs for neuromusculoskeletal conditions and injuries
(b) inadequate and inequitable access to such services
(c) poor or worrisome health outcomes of medically managed neuromusculoskeletal diseases, illnesses or injuries.

Greater chiropractic coverage under public health insurance plans can improve health outcomes, significantly reduce health care costs, and improve accessibility to needed health services on the part of several socio-economic groups who under the current OHIP coverage do not have adequate access to care.

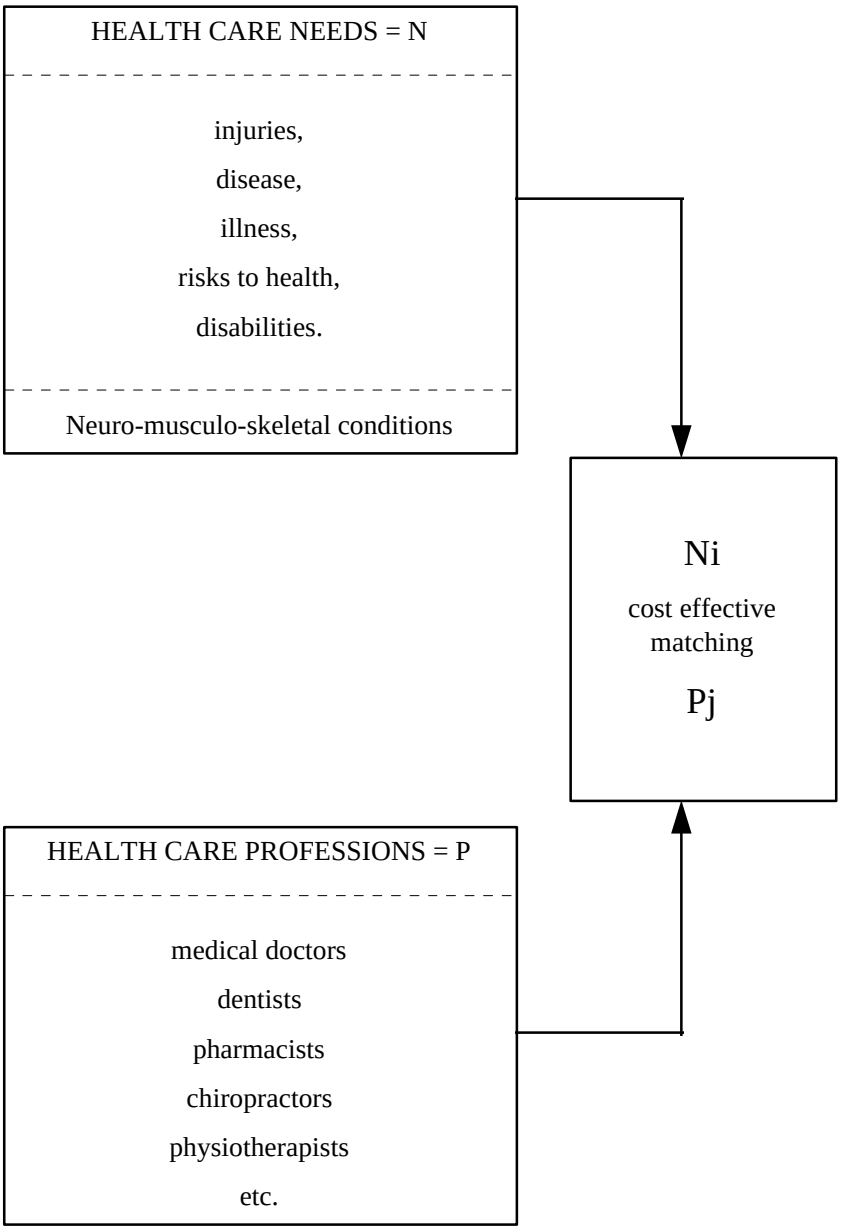
The central argument that leads us to this conclusion is that chiropractors are highly cost-effective alternative providers of care for neuromusculoskeletal conditions. In what follows, the meaning of alternative provider of care is discussed. This is followed by a presentation of empirical evidence in support of this concept and the claim of significant cost-savings, improved access and better health outcomes. We then offer estimates of the savings in health care costs from enhanced coverage of chiropractic care under OHIP. Finally, some health policy and health insurance implications of all of the above are offered.

CHOOSING BETWEEN ALTERNATIVE PROVIDERS OF CARE

Figure 1 illustrates one of the essential health care delivery problems that public and private insurance authorities face in providing health care services. In this figure "health care needs" consist of the incidence and prevalence of diseases, illnesses, injuries, disabilities and risks to health. These needs generate a demand for a wide range of health care services. Such services are offered by a number of health care professions, some of whom are uniquely competent to respond to some of the needs of the public.

However for many of the needs, and the example given here is neuromusculoskeletal conditions which include spinal pain, sciatica and headache, two or more professions may be more or less competent to offer the needed care. Under such situations the proper objective of the insurance plan authorities is to bring about the most cost-effective pairing of specific health care needs and health care providers. Where there is a choice in matching needs with competing professions, there is a concomitant opportunity for health care reform. Needless to say the cost-effective matching of needs and caregivers should be based on evidence and not merely on tradition and the unquestioned acceptance of the status quo.

FIGURE 1
MATCHING NEEDS AND SERVICES
A Fundamental Health Care Delivery Issue



If we are serious about health care reform, we ought to be principally interested in answering the question: given that certain services must be provided to patients, which of the alternative caregivers who have been educated and trained to provide the services can provide them most appropriately and cost-effectively, having regard also to quality of care, safety of treatments and patient preferences? This is the classic manpower substitution or health human resources substitution question. It is a question about professional turf as well, because it raises the issue of who should provide care to patients with specific needs. Huge savings are certain if such substitutions are carefully implemented. Examples include substituting family practitioners for specialists, midwives for obstetricians for uncomplicated deliveries, nurses practitioners for general practitioners, dental hygienists for dentists; pharmacy technicians for pharmacists and so on (Manga and Campbell, 1994). There are literally dozens of studies pointing to such evidence-based manpower substitution but for a variety of professional, political, insurance practices and other administrative reasons, many of those health human resources substitutions have yet to occur.

There is an immense amount of research aimed at discovering which of the several professions is best able to treat or manage specific health problems, assuming that they are all more or less competent and qualified to do so. It is assumed that the different professions bring to bear quite different diagnostic and therapeutic models, approaches or paradigms to the health problem that must be dealt with. For example, osteopaths, medical doctors, physiotherapists and chiropractors, all claim to be able to deal with low-back pain or neck pain or other neuromusculoskeletal conditions. Medical doctors and chiropractors both can and do deal with various kinds of headaches. We are referring to the patient's *problem* being more or less *managed entirely* by one or another *alternative caregiver*. It thus follows that if an insurance plan, public or private, chooses one caregiver rather than another, there will be implications for both the effectiveness and the costs of the care thus rendered. A wrong choice would lead to poorer outcomes or higher costs or a combination of the two.

This form of substitution has traditionally received very little attention but is now assuming greater importance and relevance. We note that the importance of matching needs with the most cost-effective caregiver is not obviated nor reduced by the development of clinical practice guidelines (CPGS). There are far too few CPGS in medicine. Worse, in most countries, and in Canada specifically, it is up to medical doctors to integrate and use CPGS in their clinical practice. Only half of medical doctors use CPGS at least once a month, and less than a third report having changed their practice even once in a year because of CPGS (Hayward et al. 1997). Medical doctors have little confidence in CPGS prepared by private health insurance plans (3%); provincial governments (9%) and federal government (16%); though 75% have confidence in CPGS prepared by official medical organizations. However there is little use of these guidelines. In the case of back pain no Canadian guidelines have been developed and very few Canadian doctors use the CPGS developed by the American Agency for Health Care Policy and Research (AHCPR), which have been corroborated by British guidelines (Dyer, 1997). “Both the American and British guidelines were

products of exhaustive literature searches... (and) represent a substantial shift from the traditional approach." (Deyo, 1996, 1343). These facts make the importance of a cost-effective matching of needs with any qualified caregivers, all the more compelling and urgent.

Traditionally, virtually all health care problems were managed almost exclusively by medical doctors. High costs and poor outcomes have forced us to question this assumption, as have the emergence of competing professions and the demand by the public to have the right to choose the caregiver. As a result, both private and public insurance systems are now asking the question that should have been addressed many decades ago: which caregiver is most cost-effective in managing an episode of a specific problem? Indeed, the answer to this question should have been the basis of organizing the health insurance plans. Instead, our insurance plans presuppose just one type of gatekeeper and caregiver, and relegate all others as subservient, subordinate or complementary to the medical profession. To put it yet another way, the creators of insurance plans did not ask what health conditions and care should be insured and then determine who should provide the thus identified care. They merely assumed that all patients needed the care offered or ordered by medical doctors. This exclusivity and monopoly is bred into the very design of insurance plans.

"Safety and consumer protection issues are often cited as reasons for restricting non-physician services. But the restrictions appear not to be based on empirical findings. Studies have repeatedly shown that qualified non-physician providers - such as midwives, nurses, and chiropractors - can perform many health and medical services traditionally performed by physicians - with comparable health outcomes, lower costs, and high patient satisfaction" (Blevin, 1995, 1).

Chiropractors and medical doctors are not only substitutes for one another but complement each other in the treatment of neuromusculoskeletal (NMS) conditions. Both substitution and complementarity are a result of the fact that there is considerable overlap in the specific conditions they treat. There is also an asymmetry in this relationship in that medical doctors are substitute providers of care for virtually every patient chiropractors treat but chiropractors are substitutes for only some of the patients medical doctors treat. Medical doctors, after all, provide a far greater range of services than chiropractors. One economic implication of this observation is that chiropractic care is thus likely to be much more sensitive to user fees, copayments, coinsurance and so forth than medical care. This is in fact borne out by empirical evidence as we point out later in this report.

COSTING AN EPISODE OF ILLNESS, DISEASE, OR INJURY

Consider Figure 2 below. Those in the total population, who need to obtain professional care for NMS conditions have a choice of seeing medical doctors (MD), doctors of chiropractic (DC), physiotherapists (PT), osteopaths (DO) or others, but for the sake of simplicity we will consider just two of the professions, namely DCs and MDs.

It is important to measure the full costs of managing an episode of a specific health condition no matter which caregiver is chosen to manage it. An episode of low-back pain, managed by a family practitioner for instance, must include the cost of drugs, diagnostic imaging and tests, the referrals to PTs or medical specialists, and hospitalization, if such costs were involved in managing the episode of low-back pain. If DCs manage such cases, the cost of X-rays and other therapeutic modalities must also be included. Just looking at fees paid to the professional caregivers is inadequate and gives an erroneous view of who is most cost-effective. This may seem obvious, but many studies make surprising mistakes in this area.

Another important point that needs to be emphasized here is that the alternative caregivers are and can be substitutes for one another. A patient need not get care from 2 or more different caregivers. This does not, however, preclude patients from getting care from two or more caregivers if the situation warrants it or if there were important complementarities between them and referral is legitimate and necessary. As well, and very importantly, if a patient cannot get a satisfactory resolution of his/her condition from one profession one would naturally expect the patient to obtain care from an alternative professional. It is this very point that should compel the insurance plans to get the right answer to the question: which of the alternative caregivers will offer the most cost-effective therapy for patients with a specific health problem. For patients to go to the wrong or suboptimal caregivers first (for reasons of habit, convention, design of insurance plans, low or no cost, etc.) only to then have to go to the more optimal caregiver later clearly implies unnecessary costs of care and poorer health outcomes.

Figure 2 underscores the need to include and aggregate all costs for the entire episode of illness or injury. It so happens that DC management of many conditions is highly "own-labour" intensive (i.e. doctors of chiropractic provide mostly hands-on therapy and very little else), whereas medical management is a lot more complex and costly involving one or more prescription drugs; referrals to other caregivers including specialists and physiotherapists; laboratory tests and diagnostic imaging, and sometimes hospitalization as well. The literature on costing medical and chiropractic management of low-back pain shows that payments to chiropractors for their own services constitute more than 80% of the costs per episode. In the case of medical management the payments to medical doctors is only about 23% of the costs per episode (Manga et al. 1993). Costing out an entire episode of care cannot be done with existing data systems in Canada, though it can and has been done elsewhere.

In our review of the literature - presented later in the report - we did not encounter a single study that measured the direct health care costs of an episode of illness fully. However, a few studies came close to doing so.

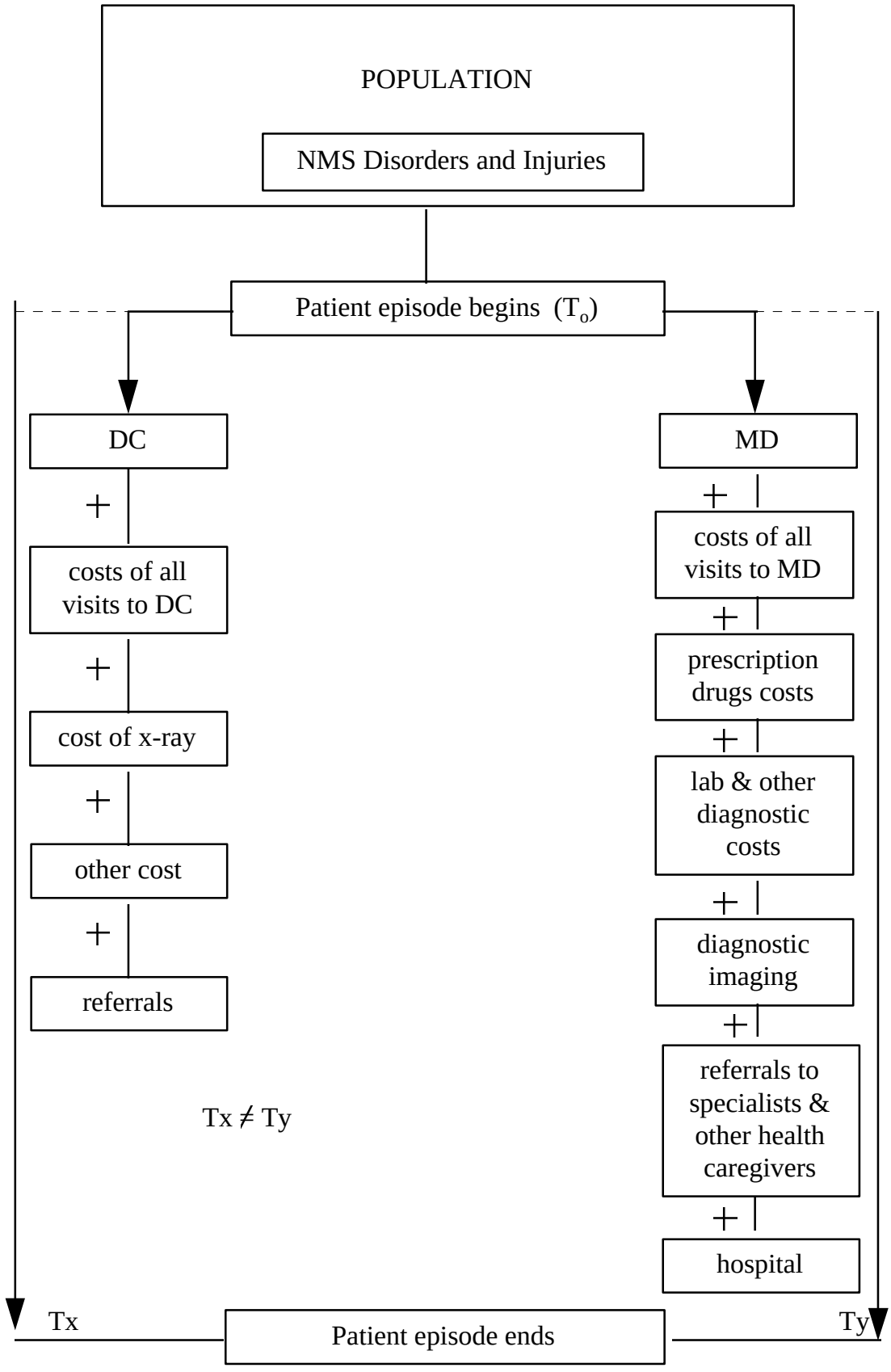
Even Figure 2 does not represent the full extent of the economic cost differentials between medical doctors and chiropractors. Firstly, some important direct costs are not included in the figure. For example, non-prescription drugs are a significant cost for some neuromusculoskeletal conditions. Secondly and most significantly, Figure 2 only looks at treatment costs or direct costs, and not a range of indirect costs. These are often larger than direct treatment costs for many NMS conditions because of the high burden of disability associated with such conditions (e.g. back pain, sciatica, headache).

In Figure 2, Tx need not equal Ty and in fact is not likely to given the very different treatment philosophies and approaches of medicine and chiropractic. Thus the duration of episodes may be different, but it is the cost incurred for the whole episode that must be the key statistic of interest in a proper evaluation. The other key parameters of interest are, of course, the effectiveness of medical and chiropractic management, the safety of the treatment and patient acceptance and preference for the different therapies and caregivers.

A medically managed episode of care involves many cost items often not recognized in some studies comparing medical and chiropractic management of illnesses and injury. This is specially true for some conditions such as low-back pain. Apart from data difficulties and proper analytical methodologies, there is also the problem of defining the "episode" of illness, injury or disease itself. When does it begin and, more problematically, when does it end? This is a subtle but extremely significant point. Comparing costs per episode for two professions is only legitimate if both professions were equally successful in resolving their patients health problems. The concept of cost per episode is a preferred concept for purposes of analysis but, as we explain later, is a source of error that invalidates some study findings.

FIGURE 2

MEASURING THE DIRECT HEALTH CARE COST OF EPISODES OF NMS DISORDERS



Unfortunately, there is no comparative data of the kind suggested in Figure 2 in Canada. We simply do not have the medical or chiropractic costs per episode for any of many specific diagnosis that are collectively referred to as neuromusculoskeletal conditions and injuries. Such data would naturally facilitate an economic assessment of substituting chiropractic management for medical management of NMS conditions or injuries. Even if we had such comparative costs data, we would still need additional data for evaluating the overall effect of enhanced OHIP coverage of chiropractic services. We would need to know exactly how the enhanced coverage would affect the level of fees for chiropractic visits, and especially its impact on the out-of-pocket (co-payment) costs to patients. In this study we assume that the patient copayment per visit, presently approximately $18, will be $10 or less after three years. Greater OHIP coverage must lead to a reduction in the co-payments paid by patients in order to improve access to chiropractic care and increase the rate of utilization as measured by the proportion of the Ontario population that visit chiropractors for needed care.

PATIENT FLOWS FOR NMS DISORDERS

Figure 3 illustrates the main pathways by which changes in patient flows may occur. Currently, an overwhelming majority of patients with NMS conditions and injuries visits medical doctors first. A staggering 81% of patients of chiropractors have had their back pain or other NMS disorders for more than 6 months (Aker et al., 1993) and typically would have had extensive medical and/or physiotherapy care up to the time they decide to see a chiropractor. This suggests both an enormous amount of unnecessary direct and indirect cost and worsening health of the patients. The high co-payment is a deterrent for the public to visit chiropractors. A significant reduction in this co-payment will have the effect of increasing the proportion of first visits to DCs. How large this effect will be depends upon principally (a) the size of the reduction in the co-payment patients must pay when they visit chiropractors and (b) the extent and nature of the public education efforts undertaken by the chiropractic profession and the Government of Ontario.

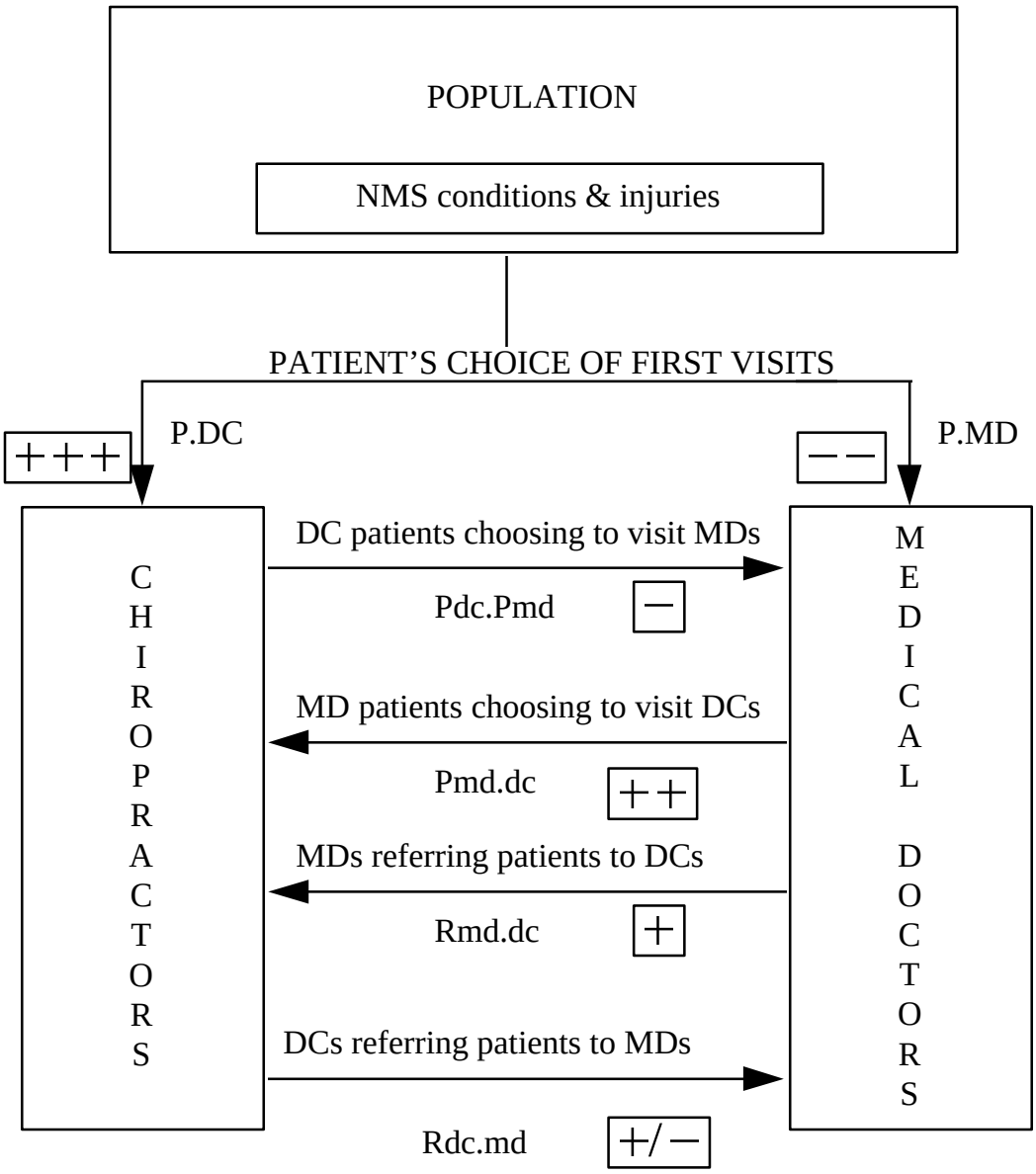
As shown in Figure 3, a reduction in co-payments will also lead to several other effects that would tend to raise the utilization of chiropractic services. A lower co-payment will surely mean that patients who first visited MDs for care and are unsatisfied with the care or the outcomes of care will likely switch over to chiropractors both in bigger numbers and sooner. Conversely, DC patients are less likely to switch over to MDs if the costs for DC care is reduced. In other words, chiropractors are likely to retain more of their patients if the co-payments are reduced significantly.

It is reasonable to speculate that MDs will increase their referrals of patients to DCs. Greater coverage under OHIP will enhance the legitimacy of chiropractic care to both the public and all the health care professions. The lower co-payment to patients would also encourage MDs to refer their patients to DCs. There is widespread belief and some evidence that MDs are referring patients to DCs in greater numbers already. A survey of Ontario family physicians by Patel-Christopher (1990) indicated that 62% were referring patients to chiropractors and that the rate was increasing for

musculoskeletal disorders. Interestingly 9.5% of physicians had received chiropractic care themselves. Scientific evidence, and clinical guidelines are underscoring the effectiveness of chiropractic management of NMS conditions. The trend will simply be reinforced and given further impetus by the enhanced coverage of chiropractic services under OHIP.

It is difficult to say whether referrals by chiropractors to MDs will increase or decrease under this broad policy change. A reasonable conjecture might be that the rate at which chiropractors will refer their patients to MD will not change, but that there will be more timely referral of patients who need medical care.

FIGURE 3
PATIENT FLOWS FOR NEUROMUSCULOSKELETAL CONDITIONS AND INJURIES



□ = the likely on patient flows from enhanced coverage of chiropractic care under OHIP.

+++ = very significant increase

−− = very significant decrease

\+ = increase

− = decrease

NEUROMUSCULOSKELETAL DISORDERS

There are statistical reasons for our main focus on NMS conditions in this analysis. About 96% of chiropractic care in Ontario is for patients with NMS disorders, with 67% for back pain, 6% for headaches, 16% for arthritis and rheumatism. At present about 33% of back pain suffers in Ontario are eventually treated by chiropractors (Aker et al., 1993).

An analysis of the 1990 Ontario Health Survey found that musculoskeletal disorders ranked first in prevalence as the cause of chronic health problems, long-term disabilities, and consultations with a health professional, and that they ranked second for restricted activity days and use of both prescription and non-prescription drugs. No other body systems ranked invariably within the top 2 ranks for the morbidity indices examined (Badley et al., 1994). There is also evidence that musculoskeletal disability is associated with rising age, lower levels of schooling, lower income and unemployment (Badley and Ibanez, 1994).

Another important economic indicator is that the incidence and prevalence of NMS disorders are increasing over time. The epidemiological data on back pain is expansive and shows a clear upward trend for both men and women (Manga et al. 1993). The prevalence of arthritis and rheumatism increased from 14% in 1978-79 to 21% in 1991; for migraines from 6% in 1978-79 to 9% in 1991 (Statistics Canada, 1994). NMS disorders are common among working age men and women and the elderly. They also tend to be more prevalent among the lowest and lower middle income populations (Statistics Canada, 1994). Back problems and arthritis are the first and second most common causes for long-term activity limitations among the population aged 15 and over (Statistics Canada, 1994). In another Statistics Canada report it is noted that "the majority of the household population aged 55 and over - 72% of men and 78% of women, 4.3 million people altogether - reported having at least one chronic condition in 1994-95." The relatively high prevalence of musculoskeletal problems is consistent with the results of earlier Canadian surveys (Wilkins and Park, 1997, p. 8).

Wilkins and Park (1997) analysed the 1994-95 Natural Population Health Survey and generated the percentage of people over the age of 15 hospitalized in the previous 12 months by age and sex for various illnesses. For arthritis/rheumatism the male and female figures respectively were 13.9% and 16.5%; for back problems 12.3% and 17.5%; for migraine headaches 8.9% and 16.2%; for activity-limiting injury 11.8% and 14.3%; for long-term disability 18.8% and 13.6%. Those with inadequate incomes are more likely to be hospitalized, especially women. Yet another study showed that hospital admission rates in Ontario were almost twice as high among the poor as for non-poor people (Katz et al. 1996). The greater admission rates and use of hospital care by the poor may suggest that Medicare works but it also is evidence that there is a continuing failure to offer equitable access to effective primary care (Katz et al. 1996). This is true in general but notably for musculoskeletal conditions (Badley and Ibanez, 1994).

In Canada, about 19% of the migrainous population never consults a caregiver. About half the lapsed consulters (former migraine patients of medical doctors) were not satisfied with the care or experienced problems with medications. A very high 41% of migraineurs were referred to a specialist (Edmeads et al. 1993). Of those who visited a medical doctor 62% received a prescription but only a third of these patients continued to use the medication. There is considerable disagreement among medical doctors in the diagnosis of migraine headaches. "Despite the higher prevalence of migraine in low income individuals, consultation rates for migraine in such patients may be lower than anticipated" (Stang et al., 1994, 551).

Later in the report we document the fact that musculoskeletal conditions are the second most costly class of diagnosis in Canada, with injuries as a group being third. *In brief, both for reasons of prevalence and cost, the management of NMS disorders deserves very serious reconsideration, and the issue of cost-effectiveness is key to designing the appropriate public policy response.*

If we had the medical and chiropractic costs per episode for each of the NMS diagnoses, the incidence of such diagnoses, and the current and future flows of patients by diagnosis as depicted in Figure 3, we would have most of the key data needed to accurately evaluate the economic consequences of a policy of enhancing chiropractic coverage under OHIP. In fact we do not have all of this data, and must make reasonable assumptions and provide a range of economic results.

UTILIZATION OF CHIROPRACTIC SERVICES, AND THE IMPACT OF USER FEES

Eisenberg et al. (1993) reported that 34% of the US population used one or more alternative therapies in 1990 and that 18 million Americans (7% of the population), made an average of 13 visits per year for chiropractic services. The popularity and value of such non-medical care is further underscored by the fact that 70% of the expenditure for such care was borne by the patients themselves out-of-pocket, with insurers and governments paying the remaining 30%. . By contrast, only 17% of the total medical services expenditure was paid out-of-pocket (Blevin, 1995, 3). The US Department of Health and Human Services (1984) reported a 4% utilization rate for chiropractic care in 1980. There is thus a significant growth in the use of chiropractic care in the USA. Manga et al. (1993) show that in Canada the chiropractic utilization rate doubled from 5% of population in 1980 to 10% of the population by 1990. There is thus a growing recognition and acceptance of chiropractic care by the public, despite the rising and now high levels of co-payments.

The Ontario figure of 10% is also confirmed for 1991 by Statistics Canada (1994). The study also suggests that about 90% of NMS suffers contact general practitioners / family physicians for their problem, and that a significant number contact a medical specialist (39% for arthritis and rheumatism and 36% for recurring migraine headaches). Interestingly it notes wide variations in the use of chiropractic services by province. "Although Quebec had the highest supply of licensed chiropractors per capita in 1990, the utilization of chiropractors in this province (7%) was quite low.

This may be attributable to the fact that provincial insurance in Quebec does not extend to chiropractic services" (p. 116-17). At 10%, Ontario's rate is quite a lot lower than Alberta (12%), British Columbia (13%), Manitoba (15%) and Saskatchewan (17%). There are significant differences in the utilization rate of chiropractic care by income class. The lower middle class at 6%, and the poor at 8% compare unfavourably to the upper middle class (11%) even though the former groups have a higher prevalence of NMS disorders.

A more recent study based on Statistics Canada's National Population Health Survey of 1994/5 suggested a national utilization rate of chiropractic care of 10.5%. (So, 1997) It also found that users of such care tend to be upper-middle income, informed and educated, less likely to be smokers or those who have quit, undertake regular physical activities, more likely to practice some form of disease prevention, and more likely "to suffer chronic conditions such as back problems and chronic pain" (p. 75). Users of alternative care also found the care they received from conventional medical physicians to be inadequate.

The same National Population Health Survey 1994-95 suggests that the Ontario chiropractic utilization rate is less than the national average of 10.5% at 9.78% and lower than the 10% level attained in 1990. The rate naturally varies by age and sex. It is highest for the age groups 45-64 (12.27%) and 25-44 (10.6%), and lowest for younger groups and those of 65 years of age or more 7.79%. The data suggests that while the utilization rate doubled from 1980 to 1990 despite rising levels of copayments, this growth has terminated and perhaps reversed itself somewhat since then. This change would seem to be due to the still higher levels of copayments for chiropractic care, caused in part by reduced OHIP financing and in the past by the worsening economic climate that gripped Ontario for most of the 90's.

Private insurance coverage for chiropractic services in Ontario has increased somewhat but remains unavailable to most Ontarians for a combination of legislative and employment reasons. Private insurance coverage of the copayment was illegal until an amendment to the regulations under the Health Insurance Act in August 1996. A legacy of the former law is that most employee benefits insurance plans only cover chiropractic services once OHIP coverage has expired. Currently that is after approximately 22 treatment visits and only approximately 10% of patients utilizing chiropractic services have that many treatments. The end result is that the costs of chiropractic care are not covered by private insurance for 90-95% of patients. They therefore have an economic reason to visit medical doctors and physical therapists instead of chiropractors. Shekelle et al (1995) have shown empirically that copayments for chiropractic care of about 25% of the cost, or poor insurance coverage in general, are significant deterrents to the use of chiropractic care. There is also a very large body of literature generally indicating that user fees in any form for health services acts as a significant barrier to access. This is particularly the case where, as in Ontario now, one service has a user fee (chiropractic) and other available alternatives (medical and physiotherapy) do not.

Chiropractic care is subject to very high price elasticity of demand, and "is more sensitive than overall health care expenses, outpatient health care expenses, and dental expenses" (Shekelle, 1994). Patient cost sharing of 25% results in a decrease in chiropractic expenditure by about half, according to data from the RAND Health Insurance Experiment in the USA, which was a randomized controlled trial of the effect of insurance on the use of health services. "Access to free chiropractic care among persons assigned to an HMO resulted in a ninefold increase in the use of chiropractic care, compared with persons in the HMO without access to free chiropractic care. Among persons who had to pay 95% of the cost of their chiropractic care, access to free medical care in an HMO resulted in an 80% decrease in the use of chiropractic care compared with persons in the fee-for-service plan". The RAND data "are certainly compatible with a substantial cross price effect (substitution of one service for another depending on price), in light of the increased price sensitivity of chiropractic care relative to outpatient medical care". (Later we express concerns about cost analyses made by Shekelle et al, but these figures on cross price effect appear to be reported accurately). Cross price effect, more correctly termed cross price elasticity of demand, simply refers to what the percentage increase in the use of medical care is when the price of chiropractic care increases. For these patients medical care becomes a substitute for chiropractic care.

In the U.S. expenditures for chiropractic services increased from $1 billion in 1980 to over $4 billion by 1988 (Stano, 1992). Neuromusculoskeletal disorders accounted for more than 80% of this expenditure.

In terms of economic analysis and potential utilization rates, it is crucially important to note that the utilization rate of chiropractic care increased from 5% of the population in 1980 to 10% in 1990 despite a huge increase in the level of co-payment payable by patients for chiropractic visits. This illustrates that the public preferred to see chiropractors despite a strong financial deterrence and the known high price elasticity discussed above. If this financial deterrence is reduced to the point where it becomes relatively insignificant, we can expect to see a large increase in the proportion of the public visiting chiropractors, especially for common NMS conditions and injuries for which chiropractic care has been shown to be safer and more effective than alternative management. A doubling of the utilization rate from 10% to 20% is to be expected, especially if an effective marketing campaign is launched and sustained after the Government of Ontario announces its policy reform. Anecdotally, chiropractors report a doubling in the utilization rate when the patient copayment was reduced to 20% in 1970 when OHIP coverage was introduced.

COMPARATIVE COST OF CHIROPRACTORS AND MEDICAL DOCTORS UNDER VARIOUS HEALTH INSURANCE SYSTEMS

In this section we present a number of studies that compare chiropractors and medical doctors in terms of costs, insurance payments, utilization, effectiveness or outcomes and patient satisfaction levels. These studies provide a basis for assessing the effects of enhanced chiropractic coverage under OHIP. Evidence from the USA is presented first. This is followed by evidence from the UK, Canada and Australia.

USA STUDIES

In two very recent studies by Smith and Stano (1997) and Stano and Smith (1996), the health insurance payments (costs) and patient utilization patterns for episodes of common lumbar and low-back conditions managed by chiropractors and medical doctors are compared. The analysis is particularly important because the patients studied had insurance allowing them to commence and then obtain all the care needed for their conditions from either a chiropractor or a medical doctor, though copayment levels were different.

The data used by Smith and Stano are derived from fee-for-service claims information of large corporations with a population of about 2 million beneficiaries. The so-called MEDSTAT database covers a period of 2 years from July 1, 1988 to June 30, 1990. The studies looked at chiropractic and medical use and costs for 208 International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) codes for NMS disorders. It is "by far the largest known source of information on chiropractic care, and probably among the largest in existence, for patients with NMS disorders" (Stano and Smith, 1996, p. 194).

The total patient count was 7,077 involving 8,018 episodes of care initiated by clearly identified chiropractic or medical physicians. The analysis was conducted using "episodes of care" which incorporate all health services utilized by a patient in diagnosis and treatment of a particular NMS condition from the beginning to the end of the patient's condition. It is thus consistent with our conceptual framework suggested in Figure 2. The entire claims history and hence costs are known, with the exception only of some data on medical prescriptions and physical therapy. Smith and Stano analysed 9 high-frequency NMS ICD-9-CM "trigger" codes which are typically used in the U.S. by both MDs and DCs as the first diagnostic code during an episode of care. They considered "only patients with clearly identified medical or chiropractic first-contact providers" and hence their study is especially relevant for our analysis of the implications of enhanced chiropractic coverage under OHIP.

There were 6,183 patients with at least one episode of care, 4,608 of whom saw an MD and 1,575 of whom saw a DC for the 9 NMS conditions for their first episodes. (The difference in first visits

in favour of MDs is not a measure of patient preference because it is influenced by the fact that chiropractic visits entailed substantially higher coinsurance rates). If second and subsequent episodes of these patients are included, the total goes up to 8,018 episodes. Table 1 (Stano and Smith, 1996, p. 195) shows the details of first and total number of episodes by diagnostic code.

The distribution of first episodes shows that 75% of the patients visited MDs for their care versus 25% for DCs. For total episodes of care, 70% of episodes were managed by MDs versus 30% by DCs. This suggests that the retention rate by DCs is higher than for MDs and that patients are more likely to switch from MDs to DCs for their subsequent episodes rather than the reverse. (This is consistent with other studies reporting higher satisfaction with chiropractic care than medical care for back pain, and is relevant to estimating some of flows depicted in Figure 3 above).

The sample of patients visiting DCs and MDs had at the very least "equal severity conditions" (Stano and Smith, 1996, p. 196) though in the later paper Smith and Stano (1997) point out that "chronic NMS cases may tend to gravitate" to chiropractic. Smith and Stano (1997,9) point out that "31.6% of chiropractic first episodes limited to a recurrence is significantly greater than 16.3% of medical episodes". To gain an extra measure of standardization and control they analysed each of the nine major episode conditions separately, as well as together.

It might be noted here that several studies have found that chiropractic patients are in fact more sick or have more severe conditions, and have experienced longer duration of pain, have a history of back pain often not successfully resolved by medical doctors, and have greater number of illnesses (Hurwitz, 1994; US Dept. of Veterans Affairs, 1990; Nyiendo, 1991).

TABLE 1

NINE "TRIGGER" ICD-9-CM LUMBAR AND LOW-BACK CODES

Code	Description	Medical[a]		Chiropractic	
		First episode	Total	First episode	Total
722.10	Intervertebral disk disorders, displacement of thoracic or lumbar intervertebral disk without myelopathy	421	(555)	104	(147)
722.52	Intervertebral disk disorders, degeneration of thoracic or lumbar intervertebral disk, lumbar or lumbosacral intervertebral disk	194	(247)	40	(57)
724.2	Other and unspecified disorders of back, lumbago	2,088	(2,458)	354	(558)
724.3	Other and unspecified disorders of back, sciatica	262	(315)	68	(110)
724.6	Other and unspecified disorders of back, disorders of sacrum	82	(122)	105	(154)
839.2	Thoracic and lumbar vertebra, closed, lumbar vertebra	45	(55)	116	(179)
846	Sprains and strains of sacroiliac region	132	(158)	77	(104)
846.0	Sprains and strains of sacroiliac region, lumbosacral joint, ligament	635	(777)	319	(490)
847.2	Sprains and strains of other and unspecified parts of back, lumbar	749	(923)	392	(609)
TOTAL		4,608	(5,610)	1,575	(2,408)

ICD-9-CM; International Classification of Diseases, 9th Revision, Clinical Modification.
[a] Number of medical and chiropractic patients/first episodes. The total number of episodes is shown in parentheses.

Source: Stano and Smith (1996, p. 195).

Results

As shown in Table 2, chiropractic cases show longer average episodes of care at 37 days compared to 19 days for medical management of these 9 NMS disorders. However, the longer average length of episodes does *not* mean higher costs. The average total insurance payments for medically managed episodes is $1,020, virtually double the $518 for the average chiropractic episodes. For outpatient costs too, the average payment for medically managed episodes is $598 compared to $447 for chiropractic episodes, a difference of 34%. Much of the higher total payments for medically

managed episodes is due to inpatient costs. Note that these differences are underestimated since "some reporting plans exclude prescription drug payments" (Stano and Smith, 1996, p. 197). In an earlier paper, Stano describes in detail the data sources used in this study. The possible bias in the cost estimates is acknowledged. "We do know, however, that medical care is underreported in this database (e.g. prescription drugs, physical therapy), due to the decentralized delivery of medical services and the difficulties relating to the documentation of that care" (Stano, 1994, p. 443). Such drugs and physical therapy of course, are typically employed by MDs and not used by DCs in managing NMS disorders.

TABLE 2

	MD			**DC**		
	Mean	**Median**	**SD**	**Mean**	**Median**	**SD**
Total payments[a] ($)	1,020	221	3,045	518	175	1,142
Outpatient payments[a,b] ($)						
Total outpatient[a]	598	218	1,145	447	175	858
Episode length (days)[a]	19	1	39	37	9	70

Source: Stano and Smith (1996, p. 196).

Stano and Smith controlled for a number of important differences between the medical and chiropractic cohorts by conducting a regression analysis of total payments and outpatient payments and using as independent variables the age and sex of the patients, location, relation to insurance plan (employee or dependent), insurance plan type (major medical or comprehensive), class of insurance plan (in terms of whether they do or do not restrict access to chiropractic care), the levels of deductibles and co-payment patients are liable for, and so on. The regression analysis makes the two patient population groups as similar as possible, strengthening the comparison of costs per episode. The results show that for each NMS condition and for all 9 together, insurance payments for medical care is greater than for chiropractic care for both "total payments" and for "outpatient payments". Table 3 shows the details.

TABLE 3

SUMMARY OF ESTIMATED RATIOS OF PAYMENTS FOR MEDICAL OVER CHIROPRACTIC FIRST EPISODES

Code	N	Total Payments	Outpatient Payments
All 9[a]	6168	1,61[b] (1.50-1.74)	1.47[b] (1.37-1.57)
722.10	518	3.17[b] (2.32-4.35)	1.94[b] (1.48-2.56)
722.52	239	2.32[b] (1.47-3.67)	1.88[b] (1.25-2.82)
724.2	2440	1.75[b] (1.53-2.01)	1.61[b] (1.42-1.83)
724.3	330	1.16 (0.82-1.64)	1.13 (0.83-1.54)
724.6	186	2.11[b] (1.07-3.03)	1.85[b] (1.32-2.61)
839.2	161	1.27 (0.82-1.96)	1.27 (0.82-1.96)
846	208	1.03 (0.73-1.45)	1.01 (0.72-1.42)
846.0	953	1.53[b] (1.29-1.80)	1.43[b] (1.22-1.67)
847.2	1139	1.30[b] (1.13-1.51)	1.27[b] (1.11-1.46)

Source: Stano and Smith, 1996, p. 201.

[b] = significant at the 1% level.

The 95% confidence intervals are shown in parentheses.

Medical payments are 61% and 47% higher than chiropractic payments for *total* and *outpatien*t care respectively (i.e. 1.61 and 1.47 in Table 3). For three codes the differences are not statistically significant (i.e. 839.2, 724.3, 846), but for most conditions the differences are statistically significant. In the latter case, total payments for medical episodes are 30% to 217% higher than for

chiropractic episodes. For outpatient payments too, medical episodes are 27% to 94% higher than chiropractic episodes.

The overall finding of these studies, that the cost of medical management of NMS disorders is as much as 61% greater than chiropractic management per episode of NMS disorders, is most significant. Yet even this is a biased result. It actually underestimates the true difference in as much as it omits several costs items (drugs, physiotherapy) from medically managed episodes of NMS disorders. In our opinion, given the rich data base and the rigorous analytical methodology employed in these studies, the results are more reliable and noteworthy than others comparing medical and chiropractic costs of care.

Table 4 shows the total payments made for the 890 patients who experienced 2 episodes of care over the 2 years. Again the total payments for chiropractic episodes are significantly lower than for medical episodes. For MD managed patients, costs were 2 times that of DC managed patients for their first episodes. However, for their second episodes, costs for MD managed patients were 2.29 times that of DC managed patients.

This observation is pertinent to changing the flows of patients as described in Figure 3. Interestingly, the payments for second medical episodes are 18% costlier than the first, suggesting that if these patients had shifted over to chiropractic care the savings would be even greater than the figures for the first episodes might suggest. There was practically no difference between the two groups in terms of the time lapse between episodes. The second episode retention rates were 83% for chiropractors and 79% for medical doctors. The higher chiropractic retention rates is also true for patients with 3 episodes of care. Higher retention rates suggest higher patient satisfaction with chiropractic care for these disorders. This finding is consistent with the earlier and extensive literature showing patients' high satisfaction level with chiropractic care generally and more specifically, that patients' prefer chiropractic over medical management of conditions such as low-back pain (Manga et al., 1993, Chapter 6; Cherkin et al. 1989; Carey, 1995).

TABLE 4
TOTAL PAYMENTS FOR PATIENTS WITH 2 EPISODES OF CARE

	Chiropractic	**Medical**
First episode	$635	$1,272
Second episode	$658	$1,505
No. of patients	311	579

Source: Put together from data offered by Stano and Smith, 1996, p. 201.

TABLE 5

COMPARISON OF CHIROPRACTIC AND MEDICAL MANAGEMENT OF CHRONIC, RECURRENT CONDITIONS OVER TWO AND THREE EPISODES OF CARE FOR PATIENTS WITH TWO EPISODES (SECOND EPISODE SAME PROVIDER). DC AND MD REPRESENTS FIRST-CONTACT CHIROPRACTIC OR MEDICAL PROVIDER. TOTPAY REPRESENTS TOTAL PAYMENTS, AND LAPSE REPRESENTS THE INTERVAL (IN DAYS) FROM THE BEGINNING OF ONE EPISODE TO THE BEGINNING OF THE NEXT EPISODE

	First and second episode provider		
	DC Mean (SD)	**MD Mean (SD)**	***p*-value**
n	257	456	
TOTPAY, 1st	612 (1484)	1129 (2939)	.002
TOTPAY, 2nd	646 (2746)	1261 (4155)	.018
TOTPAY, both	1258 (3189)	2390 (5152)	.000
LAPSE	198 (136)	185 (117)	.184

Source: Smith and Stano (1997, p.9)

The rich database allowed the authors to generate other comparisons. Table 5 shows the costs per episode for only those patients who had both their episodes of NMS conditions treated by either and MD or a DC. Again, costs per episode for chiropractic-managed patients were half of those for patients managed by medical doctors.

TABLE 6

COMPARISON OF CHIROPRACTIC AND MEDICAL MANAGEMENT OF CHRONIC, RECURRENT CONDITIONS OVER TWO AND THREE EPISODES OF CARE FOR PATIENTS WITH THREE EPISODES (ALL EPISODES SAME PROVIDER). DC AND MD REPRESENTS FIRST-CONTACT CHIROPRACTIC OR MEDICAL PROVIDER. TOTPAY REPRESENTS TOTAL PAYMENTS, AND LAPSE REPRESENTS THE INTERVAL (IN DAYS) FROM THE BEGINNING OF ONE EPISODE TO THE BEGINNING OF THE NEXT EPISODE

	First, second and third episode provider		
	DC Mean (SD)	**MD Mean (SD)**	***p*-value**
n	97	101	
TOTPAY, 1st	$282 (445)	$919 (3255)	.054
TOTPAY, 2nd	439 (1529)	983 (2415)	.059
TOTPAY, 3rd	318 (617)	1166 (2824)	.004
TOTPAY, all	1038 (1968)	3068 (4897)	.000
LAPSE, 1st to 2nd	141 (85)	165 (98)	.068
LAPSE, 2nd to 3rd	152 (100)	147 (86)	.721

Source: Smith and Stano (1997, p.10)

In Table 6, all 3 episodes of care are initiated by the same provider. The total costs for all 3 episodes shows that medically-managed episodes cost 3 times those managed by chiropractors.

Both Tables 5 and 6 make a compelling case for patients to be exposed to early DC management of NMS conditions. Recurring problems are common for patients with NMS conditions and the caregiver patients begin with has a huge bearing on the costs of their first, second, third and no doubt subsequent episodes.

In a recent study examining factors associated with patients' choice of chiropractor for episodes of back pain care, Shekelle et al. (1995, p. 848) also found that "chiropractors retain a far greater percentage of their patients who seek care for a subsequent episode of back pain...". They explained that this was compatible with previous research showing that low-back pain patients of chiropractors are more satisfied in general with their care than are low-back patients of other providers". To quote Stano and Smith:

> "In an analysis of patients with three episodes, we found that exposure to a chiropractic provider is more likely to affect medical provider retention than exposure

> to a medical provider affects chiropractic retention. Patients choosing medical care who were exposed to a chiropractic provider for an intervening episode were 23 times more likely not to return to a medical provider than those not exposed to a chiropractic provider for an intervening episode. Patients choosing chiropractic care with a medical intervening episode were nine times more likely not to return to a chiropractic provider than those without a medical intervening episode". (Stano and Smith, 1996, p. 201)

These Smith and Stano studies (1997, 1996) reaffirm several analyses undertaken by Stano earlier. Stano (1995) compared MD versus DC costs and lengths of care per episode of 9 different types of lumbar and low-back pain and found that when all episodes are considered, including 1 day episodes, the average medical episode was $1,000 versus $493 for chiropractic episodes. If 1 day episodes are excluded, the averages are $1,991 and $760 for medical and chiropractic episodes respectively. That is, medically managed episodes were 2.62 times costlier than chiropractic managed episodes for the NMS conditions. This huge cost differential exists despite longer duration of care by chiropractors, namely 58 days versus 44 (for MDs) for episodes which involves episodes longer than 1 day; and 36 days versus 21 (for MDs) for all episodes (i.e. that include 1 day episodes). When specific diagnostic codes are considered separately, these differences still hold except for a few codes. In this analysis too, Stano controlled for variables that might have confounded the comparison by using regression analysis to control for such variables. In light of his findings Stano suggests that "both the chiropractor's role of first-contact provider and his or her effectiveness as future NMS gatekeeper deserve careful consideration" (Stano, 1995, p. 141).

In another study, Stano (1994) compared medical and chiropractic treatment of patients with various lumbar and low-back disorders. In this study, however, there are a few very important properties which must be noted. In this study only patients who have insurance benefit plans without any special chiropractic or medical restrictions are included in the analysis. Furthermore, only those insurance plans with the lowest co-insurance (less than 15%) and deductibles (less than $200 annually) are included in the analysis. In other words, Stano restricted his analysis to those patients who had virtually identical insurance coverage and under which both medical and chiropractic services were offered virtually “under uniform terms and conditions”, to use a well-known Canadian expression. The purpose of this sampling was to counter the suspicion that the favourable cost differences previously reported were related to insurance restrictions on chiropractic benefits. In this study the insurance coverage of medical and chiropractic benefits were the same.

Table 7 shows the various disorders included in this study. (Stano, 1994). The different ICD-9 codes are aggregated into focus groups, specifically 847.2 (lumbar strains and sprains), 353.4 (L5 root lesions) and Groups 1, 2 and 3.

The analysis of the insurance claims data controlled for the patient's age, sex, location, employee status (active vs other), employee relationship (self or dependent) and plan type (comprehensive versus major medical). Table 8 presents the mean values of total insurance cost and total outpatient cost on an actual and adjusted basis.

The actual differences per patient between MDs and DCs range from $365 (for Group 3 conditions) to $2,266 (for Group 1 conditions). Group 3, as shown in Table 5, includes only two classes of diagnosis for sprains. Group 1 and 2 include more diagnosis, and ones that are clinically more serious. The adjusted difference in insurance costs per patient ranges from $291 to $1722. As shown in Table 6, medical management of NMS conditions included in the study are significantly costlier than chiropractic management of the same conditions for patients with the same insurance plans.

TABLE 7

ICD-9-CM CODES AND GROUPINGS FOR SELECTED LOW-BACK CONDITIONS

ICD-9	Description
847.2	Lumbar strains and sprains
353.4	LS root lesions
Group 1	
721.3	Lumbosacral (LS) spondylosis without myelopathy
722.10	Lumbar intervertebral disk (IVD) without myelopathy
722.52	Lumbar, lumbosacral IVD degeneration
722.83	Patients with lumbar, postlaminectomy syndrome
722.93	Other and unspecified lumbar disk disorders
Group 2	
724.02	Lumbar signal stenosis
724.2	Lumbago
724.3	Sciatica
724.4	Thoracic or lumbosacral neuritis or radiculitis
724.6	Disorders of sacrum
Group 3	
846	Stains and sprains of sacroiliac (SI) region
846.0	LS (joint) (ligament) sprains and strains
846.9	Strains and sprains of SI region, unspecified site

Source: Stano (1994, p. 444).

TABLE 8

ACTUAL AND ADJUSTED ESTIMATES OF MEAN INSURANCE COST DIFFERENCES OVER 2 YR FOR MEDICAL AND CHIROPRACTIC PATIENTS FOR FOUR LOW-BACK CONDITIONS

	847.2	**Group 1**	**Group 2**	**Group 3**
n (MD)	4651	6371	15661	4989
n (DC)	2217	1570	4568	2304
Actual total cost (MD)	$5360	$9608	$7342	$5330
Actual total cost (DC)	4379	7342	5620	4965
Actual difference (MD-DC)	981	2266	1722	365
Adjusted difference (MD-DC)	784*	1722*	1183*	291
Actual outpatient cost (MD)	$2772	$4192	$3537	$2803
Actual outpatient cost (DC)	2983	4147	3534	3086
(chiropractic component)	(423)	(552)	(476)	(401)
Actual difference (MD-DC)	-211	45	3	-283
Adjusted difference (MD-DC)	-204**	-82	-66	-173*

n represents the number of medical (MD) and chiropractic (DC) patients.
Adjusted differences taken into account: age, sex, geographic region, active vs. other employee status, whether the patient is the employee vs. spouse or dependent, and comprehensive vs. major medical insurance.
* indicates significance of the difference in adjusted payments at the 0.01 level, ** at the 0.05 level, and *** at the 0.1 level.

Source: Stano (1994, p. 445).

> "When cost associated with hospitalization and other inpatient services are removed so that only outpatient costs are analyzed, adjusted costs for chiropractic users are slightly higher, by $66 to $204 over 2 yr across the four conditions. Since all chiropractic care is delivered on an outpatient basis, these results are not surprising. However, the differences are negligible for chiropractic users relative to the much larger total cost excesses for medical users. Only one of the adjusted outpatient cost differences is significant at the 1% level (Group 3) and two are not even significant at the 10% level, the most generous by conventional scientific standards. Finally, the outpatient component for medical patients in our database underreports some components of costs, such as prescription drug costs. If such costs could be

> included, the medical only outpatient costs would likely increase, as would the total medical care costs". (Stano, 1994, p. 445)

We would like to point out that there is yet a further bias that Stano himself notes in his paper, namely, that MD inpatient costs do not include all of the costs of physical therapy. MDs tend to refer their NMS patients to physical therapists rather frequently and were this cost alone added to the medical management, the medical outpatient costs would surely exceed chiropractic outpatient costs.

It is crucially important to note that in our extensive search through the empirical literature we found that the medically managed costs are invariably understated. While this is true of Stano's studies (a bias he recognizes) it is even more true in other U.S. studies and indeed studies from other countries. Solid, comprehensive and reliable costing of medically managed NMS conditions on an episodic basis is difficult. In Canada, sadly, we have no comparative cost data of the type developed in Stano's studies.

In another study, Stano (1993) looked at the same 15 NMS conditions as shown in Table 7 but this time the sample sizes are much bigger since no restrictions on the type of insurance plans were made. Thirteen of the conditions were placed in three groups just as in Table 7. The results are summarized in Table 9 in which the ratio of medically managed patient costs to chiropractic patient managed costs are given.

TABLE 9

PAYMENT RATIOS OF COHORT A (MEDICAL PATIENTS) TO COHORT D (CHIROPRACTIC PATIENTS) FOR SELECTED Low-back CONDITIONS[a]

	847.2	353.4	Group 1	Group 2	Group 3	Other
N(cohort A)	9,012	290	12,406	32,544	10,611	915-61,775
N(cohort D)	6,727	1,028	4,835	14,398	7,824	440-10,317
ADMISSNO	1.62	1.63	1.76	1.76	1.57	1.19-2.50
TOTPAY	1.20	1.35	1.37	1.33	1.08	0.96-1.571.37-2.20
INTOT	1.67	1.35	1.80	1.84	1.38	0.75-1.25
OUTTOT	0.96	1.36	1.04	1.04	0.91	0.84-1.64
MD	1.15	1.89	1.24	1.17	1.09	

[a] payment ratios are the costs of medically managed patients to chiropractic managed patients.

Source: Stano (1993, p. 295).

The excess of total medical payments (over chiropractic payments) range from 8 to 37%. (See line TOTPAY in Table 9). Inpatient costs show the greatest percentage differences. Medical outpatient costs are also higher from 3 of the 5 groups, but is significantly higher in the case of code 353.4 and can be considered to be approximately equal in the four other diagnostic groupings. However, medical outpatients costs are underestimated inasmuch as data for prescription drugs and physical therapy were often missing and were therefore not included in the cost estimates.

The four Stano studies present convincing evidence of the cost-effectiveness of chiropractic care and the merits of the substitution concept. There are further studies, of varying quality and generally less rigorous in design, and these are presented next.

In a published monograph, Dean and Schmids (1992) compared chiropractic treatment of 11 specific NMS conditions including disc disorders, arthritis, low-back pain, and spinal-related sprains, strains or dislocations with five other provider groups: general practitioners, internists, surgeons, other physicians, and non-physicians (e.g. physical therapists). Insurance payment and total costs were the lowest for chiropractic for most conditions. They controlled for a variety of factors, by means of regression analyses, that might otherwise account for the observed cost differentials favouring chiropractic. These factors include health status, gender, race, age, education and income class. The 11 condition-specific regression analysis results "support the overall contention that chiropractic care is a lower cost alternative to general GP/specialist treatment regimens" (Dean and Schmids, 1992, p. 45). In this study also the costs of care provided by MDs were understated in that the costs

of pharmaceuticals and referrals to specialists and others were not fully incorporated in the total costs of medically-managed cases.

The unit of analysis in this study is the cost for treating the specified condition. Charges by the practitioners for professional services alone is just one component of the total cost of treating the condition. While this should be obvious, it is very frequently overlooked in studies and commentaries by officials of ministries of health and workers compensation boards. Chiropractors typically provide an almost all encompassing treatment regimen. As Stano's studies also suggested "the relevant figure is not the cost per practitioner but rather the cost of treating the condition" (Dean and Schmids, 1992, p. 25). Thus, a patient may visit a G.P. only 2 to 3 times for low-back pain but is often prescribed drugs and referred to other practitioners for more specialized care. As shown in Table 10, GP billings represents only 23% of the total costs of the conditions they treated in this study. Payments to chiropractors for their own professional services account for 80% of the total cost of care. In this chiropractors are very different from other health care professions treating NMS disorders. Their care is "own-labour" intensive. These figures in this study are similar to those suggested by other studies.

TABLE 10

PROFESSIONAL CHARGES (FEES, PAYMENTS TO) AS A PROPORTION OF TOTAL COST FOR TWO BROAD CLASSES OF CONDITIONS

Practitioner	Musculoskeletal	Strains/Sprains
Chiropractor	80	79
Gen. practitioner	23	21
Internist	22	36
Surgeon	24	31
Other MDs	18	21
Non-physicians (physical therapy)	24	37

Source: Abstracted from Dean and Schmidts, 1992.

> "Chiropractic therapy is almost wholly hands-on care. There is a nominal use of auxiliary services, no to little use of drugs, and little hospitalization. Payments to chiropractors for services they provide is 80% or more of the total cost of care. For physician management of low-back pain the proportions are virtually reversed. Prescription drugs, laboratory tests, referrals to specialists, and hospital in-patient care leads to a four or five fold increase in total health care costs of the physician's own billing for medical services". (Manga et al. 1993, p. 80)

In the USA, there have been numerous studies comparing medical versus chiropractic management of workers compensation cases. These studies are relevant to our present analyses inasmuch as chiropractors and medical doctors are widely regarded and actually practice as alternative providers in the sense shown in Figure 2. An injured worker treated by a chiropractor generally does not have to visit a medical doctor for care, and vice-versa, precisely the situation in which we ought to discover which of the two professions is the more cost-effective. A recent review of the many studies in the USA and elsewhere demonstrates that chiropractic management is clearly the more cost-effective, (Manga et al. 1993, Chapter 5)

In a recent, better designed study by Jarvis et al. (1991), the cost per case of back injuries in claims with identical diagnostic ICD-9 codes managed by chiropractors and medical doctors was compared. The data are from the Workers Compensation Fund of Utah for cases starting in the calendar year 1986 and ending in early 1989. Surgical cases, cases treated by both MDs and DCs (crossovers), and cases treated by non-MDs or non-DCs were excluded from the study. The use of ICD-9 codes is an attempt to establish comparability of patients exclusively managed by MDs or DCs. Only those specific ICD-9 categories containing at least 50 cases treated by MDs and DCs were included in the analysis. The main results are shown in Table 11.

TABLE 11

DIFFERENCES IN COSTS AND TREATMENT VARIABLES FOR ALL PATIENTS OF MEDICAL AND CHIROPRACTIC DOCTORS WITH BACK-RELATED WORKERS' COMPENSATION INJURIES

	Mean Values		
Provider	**MD***	**DC†**	**p Value**
Age	32.0	34.8	<.001
Number of diagnoses	.15	1.32	<.001
Number of treatments	4.9	12.9	<.001
Number of days care	34.3	54.5	<.001
Number of days compensation	20.7	2.4	<.001
Compensation costs	$668.39	$68.38	<.001
Costs for care	$684.15	$526.84	=.009

* MD = medical doctor.
† DC = doctor of chiropractic.

Source: Jarvis et al. 1991.

As shown in Table 11, the number of diagnoses per case, the number of treatments (visits) and the number of days of care elapsed from the beginning to the end of the treatment period are all greater

for the DC cases than for MD cases. However, the number of days for which compensation was received on a per case basis is about 9 times higher for the MD managed cases. This means that DCs manage to get their patients back to work much earlier, a finding which is common in all but one of the worker's compensation studies, which have been previously reviewed by us (Manga et al , 1993). As a result the mean compensation costs are almost 10 times higher for MD patients than for DC patients ($668 vs $68). Direct costs of care are also higher for MD managed cases ($684) compared to DC managed cases ($526). The sum of compensation costs and costs for care is the total cost per case, and was 227% higher for MD cases ($1,352) than DC cases ($594).

In an earlier paper Jarvis (1989) also showed that the costs of chiropractic treatment of the most common back injuries was significantly lower than medical treatment. This paper reviewed earlier studies with similar findings. Jarvis also noted that:

> "One seventh of all claims were back injury claims. One thirteenth of all claims were treated by chiropractors, the second largest professional group treating industrial claims. Chiropractors treated nearly half of all back injury claims, yet those claims make up only 28.8% of the back injury claim costs". (Jarvis, 1989, p. 75).

The potential for shifting patients from MDs to DCs and thereby saving on health care cost and workers' compensation costs is very significant.

As stated before there are numerous other US studies comparing MD and DC management of workers compensation cases and there is an extensive and recent review of this literature (Manga et al, 1993). Suffice to say, all but one of about 20 studies support the findings reported above.

A recent study focussing on patients with low-back pain covered by Metropolitan Life, found that average outpatient charges per claimant by DCs was $416 and by MDs the average charges were $542 for outpatients treated in physician offices (i.e. no hospitalization). (Mushinski, 1995).

In another recent study specially relevant to our analysis Schifrin, who is both an economist and a clinical professor of preventive medicine, evaluated mandated health insurance coverage for chiropractic treatment, an idea similar to the OCA's current proposal to the Ministry of Health of Ontario. After a thorough review of the empirical literature on the subject, he concluded that "a fair interpretation of the evidence accumulated to date indicates that the impact of chiropractic mandates comes close to the "best case" scenario of low costs and high benefits. Accordingly, the continuation of mandated chiropractic provider services in health care appears both reasonable and sound. It is a cost-effective provision in health insurance, and one that also serves the important goal of health care cost containment". (Schifrin, 1992).

Chiropractors have also been found to be cost-effective in the one comparison published from a managed care setting for managing back or neck pain (Mosley et al, 1996). Analysis of claims over a one-year period in a Louisiana HMO in which patients were permitted direct access to either a primary care gatekeeper physician or a participating chiropractor revealed comparative data shown in Table 12.

TABLE 12

CHIROPRACTORS VERSUS MEDICAL PRACTITIONERS IN A MANAGED CARE SETTING

Item	Chiropractic Patients	Medical Patients	p value
Rate of imaging (%)	4.9	16.5	0.001
Imaging cost/patient	$30.49	$94.27	0.001
Prescriptions/patient	1.1	2.3	0.001
Surgical cases (%)	2.5	2.5	
Total cost per patient	$539.33	$774.06	0.002

Source: Mosley et al. (1996, p. 281).

It is evident from Table 12 that, even in the cost-controlled environment of an HMO, medical patients are prescribed more drugs for their conditions and exposed to more diagnostic imaging tests. The total costs per chiropractic patient is 70% of that for medical patients. The NMS conditions included in this analysis were back and neck pain ICD-9 codes 720 to 724. The authors concluded that "chiropractic care was substantially more cost-effective than conventional care, yet had similar clinical outcomes for back and neck pain" (Mosley et al. 1996, 281). Interestingly, the authors also noted that "the number of visits to chiropractors was fewer than previously reported. We believe that this result can be explained by our pre-certification requirements" (Mosley et al, 1996, 281). Another contributing factor might be that in this managed care plan patients see chiropractors directly and earlier than under other insured and uninsured environments.

There are two studies that are inconsistent with the rest of the research in that they do not report reduced cost for patients choosing chiropractic care. Interestingly, they both have significant design problems from an economist's point of view, and they illustrate the importance of fully accounting for all the costs of care and employing proper methodological, analytical and statistical approaches.

Carey et al (1995) found outpatient costs per episode were lowest in a group-model HMO for primary care providers and highest for urban chiropractors and orthopaedists. The reason for the

high cost for chiropractic care was the larger number of visits for chiropractic episodes. Chiropractic managed patients however reported a higher degree of satisfaction with their care than medically managed patients.

The study has these limitations. Firstly and very importantly, only out-patient costs and not total costs per episode were considered in this study. Secondly neither the mix of diagnoses nor the severity of the cases were known. Thirdly charges rather than actual payments were used to estimate costs. Payments are often substantially less than charges, and discounting is typically larger for chiropractors than for medical doctors. Fourthly the study did not consider the co-morbidities often associated with low-back pain, nor did it separate acute from chronic cases, probably because many medical and chiropractic physicians often do not record this information. Chronic cases necessarily imply both longer episodes and more visits and hence higher costs. Finally the data for this study are drawn from a localized area in North Carolina and a very small sample. This study may be valuable in some of its other findings, but its economic conclusions are flawed.

Shekelle et al (1995) have also compared the cost of services from different health care professionals for management of episodes of back pain, including the services of chiropractors, general medical practitioners, medical specialists, osteopaths and others. This was potentially an important study as it comes from the RAND Corporation and was published in the peer reviewed journal *Spine*. Using data from the RAND Health Insurance Experiment it finds that chiropractic services are not less costly than most general practitioner services per episode of back pain.

However the authors acknowledge a number of methodological problems and admit their inability to explain some surprising findings, such as the fact that DC patients had the highest prescription drug costs per episode of back pain. We have reviewed this study carefully and conclude that it does not present reliable evidence or conclusions, for reasons we now explain..

Firstly, while the paper was published recently, the data used in the analysis comes from a study undertaken 24-16 years ago. Medical technologies and costs for the diagnosis and treatment of back pain have changed markedly since that time. Secondly the sample is small, there were very large geographic variations, the causes of these are not known, and it is acknowledged by the authors that the results are not generalizable. Indeed, in four of the six sites of the study, chiropractors were the lowest cost providers of care per episode of back pain.

Our next concern is that the data as presented appear to be inaccurate. We summarize this concern in Table 13, which duplicates and expands Table 1 in this study. Columns 1-4 are from Shekelle et al, we have added Columns 5-7. The figures in Column 3 (number of visits) should be equal to Column 1 (number of episodes) multiplied by Column 2 (mean number of visits per episode). They are not, and no explanation is given. There are large discrepancies that invalidate the analysis. It seems the discrepancies are probably due to referrals from one category of provider to others for

care. If so that represents a very significant problem in a cost analysis. It may be that many of the visits under 'other' are to physical therapists on referral from a general practitioner. If so, those costs per episode should be aggregated with the costs of the referring physician. Referrals and their costs are not discussed by Shekelle et al, which is surprising given their central importance in a cost analysis.

Yet another methodological problem is found in the definition of the fundamental unit for the cost comparison, an 'episode of back pain'. In this study it is decided that, if the patient has had 3 months without care and then seeks treatment, there is a new episode of back pain. This overlooks the different management patterns of different health professionals. A general medical practitioner may see a patient 1 or 2 times then tell the patient to rest and prescribe medication. If the patient returns 4 months later that is said in this study to represent a separate episode of back pain. Under chiropractic management the same patient would typically have a course of chiropractic treatments, and there would likely not be a space of 3 months between these treatments and a visit 4 months later. For such a patient, in this study, the cost of medical care would be spread over 2 episodes of back pain, whereas the cost of chiropractic care would be related to 1 episode of back pain. If total costs of medical care and chiropractic care were the same, this study would report the chiropractic care as being twice as costly because of the definition of episode of back pain.

Finally there are problems with attribution of costs. In Table 13 the provider category *Other*, as already suggested, presumably includes physical therapists. Based upon the figures reported by Shekelle et al in Columns 1 and 2, one would expect a total number of visits of 413, as shown by us in Column 6. However 1451 visits are reported (Column 3), a discrepancy of 1038 (Column 7). If these visits were rendered on referral from a general practitioner. Their costs should be aggregated into GP costs per episode. More problematic still are double attribution errors. Shekelle et al were puzzled by the observation that in some chiropractic episodes of care, during which time no provider other than a chiropractor was requesting reimbursement for services, patients were purchasing prescription medications for up to several months. They attribute these costs to chiropractic management. This is surprising since the prescription must have been made by a medical or osteopathic doctor. To attribute these costs to chiropractic management creates a double attribution cost problem.

TABLE 13

MEAN NUMBER OF VISITS PER EPISODE AND MEAN COST PER VISIT, BY PROVIDER TYPE (STANDARD ERROR IN PARENTHESIS)

Provider	No. of Episodes (1)	Mean No. of Visits per Episode (2)	No. of Visits (3)	Mean Cost per Visit (4)	Calculated Mean No. of Visits per Episode (5)	Calculated No. of Visits (6)	Difference Between No. of Visits (3-6) (7)
Chiropractor	412	10.4(0.67)	5,335	$19.45(0.15)	12.9	4,285	1,050
General Practitioner	262	2.3(0.26)	807	$20.21(1.93)	3.1	603	204
Orthopaedist	85	5.0(0.8)	456	$38.53(4.16)	5.4	425	31
Internist	60	3.4(0.67)	235	$21.85(1.05)	3.9	204	31
Osteopath	72	5.3(1.32)	510	$22.18(0.66)	7.1	382	128
Other	129	3.2(0.53)	1,451	$37.66(2.16)	11.2	413	1,038

Source: Shekelle et al. (1995) with the last 3 columns added by us.

(5) Number of visits reported by Shekelle et al divided by number of episodes.
(6) Number of episodes multiplied by mean number of visits per episode reported by Shekelle et al.
(7) The number of visits reported by Shekelle et al minus the calculated number of visits.

We now present studies from other countries that also support the cost-effectiveness of chiropractic management of NMS conditions. They also offer support for the notion that cost-shifting must be recognized and incorporated in the design of public and private insurance systems.

FOREIGN STUDIES

Meade et al (1990, 1995) undertook one of the most discussed randomized controlled clinical trials, a trial comparing chiropractic with hospital outpatient treatment of mechanical low-back pain in Britain. They found that chiropractic treatment was more effective than hospital outpatient management, especially for patients with severe or chronic back pain. The differential benefit was evident at 6 months, 1 year, and 2 years since treatment. With respect to cost-shifting, Meade et al noted that:

> "Some 300,000 patients are referred to hospital for back pain each year, of whom about 72,000 would be expected to have no contra-indications to manipulation. If all these patients were referred for chiropractic instead of hospital treatment the annual cost would be about £4m. Our results suggest that there might be a reduction

> of some 290,000 days in sickness absence during two years, saving about £13m in output and £2-9m in social security payments. As it was not clear, however, that the improvement in those treated by chiropractic was related to the number of treatments the cost of essential chiropractic treatment might be substantially less than £4m. The possibility that patients treated in hospital would need more treatment during the second year than those treated by chiropractic (see above and Table VI) also has to be borne in mind. There is, therefore, economic support for use of chiropractic in low-back pain, though the obvious clinical improvement in pain and disability attributable to chiropractic treatment is in itself an adequate reason for considering the use of chiropractic" (1990, p.1435).

In the follow-up study of the same patients Meade et al report that "at three years the results confirm the findings of an earlier report that when chiropractic or hospital therapists treat patients with low-back pain as they would in day-to-day practice those treated by chiropractic derive more benefit and long-term satisfaction than those treated by hospitals." Unfortunately, beyond this suggestion, Meade et al. did not estimate the longer term savings from the greater long-term effectiveness of chiropractic care.

In the UK, the number of chiropractors has doubled in the last 5 years. They are increasingly recognized by the National Health Service, and the British Medical Association and Royal College of General Practitioners have openly supported the trend of increased medical referral of patients to chiropractors. Managers in the National Health Service are increasingly interested in drug-free treatments and are very mindful of the cost-effectiveness of alternative therapists (Jones, 1996).

An Australian study by Ebrall (1992) is also pertinent to our analysis. He analysed two well matched samples of 1996 workers' compensation cases solely managed by either a chiropractor or a medical practitioner. The overall cost results are presented in Table 13.

TABLE 14

AVERAGE PAYMENTS PER CLAIMANT

	Chiropractor $	Medical Practitioner $
All payments	963.47	2,308.10
Compensation payment	392.02	1,569.93
Non-compensation payment	571.45	738.17
Provider payment	369.01	209.60
Other payments	202.44	528.57

N.B. (provider + other) = non-compensation payments
(non-compensation + compensation) = all payments

Source: Ebrall (1992, p. 50).

The total cost per case for DC managed cases was $963 versus $2,308 for MD managed cases. Note that while the average provider payment for DCs ($369) exceeds that for MDs ($209) the reverse is true for other payments (e.g. drugs, tests, referrals, etc.) so that the total non-compensation payments for the average DC managed cases is significantly lower ($571) than that for MD managed cases ($738). There is a large difference in compensation payments, a finding in virtually all WCB studies. The higher compensation costs for MD managed cases is due to the much higher loss of days at work. Ebrall also found that a greater number of patients managed by MDs became chronic (11.6%) compared to patients managed by DCs (1.9%). The greater tendency to chronicity has obvious implications direct and indirect.

Ebrall found that the average number of visits per chiropractic workers' compensation patient was 14.25 in Victoria, Australia. This figure is slightly higher than the range of 9 to 14 for such cases in United States and Canada. These rates are lower, however, than the treatment rates of similar patients by physiotherapists on medical referral (Patijn et al, 1991; Jochumsen, 1991).

Ebrall estimated that "if the Victorian chiropractors managed a similar proportion (40%) of these injuries as do Oregon (USA) chiropractors, then the direct savings within the Victoria workcare scheme for this period (one year in 1990-91) would have been $10 million over 7,482 claims". Analogous figures in Ontario would be many times this figure. Ebrall used the figure of 40% because this was the utilization rate prevailing in some jurisdictions in the USA. Higher utilization (substitution) would increase estimated savings.
In our 1993 study we offered evidence that medical management led to more iatrogenic complications than chiropractic management of back pain. These adverse outcomes add to the cost

of health care. Indeed it is very important to note that no study has ever included the costs that either medical or chiropractic patients incur after their treatment, as distinct from their episodes, "ends" - i.e. when patients no longer see their caregiver but their problem continues. The cost of poor outcomes and iatrogenic complications should be added to the cost of care, whoever happens to be the caregiver. If this more comprehensive kind of costing were to be done by taking a longer view of an episode of NMS conditions, we estimate that medically-managed cases would be found to have disproportionate additional costs. A proportion of patients visiting chiropractors are former patients of medical doctors whose conditions were not resolved (i.e. their episode has in fact not ended). Medical care has ended but the patient's episode continues. We have not come across a single study that incorporates the problem of unsuccessful treatment in an analysis of the costs of care, or that limits the comparison of costs only to cases that were successfully treated or resolved.

THE ECONOMICS OF ENHANCED COVERAGE OF CHIROPRACTIC IN ONTARIO

We have shown that there is substantial and solid evidence favouring a policy of enhanced OHIP coverage of chiropractic services in Ontario, 96% of which are for neuromusculoskeletal (NMS) disorders. Just what form this enhancement should take is the subject of this section. How exactly should greater OHIP coverage be implemented?

We presume that a fee-per-visit modality of paying chiropractors will be maintained. Fee-per-visit is very different from the fee-for-service system applicable to medical doctors under which the practitioner can bill for several services rendered during a single visit. The typical bill per visit from an MD is several times that of the OHIP fee-per-visit for chiropractors. Indeed the latter is even lower than the OHIP fee-per-visit for physiotherapists (Wells, 1994).

The Ministry of Health may also wish to use a small part of the additional funding to support salaried or sessional positions for chiropractors in hospitals, hospital outpatient departments, long-term care facilities, community health centres, health service organizations or comprehensive health organizations. We made this recommendation 5 years ago (Manga et al, 1993) and it was supported in the Chiropractic Services Review Committee Report (1994). We also recommended a greater involvement of chiropractors in the Workers' Safety and Insurance Board. This is best done through salaried positions. All of these recommendations constitute cost-effective deployment of chiropractic but would account for a small fraction of the additional funding requested by the OCA. The bulk of the new funding would of necessity involve the fee-per-visit method of remunerating chiropractors.

We understand that the OCA is requesting additional coverage of $200 million by year 3 (year 2000), which would bring the total coverage to 1.5% of that year's budget for health care assuming that the current health care budget grows at 1.3% per year. The current coverage is only about 0.47% of the health care budget. It is our considered view that the incremental budget for

chiropractic care is best devoted to reducing the copayment patients now pay to zero. Such services do not have any patient copayment under Medicare in Canada. There is no reason to perpetuate the existing perverse situation in which cost-effective and safer services are subject to a copayment which inhibits access to them, whereas care which is less effective and safe and more costly is offered free of any copayments. The elimination of the copayment will most certainly meet with public approval since there is strong evidence that patients prefer chiropractic over medical management of NMS conditions. An annual cost ceiling per patient is a legitimate control device and it should be reset in the light of the new financing arrangements.

The next best proposal in our view is a package in which (a) the copayment per visit for the second visit onwards is about 20% with the OHIP fee being 80% of the fee (b) the first visit is free, (c) the annual cost ceiling per patient should be renegotiated in light of these new financial arrangements. Incidentally the best way to determine the ceiling is by first negotiating the maximum number of visits OHIP is liable for and then costing out this number of visits.

In our view this is a practical proposal and is fairly easy to administer. Very importantly, making the first visit free would dramatically reduce the deterrent effect of the current financing of chiropractic care in which the first visit is invariably the most expensive for patients.

In 1970, OHIP paid 83% ($5) of the average fee-per-visit of $6 and the patient paid 17% ($1). OHIP currently pays 33% of the fee. The increase in the Consumer Price Index since 1970 is about 342% and the average fee-per-visit increased by 331%. The patient copayment has increased 5 times faster than the rate of inflation since 1970.

The next best solution might be that proposed by the OCA itself in its 1996 submission to the government, that OHIP cover 75% of the fee for most patients, as it used to, and the entire fee for seniors and patients on social assistance. (OCA, 1996). This proposal would have the difficulty of requiring patients to declare and presumably prove that they are on social assistance. Furthermore, some patients are on social assistance for only a limited or short duration. These are not insurmountable problems in light of the modern information technologies available in health care administration, but do however add a degree of complexity to the OCA's reform proposal. A 25% copayment is not an insignificant deterrent to the use of chiropractic care. The OCA proposal will not adequately address the barrier to access of the significant number of the population we might characterize as the working poor and those at the lower end of the middle class.

We also presume that in the event that copayments are in fact maintained under the enhanced coverage of chiropractic care that current private insurance coverage will be maintained to cover costs for those patients - presently 10% - whose costs of treatment exceed the annual ceiling. Thus in our second best option and the OCA's proposal, financing from OHIP, patients and private

insurance is envisioned. Worker's Safety and Insurance Board cases will be paid for in the same manner as they are now.

Our recommendation is based on the analysis and arguments summarized in Table 15. The first row is the status quo and is simply the basic formula that shows that the current budget or expenditure for chiropractic care can be thought of as the number of patients (P) multiplied by the average number of visits (V) per patients, all multiplied by the average fee (F) per visit. The latter is the sum of the OHIP fee and the copayment paid by patients. Enhanced coverage will of course change the values of each of these parameters. We consider 7 propositions as shown in Table A.

The first proposition entails raising the OHIP fee alone and leaving intact the current copayment. The likely outcome of this initiative is no or little change in the number of patients who visit chiropractors and an increase in the average number of visits per patient. Consequently, there would be hardly any improvement in accessibility and at best a small improvement in health outcomes. The savings in health care costs are likely to be negative. In short, this proposition does not serve the public interest. Its main effect would be to raise the incomes of chiropractors.

Propositions 2, 3, and 4 can be considered together. As shown in Table 15, the greater the reduction in the level of copayment, while keeping the overall fee level constant, the greater is the increase in the number of patients visiting chiropractors. Correspondingly, the OHIP fee must rise to allow for the reduction in copayments. The average number of visits may rise at first but if the increase in patients rises significantly, we can expect the average number of visits per patient to decrease. This is due to earlier patient self-referral, medical referrals, and patients making chiropractors their first choice of caregiver for NMS conditions and injuries. If patients visit chiropractors earlier when their conditions are more acute (rather than as currently, when a large proportion present themselves with chronic conditions) it is likely they will not have to visit chiropractors as frequently on average. This would yield dividends both in terms of a reduction in health care costs and better health status of the patients.

Table 15

The Essential Economics of Enhanced OHIP Coverage of Chiropractic Care

Proposal for enhanced coverage	No. of Patients (P)	No. of visits per patient (V)	OHIP fee, copayments of total fee O+C=F	The effects of proposals on objectives		
				Health care cost savings	Improved Health	Improved Access
Basic formula	**P_0**	**V_0**	**$O_0+C_0=F_0$**	**Status quo benchmark**		
1	P_0 _=0	V_1 V_1_V_0	$O_1+C_0=F_1$ O_1_O_0	**_0/-**	**_0**	**_0**
2	P_1 P_1_P_0	V_2 V_2_V_0	$O_2+C_2=F_0$ O_2_O_0, C_s_C_0	+	+	+
3	P_2 P_2_P_1	V_3 V_3_V_2	$O_3+C_3=F_0$ O_3_O_2, C_3_C_2	++	++	++
4	P_3 P_3_P_2	_V_0	$O_4+C_4=F_0$ O_4_O_3, C_4_C_3	+++	+++	+++
5 (OCA)	P_4 P_4_P_3	V_4 V_4_V_0	$O_4+C_5=F_0$ $O_4=.75F_0$ O_4_O_3	++++	++++	++++
6	P_5 P_5_P_4	V_5 V_5_V_0	$O_5+O_5=F_0$ $O_5= .75F_0$ $V_1= O$	+++++	+++++	+++++
7	P_6 P_6_P_5	V_6 V_6_V_5_V_0	$O_6+O=F_0$ $O_6=F_6$ O_6_O_4	++++++	++++++	++++++

Key: O = OHIP fee
C = Copayment paid by patients
_ = little or no change
+ = Improvement in the attainment of the objective
- = Failure to meet the objective

Proposition 5 is what the OCA proposed to the Ministry of Health. There is no doubt that it would lead to very substantial gains in each of the three objectives of accessibility, improved health and health care cost savings. A more practical solution may be to make the first visit to chiropractors free and impose a copayment for second and subsequent visits only, as was described above. This is Proposition 6 in Table 15. Such a scheme could be expected to more than double the number of patients visiting chiropractors. We believe that going this further step of eliminating the copayment entirely will lead both to a higher level of patients visiting chiropractors and a further reduction in the average number of visits per patient. Under Proposition 7 of Table 15 the flow of patients to chiropractors will naturally be maximized and patients will seek chiropractic care as soon as they see fit or necessary. This proposition allows the greatest freedom of choice of caregivers on the part of patients, since medical care and chiropractic care would be treated almost equally under OHIP. We say "almost" because there are no ceilings on the number of visits nor total costs per patient for medical management under OHIP but we do envision such ceilings for chiropractic care. Nonetheless, our proposal radically alters the set of choices for patients. A high proportion of patients choose to see chiropractors only when medical and/or other treatments fail to resolve their problems. The levels by which the three objectives are met are therefore somewhat greater under Proposition 7 than under Proposition 6.

The essential economic argument can be stated succinctly. In order for the Ministry of Health to maximize the savings in health care costs, it should maximize the flow of patients with NMS conditions and injuries to chiropractors. This can best be done with no copayment. It is simply illogical to impose a copayment - a user fee that deters access - on care that has been proven to be cost-effective and safe while making alternative care that is not as cost-effective nor as safe available for 'free'. The current situation fails to conform with the principle illustrated in Figure 2 earlier, that the government should make the most cost-effective matching between specific health care needs of the public and recognized, available health care providers.

The only argument for imposing a copayment on cost-effective care is lack of fiscal capacity. We cannot see how such an argument can apply in this matter. If affordability was in fact a real constraint in accepting our recommendation of no patient copayments, then it would be wiser in principle for the Ministry of Health to impose a medical visit copayment by patients. Since this would violate the Canada Health Act, the next best alternative policy would be to reduce the OHIP fee levels for medical doctors for select NMS conditions and injuries within the chiropractic scope of practice, thus encouraging referral of patients for more cost-effective care.

THE POTENTIAL ECONOMIC SAVINGS FROM ENHANCED CHIROPRACTIC COVERAGE

We now offer several estimates of how much we can reasonably expect to save in both direct health care costs and indirect costs from the additional coverage of chiropractic services under OHIP.

As we explained earlier, there are no data of the type suggested in Figures 2 and 3. Fortunately, we do have the direct and indirect costs of illness by diagnostic categories for all of Canada for the years 1993 and 1986 from Health Canada (Wigle et al, 1993; Moore et al, 1997). The relevant figures for 1986 are reported in Table 15. We note that indirect costs for musculoskeletal (MS) conditions are 4.36 times greater than the direct costs and that for injuries indirect costs are 3.24 times greater than the direct costs (ie. including drugs, medical, and hospital care only). Furthermore, Wigle et al. (1993, p.1) note that in 1986 in terms of total costs "musculoskeletal disorders and injuries ranked second and third" among all diagnostic categories, and were exceeded only by cardiovascular diseases. This ranking remained the same in 1993 (Moore et al. 1997, p.11). Musculoskeletal diseases alone accounted for 35.2% of all the long-term disability costs and 10% of short-term disability costs (Moore et al., 1997, p.32-33).

Table 16 contains data for the year 1993 using the same categories and definitions of direct and indirect costs. As far as we know, these are the only such data available for the direct and indirect costs for Canada, and there are no comparable for the years since 1993.

Table 17 shows the growth in both direct and indirect costs from 1986 to 1993 for each of the 3 diagnostic categories. It is apparent that both the direct and especially the indirect costs of musculo-skeletal conditions have grown much more rapidly than the direct and indirect costs for all diseases in Canada.

Table 16

Direct & Indirect Costs by Diagnostic Category
1986 Canada (in millions)

Diagnostic Category	Direct Costs				Indirect Costs			
	Drugs	Medical	Hospital	Total*	Prem Mort	Chron Dis	ST Dis	Total
Musculo-Skeletal	134	433	906	1473	84	6057	285	6426
Nervous Sys. & Sense Org.	279	572	1180	2031	510	823	143	1476
Injuries	145	475	1351	1971	4848	1328	213	6389
TOTAL	558	1480	3437	5475	5442	8208	641	14291

*Source: Wigle et al (1993), Table 10, pp. 26.

* This is not the total direct costs reported by Wigle et al (1993). These totals exclude all research costs since they are not likely to be affected at all by the greater coverage of chiropractic care under OHIP. The direct costs of interest to us in this analysis are essentially direct treatment costs, and we also exclude pensions and benefits which were included in the definition of direct costs.

Table 17

Direct & Indirect Costs by Diagnostic Category
1993 Canada (in thousands)

Diagnostic Category	Direct Costs				Indirect Costs			
	Drugs	Medical	Hospital	Total*	Prem Mort	Chron Dis	ST Dis	Total
Musculo-Skeletal	490091	668802	1285910	2444803	95531	13479056	1753851	15328438
Nervous Sys. & Sense Org.	444055	952471	792862	2189388	703404	5721836	896058	7321298
Injuries	185609	676300	2253487	3115396	5700162	2279040	3242540	11221742
TOTAL	1119755	2297573	433259	7749587	6499097	21479932	5892449	33871478

Source: Table 2 of Moore et al. (1997), p. 10-11.

Table 18

Growth in Direct & Indirect Costs of Select Diagnostic Categories from 1986 to 1993 Canada (in millions)

Diagnostic Category	Total Direct Costs			Total Indirect Costs		
	1986	1993	% increase	1986	1993	% increase
Musculo-Skeletal	1473	2444.8	66.0	6426	15328.4	138.5
Nervous Sys. & Sense Org.	2031	2189.4	7.8	1476	7321.3	396.0
Injuries	1971	3115.4	58.1	6389	11221.7	75.6
All Diseases	27662	43617.5	57.7	47020	85122.7	81.0

Total direct costs includes expenditures for drugs, medical & hospitals. Total indirect costs includes the costs of premature mortality, long term disability and short-term disability.

In order to derive estimates for Ontario for the year 1998, we first calculated 40% of the 1993 Canadian figures and then increased them by 8.4%, which represents the growth in direct health costs for all health care services over the period from 1993 to 1998. This 8.4% is derived from the known increase in expenditure from 1993 to 1997 and a further estimated increase of 1.4% from 1997 to 1998 (CIHI, 1997). These estimates are shown in Table 18. It is likely that the estimates for musculoskeletal conditions are below the real figures, but in the absence of good up-to-date evidence we chose to proceed with conservative estimates.

Table 19

Estimates for the Province of Ontario, 1998*
(in thousands)

Diagnostic Category	Direct Costs				Indirect Costs			
	Drugs	Medical	Hospital	Total*	Prem Mort	Chron Dis	ST Dis	Total
Musculo-Skeletal	212699.5	290260.1	558084.9	1061045	41460.45	5849910	761171.3	6652542.1
Nervous Sys. & Sense Org.	192719.9	413372.4	344102.1	950194.4	305277.3	2483277	388889.2	3177443.3
Injuries	80554.31	293514.2	978013.4	1352082	2473870	989103.4	1407262	4870236
TOTAL	485973.7	997146.7	1880200	3363321	2820608	9322290	2557323	14700221

* The 1998 estimates for the Province of Ontario are derived by first taking 40% of the 1993 all-Canada figures, and then increasing the resulting figures by the increased expenditure since that time of 8.4%.

The empirical literature we presented earlier suggests the approximate percentage of savings we can expect if chiropractic services were made more accessible to be public. Since we have no direct Canadian evidence, and because precisely how generalizable the foreign evidence may be for Ontario is not known, we offer four scenarios that assume different combination of savings from increasing the flow of patients from medical to chiropractic management of NMS conditions and injuries.

There are very solid empirical estimates that chiropractic care can save the health care system 61% of costs for a range of musculoskeletal conditions. For some conditions the savings are even higher, for others they are lower to about 25% to 35%. There are less data for "nervous system and sense organ illnesses", which include headaches. On the basis of the direct costs of treatment and hospitalization rates by illness that we referred to earlier, only a less accurate estimate can be made about the overall savings if chiropractors were to manage many more patients with such conditions. We have therefore chosen much lower "savings ratios" for this category, 3% to 15%. Similarly we have a lower savings ratio for the third category, injuries.

Our methodology for estimating the savings in health care costs is illustrated in Figure 4. Essentially we use the empirical analysis and utilization data presented earlier to generate magnitudes of savings,

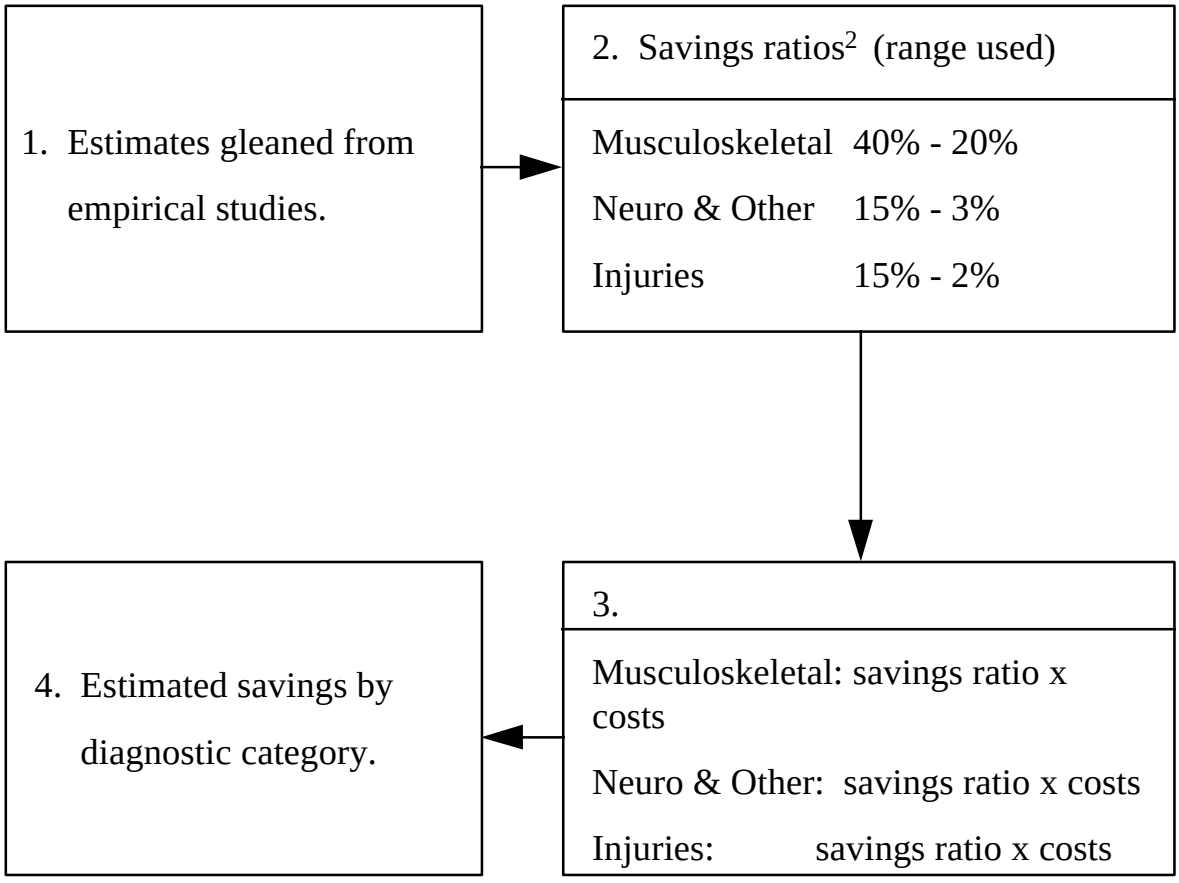
which we call the "savings ratios", in Figure 4. We assume various levels and combinations of savings-ratios in our analysis. For example, the range of the savings-ratios for musculoskeletal conditions is 40% to10.5%, and for injuries from 15% to 2%. We then apply these combinations of savings-ratios to the costs of the three diagnostic categories of relevance to our analysis to generate the overall magnitude of savings.

In Table 19 and 20 we indicate what our "savings-ratios" for each scenario means for the various components of direct and indirect costs for the three diagnostic categories of interest. For each scenario we have a "saving-ratio" for each category for direct costs and indirect costs. That is to say, each scenario consists of 6 savings-ratios. There are shown in Table 21. The wide range of savings-ratio should be noted. The range of the savings-ratios was made deliberately wide to indicate how sensitive our overall health care costs savings were to quite different values for the savings-ratios.

Another necessary assumption is the additional number of patients chiropractors will treat under enhanced OHIP funding that reduces copayments and increases access. The impact of the savings ratios obviously depends on the flow of new patients and more acute patients to chiropractors. We have assumed that the Ministry of Health accedes to the OCA's proposal (or Proposition 5 in Table 19) and that this will result in an additional 1 million patients utilizing chiropractic services each year within 3 years. This assumes a doubling of the utilization rate which we believe is feasible in light of the price-elasticity of demand estimates we have cited earlier in the report and the fact that Saskatchewan has already attained a 17% utilization rate. We have emphasized the strong deterrent effect of copayments. The 50% reduction in the current copayments from approximately $18 per visit to $9 per visit implied by the OCA's proposal may easily double the numbers of patients seeing chiropractors for NMS disorders and conditions.

FIGURE 4

METHODOLOGY FOR ESTIMATING SAVINGS IN DIRECT[1] HEALTH CARE COSTS



1. There are no empirical estimates on the savings to indirect costs of the 3 diagnostic categories. In order to illustrate the rough magnitudes we assumed lower savings ratios as shown later.
2. Assuming a population utilization rate of 20% i.e. a doubling in the number of patients visiting chiropractors.

Table 20 shows the details of the resulting savings for both direct and indirect costs for each diagnostic category. The savings ratios we have used for each of the three scenarios shown in Table 21 can be found in Table 22. Thus, Scenario 1 assumes ratios of 40%, 15% and 15% for the direct treatment costs for the diagnostic categories respectively assuming 1 million new patients being seen by chiropractors. The savings in direct treatment costs under this scenario are $769.8 million. If we assume a lower set of savings ratios (i.e. 30%, 10%, and 10%) the savings in total direct treatment costs drops to $548.5 million as shown in Scenario 2. Under yet lower savings-ratios in Scenario 3 of 25%, 5% and 5%, the direct savings are $380.4 million and indirect costs are in excess of $1 billion as can be observed in the last column of Table 20.

In Table 20, we present Scenario 4 which assumes savings in direct health care costs equals the additional $200 million required by the OCA's proposal of enhanced coverage of chiropractic care under OHIP. More precisely, if we assume very low - and in our opinion very unreasonably so - savings ratios of 10.5%, 3% and 2% respectively, the total savings in direct treatment costs will match the additional financing of chiropractic care that the OCA is requesting. It is difficult to think that given the high rate of hospital use for some neurological conditions (eg. migraine and other headaches) and all that they entail (drugs, diagnostic imaging, other laboratory tests, etc.) and the high incidence and prevalence of these conditions, that chiropractic management of them would result in a savings of a mere 3%. Even more unbelievable to us is a savings of only 10.5% for musculoskeletal disorders which constitutes the bulk of the cases of chiropractors. Still, our purpose for using these very low savings-ratios was to illustrate the implications of assuming a break-even hypothesis. In calling it the "break-even" scenario, we recognize that we are in fact ignoring the savings of $795.2 million in indirect costs under this scenario.

Table 21 summarizes the assumptions we made that comprise the scenarios shown in Tables 19 and 20. It also shows the total savings under each scenarios, which are of course taken from Tables 21 and 22.

It is apparent that under any scenario the savings in indirect costs are much higher than the savings in direct costs. The Ministry of Health will no doubt be principally interested in net direct health care costs savings. We conclude that these are significant on the most conservative reasonable estimates. Savings will significantly exceed the costs of the expanded coverage of chiropractic services under OHIP. Needless to say other scenarios can also be worked out by applying different savings-ratios to Table 18.

Table 20

3 Scenarios of Savings to Direct and Indirect Costs ($ thousands)

Diagnostic Category	Direct Costs				Indirect Costs			
	Drugs	Medical	Hospital	Total*	Prem Mort	Chron Dis	ST Dis	Total
Scenario 1								
Musculo-Skeletal	85079.8	116104	223234	424417.8	0	2339964	304468.5	2661016.8
Nervous Sys. & Sense Org.	28907.98	62005.86	51615.32	142529.2	0	496655.4	77777.83	635488.67
Injuries	12083.15	44027.13	146702	202812.3	0	197820.7	281452.5	479273.14
TOTAL	126070.9	222137	421551.3	769759.2	0	3034440	663698.8	3775778.6
Scenario 2								
Musculo-Skeletal	63809.85	87078.02	167425.5	318313.4	0	1169982	152234.3	1322216.3
Nervous Sys. & Sense Org.	19271.99	41337.24	34410.21	95019.44	0	248327.7	38888.92	287216.6
Injuries	8055.431	29351.42	97801.34	135208.2	0	1517220	331849.4	1849069.5
TOTAL	91137.27	157766.7	299637	548541	0	1517220	331849.4	1849069.5
Scenario 3								
Musculo-Skeletal	53174.87	72565.02	139521.2	265261.1	0	877486.5	114175.7	991662.25
Nervous Sys. & Sense Org.	9635.994	20668.62	17205.11	47509.72	0	124163.8	19444.46	143608.3
Injuries	4027.715	14675.71	48900.67	67604.09	0	49455.17	70363.12	119818.29
TOTAL	66838.58	107909.3	205627	380374.9	0	1051106	203983.3	1255088.8

Key: Prem Mort = premature mortality
Chron Dis = chronic disability
St Dis = short-term disability

Table 21

The Break-even Scenario
($ thousands)

Diagnostic Category	Direct Costs				Indirect Costs			
	Drugs	Medical	Hospital	Total*	Prem Mort	Chron Dis	ST Dis	Total
Scenario 4 Musculo-Skeletal	22333.4	30477.3	58599	111409.7	0	584991	76117	661100
Nervous Sys. & Sense Org.	9635.994	20668.62	17205.11	47509.72	0	74498	11667	86165
Injuries	2416.629	8805.426	29340.4	40562.46	0	19782	28145	47927
TOTAL	34386.1	59951.3	105144.5	149482.9	0	679271	115929	795200

Table 22

Assumptions About Savings Radios under each of the 4 Scenarios

Diagnostic Category	Total Direct Costs				Total Indirect Costs			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Musculo-Skeletal	.40	.30	.25	.105	.30	.20	.15	.10
Nervous Sys. & Sense Org.	.15	.10	.05	.03	.20	.10	0.05	.03
Injuries	.15	.10	.05	.02	.20	.10	.05	.02
Total savings in millions	769.8	548.5	380.4	199.5	3037	1849	1255.1	795.2

Interpretation: For Scenario 4 we assume that the enhanced coverage of chiropractic care will permit a saving of 10.5% (0.105) of the direct treatment costs of musculo-skeletal disorders; 3% (0.03) of nervous system diseases and illnesses, and 2% (0.02) of injuries. The total savings in direct treatment costs is about $200 million.

The savings indicated in Tables 20, 10 and summarized in Table 22 are huge. Under Scenario 1 for instance, a savings of $770 million in direct costs means a savings of $770 per patient. This is

possible because of the high costs of laboratory diagnosis, imaging, surgery and hospitalization. The savings for one patient for whom back fusion surgery is avoided may be $18,000 or more. Put another way, the additional $200 million in funding for chiropractic care amounts to about $20 per capita for a saving of about $77 per capita. Our most conservative estimate of savings in direct health care costs is $380 million, that is, less than half of the savings under Scenario 1. Our middle estimate is $548 million. We are confident that very significant savings in direct treatment costs can be realized under the enhanced coverage of chiropractic care under OHIP. We can only wish that far more direct and detailed data were available for this analysis, and wish to encourage the Ministry of Health to help establish the desired data and initiate the kind of research suggested earlier.

Finally, it should not be assumed from the foregoing that we think the indirect costs of the three diagnostic categories are less important. No health economists would adopt this view. It is the total savings, including both direct and indirect costs, that should determine the wisdom or otherwise of a specific health care reform. Governments, more than anyone else need to take a more comprehensive view of the benefits and costs of any reform. After all, much of the indirect costs eventually translates into a direct burden for one or another ministry of the Government of Ontario (for eg. health, labour, social services, housing, finance, etc.) . From this wider perspective the case for the proposed reform becomes particularly strong and convincing.

CONCLUSION

The burden of much of the previous sections was to point out that chiropractic and medical management of many NMS disorders and injuries are substitutes. We recognize that there are complementarities between the two professions as well. We have presented much evidence that NMS disorders and injuries are very prevalent and costly. They cause a disproportionate amount of chronic illness and disability. We then presented sophisticated studies and analyses, especially those by Stano and Smith, demonstrating that chiropractic care is significantly more cost-effective than medical care within a common scope of practice. We also cited evidence favouring chiropractic in terms of safety and patient preference.

All of these observations point to a clear need for greater coverage of chiropractic care under private and public insurance systems. This will assure gains in both efficiency (producing health care services at the lowest costs) and effectiveness (getting the best health outcomes per dollar spent). Furthermore, greater insurance coverage will also mean greater access to chiropractic care, especially for population groups who are presently deterred from visiting chiropractors for financial reasons. We presented evidence that the poor, lower middle class and the elderly were significantly less likely to access and use chiropractic care even though they suffer from a greater prevalence of NMS disorders. This no doubt contributes to the high use among these groups of medical services, drugs and hospital care. High out-of-pocket payment is a major deterrent to the utilization of

chiropractic services. The patients are steered to medical doctors resulting in higher costs and, often, poorer health outcomes.

Many Ontario patients, with their histories of NMS disorders, constitute "living evidence" of the overall statistical picture we have established in this report. The testimonials of two are appended to the Chiropractic Services Review Committee Report. The Ministry of Health could find many others who can offer anecdotal evidence corroborating our analysis. As we pointed out earlier, four out of five patients of chiropractors have had their problems for more than six months and have typically had medical and/or physiotherapy care before their visit to the chiropractor. This fact alone calls for the kind of reform we have analyzed here.

Increasing the funding for chiropractic care is consistent with the Government of Ontario's Business Plan of 1997 which called for reallocating resources for evidence-based frontline services in a community setting. This initiative substitutes community-based services for institutional and hospital care, and emphasizes getting "the right care from the right provider at the right time." It is consistent with the government's emphasis on primary health care reform and its effort to move away from the fee-for-service method of reimbursement. The policy would assist the WSIB to reform its management of neuromusculoskeletal disorders in the workplace. The literature and clinical guidelines on back pain, neck pain and headache indicate a fundamental change in managing such conditions from a biomedical model (extensive use of diagnostic testing, drugs, bed rest, physiotherapy) to a biopsychosocial model (use of early activities/exercise, patient education, spinal manipulation, over-the-counter drugs and restoration of function). Finally, it would allow chiropractic services to be better integrated into the larger health care delivery system, especially if some of our recommendations pertinent to the wider use of chiropractic are implemented. The evidence is that chiropractic services should be frontline services for many NMS disorders rather than the default system of care when all else fails, as it seems to be for many patients.

Unlike the past there is now mutual respect and greater inter-referral of patients between medical and chiropractic doctors. There are no doubt many medical doctors who would support greater OHIP coverage of chiropractic services. The College of Physicians and Surgeons of Ontario has recently acknowledged the value of chiropractic and made the policy declaration that it is not misconduct to refer patients to such "complementary" practitioners when appropriate. Since the policy we have suggested in this study would diminish the wide gap in the way the two professions are treated under OHIP, but does not favour chiropractic more than medicine and does not directly reduce medical coverage for NMS conditions, we do not anticipate open opposition to this reform on the part of organized medicine in Ontario.

Thomas L. Wells, a former Ontario Minister of Health, chaired the Chiropractic Services Review Committee in 1993-1994. The CSRC Report, popularly referred to as the Wells Report, made many recommendations vis-a-vis chiropractic which dealt with health human resources planning and

education, radiology services, specialist referrals, diagnostic code revisions, laboratory diagnosis, access and funding, and finally, research and clinical guidelines.

We repeat some of the recommendations that are most relevant to our analysis. The Wells Report recommended that:

> "That the citizens of Ontario should have improved and genuine freedom of choice of chiropractic services. To achieve this a number of barriers to access should be removed" (Wells, 1994, p. ii).

> "That the current level of copayments for chiropractic services, particularly in a multi-disciplinary health care system where other services have no copayment, represents an inequitable barrier to access which should be minimized" (Wells, 1994, p. iii).

Our report offers concrete support for these recommendations, and is based on the economic argument that additional coverage of chiropractic services to reduce or eliminate patient copayments will yield major savings in both direct health care costs and indirect costs.

There is a final principle that is important is making decisions about manpower substitution in the health care system, one that is repeatedly overlooked or discounted by health care bureaucracies and decision makers. We are referring to the principle of distributive justice which is hardly ever mentioned, let alone seriously considered, in studies of manpower substitution. We would argue that the principle of distributive justice requires that the government implement all cost-effective substitutions because failure to do so results in unfairness to the taxpayers and the health care professionals concerned. It is clear that some professions enjoy economic rent at the expense of the taxpayers, and thus the distribution of the burden and benefits of publicly supported health insurance is inequitable from the standpoint of the taxpayers. OHIP is more costly than it needs to be, hence taxes in Ontario are correspondingly higher than they should be. The imposition of the high copayment for chiropractic care, when publicly financed medical services are free, results in a higher tax burden on the public to cover the less cost-effective medical management of prevalent conditions such as common back pain - a major cause of disability in the community. This result should be of concern to a government that emphasizes the need to reduce taxes in Ontario. The monopolization of health care services turf is also inequitable from a related perspective. It denies some professions equal opportunity to earn income commensurate with their ability, effectiveness and effort.

Equity is likely to become more important in the immediate future as the struggle over the health care turf becomes fiercer, and as taxpayers demand more value for the taxes they pay. Inefficient use of health manpower is not just economically wasteful, generating higher levels of taxation, it

is also inequitable, and the greater the realization of this fact the greater will be the pressure on governments to do something about the problem. Curiously, the professions that have and still

suffer the adverse effects of the inefficient use of our health manpower have not used this argument forcefully to encourage and urge the desired reforms. They should.

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