0008-3194/2002/241–256/$2.00/©JCCA 2002

Chiropractic Name techniques in Canada: a continued look at demographic trends and their impact on issues of jurisprudence

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In a previous article, the author reported on the recommendations gathered from student projects between 1996 and 1999 investigating their preferences for including certain chiropractic Name technique systems into the curriculum at the Canadian Memorial Chiropractic College (CMCC). These results were found to be congruent with the professional treatment techniques used by Canadian chiropractors. This article reports on the data obtained during the 2000 and 2001 academic years, comparing these results to those previously gathered. In addition, because of the implementation of a new curriculum during this time period, there was a unique opportunity to observe whether or not student perceptions differed between those students in the 'old' curricular program, and those students in the 'new' curricular program. The results gathered indicate that students in both curricular programs show an interest in learning Thompson Terminal Point, Activator Methods, Gonstead, and Active Release Therapy techniques in the core curriculum, as an elective, or during continuing educational programs provided by the college. Students continue to show less interest in learning CranioSacral Therapy, SacroOccipital Technique, Logan Basic, Applied Kinesiology and Chiropractic BioPhysics. Over time, student interest has moved away from Palmer HIO and other upper cervical techniques, and students show a declining interest in being offered instruction in either Network Spinal Analysis or Torque Release Techniques. Since these findings reflect the practice activities of Canadian chiropractors they may have implications not only towards pedagogical decision-making processes at

Dans un article antérieur, l'auteur publiait les recommandations recueillies lors de projets étudiants entre 1996 et 1999 dans le cadre d'une étude sur leurs préférences quant à l'inclusion de certaines « techniques de nom » chiropratiques dans le programme d'études du Canadian Memorial Chiropractic College (CMCC). Ces résultats coïncident avec les techniques de traitement professionnel utilisées par les chiropraticiens au Canada. Le présent article fait état des données obtenues durant les années scolaire 2000 et 2001, en comparant ces résultats à ceux auparavant recueillis. De plus, vu la mise en œuvre d'un nouveau programme d'études durant cette période, il y avait là une occasion unique d'observer si la perception des étudiants différait selon qu'ils étaient dans le « vieux » programme ou dans le « nouveau » programme. Les résultats recueillis indiquent que les étudiants des deux programmes d'études ont montré un intérêt à apprendre les techniques Thompson Terminal Point (point terminal de Thompson), Activator Methods (méthodes au moyen d'activateur), Gonstead et Active Release Therapy (thérapie de libération active), dans le cadre du tronc commun, en cours au choix ou dans les programmes de formation continue offerts par le collège. Les étudiants montrent de moins en moins d'intérêt pour l'apprentissage des techniques suivantes : thérapie crânio-sacrale, technique sacro-occipitale, Logan Basic, kinésiologie appliquée et biophysique chiropratique. Au fil du temps, l'intérêt manifesté par les étudiants pour la technique HIO de Palmer et autres techniques axées sur les hautes cervicales s'est estompé. Les étudiants ont aussi montré de moins en moins d'intérêt pour

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CMCC, but they may also influence professional standards of care.
(JCCA 2002; 46(4):241–256)

KEY WORDS: chiropractic Name technique systems, standards of care, professional practice activities, education.

d'éventuels cours portant soit sur l'Analyse du réseau vertébral ou sur la technique Torque Release. Puisque ces résultats reflètent la pratique des chiropraticiens au Canada, ils pourraient avoir des répercussions non seulement sur le processus de décision pédagogique du CMCC, mais aussi sur les normes professionnelles en matière de soins.
(JACC 2002; 46(4):241–256)

MOTS CLÉS : techniques de nom chiropratiques, normes en matière de soins, activités professionnelles, éducation.

Introduction

The best available evidence continues to demonstrate that chiropractors achieve clinically important results for their patients experiencing acute and chronic spinal pain, and certain types of headaches.[1–11] Other evidence from practice-based trials has shown that chiropractic treatments often benefit patients with other neuromusculoskeletal conditions such as fibromyalgia,[12] vertigo,[13] asthma[14] and colic.[15] These results are often achieved with an enviable safety record, with the current literature consistently indicating that serious side effects of chiropractic care, such as stroke or death, are rare, unpredictable and idiosyncratic complications.[16–20] The overall net effect is that many studies, comprehensive reviews of the literature and expert opinion conclude that chiropractic care is safe, appropriate, clinically useful and cost effective compared to alternative treatments such as surgery, drug therapy, bed rest, physical therapy and patient instruction.[11]

However, several fundamental questions germane to many chiropractic technique systems continue to stubbornly resist putative testing, and many hypothetical models commonly used in professional practice have not achieved credibility in the eyes of a substantial component of the scientific community.[21] Questions as yet unanswered include: the true generators of spinal pain;[22] a suitable explanation for uniformly desirable outcomes obtained under chiropractic care despite the poor inter-rater reliability of many of the most commonly used diagnostic tests;[23] the relationship of prolonged spinal dysfunction to health or, conversely, the benefit of ongoing (maintenance) care;[24–26] and the determination of which of the over 200 different chiropractic technique systems should be preferentially used for which clinical condition.

What drives the controversy here is that each chiropractic Name technique system purports to treat similar but not identical clinical problems, under what has been referred to as subluxation-equivalents.[27] Thus, while chiropractors can point with pride to the accrual of positive patient outcomes derived while under chiropractic care, these results may be obtained using a host of different therapeutic approaches. In other words, because no one chiropractic technique has shown consistent superiority over another for all clinical conditions (see, however, reference 11), many chiropractors have come to rely on a combination of several different interventions in order to overcome the variability in patient presentation encountered during private professional practice.

This article reports on the results obtained from student projects investigating their perceived preference for greater exposure to different Name techniques while at CMCC, a trend that was first identified in a previously published study,[28] as well as student focus groups and surveys.[29] Moreover, during the 1999 academic year, CMCC undertook a curricular transformation. The intent of this effort was to better position courses in the curriculum with respect to each other while emphasizing a program that was competency-based, integrated and practice-related. In addition, with the current trend towards evidence-based practice (EBP), the curriculum strove to emphasize a preference for those procedures with the widest base of clinical evidence while being wary of those practice activities based on either metaphysical ideologies or concepts that fall outside the realm of nor-

mal science. To achieve this goal, several courses sought to equip students with the critical appraisal skills needed to differentiate between the two. The curricular transformation resulted in the repositioning of the course that introduced students to the most commonly used chiropractic Name technique systems from the end of fourth year to the beginning of the second year at CMCC. The combination of the curricular transformation project and the emphasis on EBP provided a unique opportunity to observe whether or not perceptions differed between those students educated under the 'old' curriculum, and those students educated under the 'new' curriculum.

Over the past few years, regulatory bodies across Canada have had to grapple with a number of complex issues regarding chiropractic technique systems, and some of the different domains of Canadian chiropractic law are discussed in this article. The information gathered from this ongoing program may, therefore, not only impact pedagogical decision-making processes at CMCC, but it may also influence the developmental process of both professional practice guidelines and standards of care.

Method

Guest lecturers were invited to provide students in both second and fourth year classes with a presentation of the technique(s) they use in their private practices. The presentations discussed a Name technique in terms of its historical development, philosophy (or ideology), diagnostic approaches and therapeutic methods. After these presentations, students were then randomly placed into groups of 16. These groups of students met on three different occasions with a facilitator in a problem-based learning (PBL) environment. The advantage of a PBL format is, unlike lecture-based courses, it creates an equal power structure. That is, both the students and the facilitators are on an equal status. Facilitators, all of whom are college faculty in private practice, are not expected to be content-experts or to otherwise dominate the deliberations. The facilitator's role was to provide a forum that allows all participants to express their opinions without bias, censorship or ridicule.

Working within groups of twos or threes, students were allowed to choose a Name technique and investigate it in terms of its history, philosophy, diagnostic and therapeutic methods and, most importantly, to review the available evidence supporting or refuting a technique's clinical effectiveness. Each pair (or trio) of students then presented their report to the other students in the facilitated PBL group. Upon consideration of all the available information, students then voted as to their preference to have the technique included into the core curriculum at CMCC, taught as an elective, taught through the continuing education department, or to continue to have the technique excluded from the college's curriculum. The students compiled and submitted all the investigative reports from their group to the course coordinator (the author) for evaluation. These results gathered from the second and fourth year students from the 2000 and 2001 academic year were compiled into a chart and were compared not only to each other, but also to the results previously published. Lastly, the aggregate data was subsequently compared to the professional practice activities of Canadian chiropractors.

Results

In general, the results gathered from the second and fourth year students during the 2000 and 2001 academic year were strikingly similar to each other (see Charts 1–6), and to those previously published. Specifically, students continued to express an interest in learning Thompson Terminal Point, Activator Methods, Gonstead and Active Release Therapy (ART) techniques in the core curriculum, as an elective course, or in the continuing education program. Students continue to be ambivalent with respect to learning Logan Basic, SacroOccipital, Torque Release, and CranioSacral Technique therapies. Lastly, students reported minimal interest in learning Palmer HIO and other upper cervical techniques, Applied Kinesiology, and Network Spinal Analysis (NSA).

A comparison of second and fourth year student reports also revealed some interesting differences. While fourth year students seemed to be generally more tolerant of tonal based and other techniques that have at their core an ideological approach very much different than the one embraced by the Diversified model advocated at CMCC, second year students expressed more reluctance to do so. For example, reports from the 2001 second-year class (Chart 3) expressed no interest in learning either NSA (0 of 8 groups) or Palmer HIO (0 of 5 groups). By comparison, 2 of 6 groups of fourth year students (Chart 4) from the 2001 class expressed interest in learning NSA (no reports submitted on Palmer HIO). Also, while second year students reported an interest in learning how to use an

Chart 1 Second Year (AC 2410): Year 2000 (*n* = 73)

Technique	Core or Elective	Continue to Exclude	N	Percentage to Include
ART	12	0	12	100%
Activator	10	0	10	100%
Thompson	10	0	10	100%
Gonstead	9	1	10	90%
CranioSacral	3	1	4	75%
Network	2	3	5	40%
Applied Kinesiology	3	6	9	33%
Logan	1	2	3	33%
Torque Release	1	3	4	25%

There were also individual reports (N=1) on CBP, Chrane, BEST, PRT, Palmer HIO, and SOT.
These reports recommended PRT and Palmer HIO be included in the curriculum, and CBP, Chrane, BEST, and SOT be excluded from the curriculum.
There were 4 reports submitted with no definitive recommendation reached.

Chart 2 Fourth Year (AC 410): Year 2000 (*n* = 71)

Technique	Core or Elective	Exclude	N	Percentage to Include
ART	11	0	11	100%
Activator	10	0	10	100%
Gonstead	7	0	7	100%
Thompson	8	1	9	89%
CranioSacral	5	1	6	83%
NSA	4	1	5	80%
SOT	2	2	4	50%
Applied Kinesiology	2	3	5	40%
Palmer HIO	1	2	3	33%
Torque Release	1	2	3	33%

There were two reports on Pettibon; both recommended Pettibon be included as an elective.
Two reports on BEST recommended it be excluded from the curriculum. Individual reports on Hill, Cox Flexion-Distraction, Logan Basic and CBP recommended these techniques be included in the curriculum.
There were 9 reports that did not provide a definitive recommendation.

activator or drop piece tables, they expressed much less interest in learning the diagnostic methods associated with each technique (isolation tests, leg length analysis and so on) than did fourth year students. Without exception, however, both second and fourth year students expressed an interest in learning more soft tissue and myofascial techniques, such as ART.

Discussion

Limitations of this study

There are some limits to the investigation approach used by the author. A few charismatic students who have a passionate interest in a particular Name technique may be able to dominate a number of PBL groups and ultimately

Chart 3 Second Year (AC 2410): Year 2001 (*n* = 71)

Technique	Core or Elective	Exclude	N	Percentage to Include
ART	10	1	11	90%
Activator	9	1	10	90%
Gonstead	9	2	11	81%
Thompson	9	2	11	81%
Pettibon	2	2	4	50%
Applied Kinesiology	1	4	5	20%
NSA	0	8	8	0%
Palmer HIO NUCCA	0	5	5	0%

Two reports were provided on Logan Basic and CranioSacral Therapy. For each technique, one report recommended inclusion, one report recommended exclusion. One report was submitted on SOT; it recommended exclusion. One report was submitted on Trigenics; it recommended inclusion.

Chart 4 Fourth Year (AC 410): 2001 (*n* = 71)

Technique	Core, Elective or CE	Exclude	N	Percentage to Include
ART	9	2	11	81%
Activator	8	2	10	80%
Gonstead	6	2	8	75%
Thompson	7	2	9	77%
CranioSacral	5	4	9	55%
SOT	2	2	4	50%
Applied Kinesiology	2	3	5	40%
NSA	2	4	6	33%
Torque Release	1	2	3	33%

Two reports investigated Mitzah technique. One recommended inclusion, one recommended exclusion.
One report each for CBP, Grostic, Toftness, and BioGeonetnics. All recommended continued exclusion from the program at CMCC.

distort the statistical outcomes in such as way as to suggest that a technique is more popular than it may actually be (see below). Conversely, a pair of skeptical students may not have access to all the available evidence about a particular technique, and may censure some sources of information that are not congruent with their opinions, or they may otherwise not provide a fair, balanced or thorough presentation. Also, unlike the students in the previous study, these students would be aware of the data gathered from student groups between the 1996 and 1999 academic years. More importantly, because students are not in clinical practice, they may lack the practical knowledge base needed to make appropriate decisions with respect to curricular content.

Utilization rates

The preference by students for instruction in many different chiropractic techniques systems resonates well with current practice activities. The Job Analysis of the NBCE 2000 is the best source of data from which to draw information in the area of chiropractic technique systems.[30] The most current report of the NBCE 2000 suggests that,

Chart 5 Combined Results from Second Year Students (Academic years 2000 and 2001 (*n* = 144)*

Technique	Core or Elective	Exclude	N	Percentage to Include
ART	22	1	23	95%
Activator Methods	19	1	20	95%
Thompson Terminal Point	19	2	21	90%
Active Release	18	3	21	85%
CranioSacral Therapy	4	2	6	66%
Pettibon	2	2	4	50%
Logan	2	3	5	40%
Applied Kinesiology	4	10	14	28%
Torque Release	1	3	4	25%
Palmer HIO/ Upper Cervical	1	5	6	16%
NSA	2	11	13	15%

Two reports on SOT both recommended continued exclusion from the program.
One report on each of the following recommended continued exclusion: BEST, Crane Technique, CBP.
One report on each of the following recommended inclusion: PRT, Trigenics

Chart 6 Combined Results from Fourth Year Students: 2000 and 2001 (*n* = 135)*

Technique	Core or Elective	Exclude	N	Percentage to Include
ART	19	2	21	90%
Activator	19	2	21	90%
Thompson Terminal Point	15	2	17	88%
Gonstead	13	3	16	81%
CranioSacral Therapy	10	5	15	66%
NSA	6	5	11	54%
SOT	4	4	8	50%
AK	4	6	10	40%
Torque Release	1	2	3	33%
Palmer HIO/ Upper Cervical	1	3	4	25%

Two reports were submitted on both Mitzvah and CBP techniques. For each technique, one report recommended inclusion, one exclusion. One report was submitted for Logan, Cox flexion and Pettibon; each recommended inclusion. One report was submitted for Toftness and BioGeometrics; each recommended exclusion.

on average, individual practitioners in the United States use seven separate techniques in their practices. The Analysis reported that three-fourths of chiropractors use Diversified technique on their patients. However, half of these chiropractors also use Activator, Gonstead, Cox-flexion, Thompson and SacroOccipital Technique (SOT) on 49% or more of their patients. Moreover, a comparison of the results reported by the NBCE between 1991 and 1998 demonstrate an increase in the nine most commonly reported used techniques.[31] For example, in 1991, 51.2% of chiropractors used Activator Methods; in 1998, this number rose to 62.8%. Similar trends of increased utiliza-

Chart 7 Total of all Student Reports from 1996 to 2001 (*n* = 542)*

Technique	Core or Elective	Exclude	N	Percentage to Include
Thompson Terminal Point	67	4	71	94%
Activator	70	5	75	93%
Gonstead	63	7	70	90%
Active Release	62	7	69	89%
Palmer HIO/ Upper Cervical	15	9	23	62%
Logan	12	9	21	57%
SacroOccipital Technique	16	14	30	53%
Torque Release	11	10	21	52%
CranioSacral Technique	28	28	56	50%
Applied Kinesiology	17	27	44	38%
Network Spinal Analysis	12	22	34	35%
Chiropractic BioPhysics	4	8	12	33%

* Since 1996, there have been a total of 595 reports submitted by students. Techniques that were investigated by fewer than 5 student groups were not included in this summation (*n* = 28), nor were those reports that failed to provide a definitive recommendation (*n* = 25)

tion rates are seen in Gonstead, Cox Flexion-distraction, Thompson, SOT, Applied Kinesiology, NIMMO/receptor tonus, cranial, and Palmer upper cervical/HIO. There were slight decreases (2% or less) in the utilization rates of Logan basic and Pierce-Stillwagon techniques.

Although the practice activities of Canadian chiropractors undoubtedly differ in some respects from their American cohorts, there is some evidence to suggest that there are many similarities between the two, especially in the area of technique utilization. In a previous article,[28] the author described the increasing influx of American-trained chiropractors in Canada, as evidenced by an exponential increase in the number of candidates sitting for the Canadian Board Examination. Since most American chiropractic colleges offer instruction in a wide variety of Name techniques in either the core curriculum or as electives,[32] it is probable that these practitioners will continue to use the procedures they were taught in the United States upon their return to Canada. Combining the data gathered from the practice pattern study of Canadian chiropractors in 1995 by Kopansky-Giles and Papadopoulos,[33] as well as the increased interest in Name techniques seen in CMCC students over the past decade,[28,29] it seems reasonable to predict that the utilization rate of Name techniques will continue to increase and may eventually mirror those rates reported by the NBCE for American chiropractors.

Interpreting cumulative data

Careful inspection of the cumulative results gathered between 1996 and 2001 reveals some interesting trends. Over this six-year period, six fourth year classes and two second year classes, representing approximately 1,250 students, have submitted a total of 595 investigative reports. Overall, students have consistently expressed an interest in learning Thompson Terminal Point (94%), Activator Methods (93%), Gonstead (90%) and Active Release Therapy (89%), while the interest expressed in learning other techniques has waxed and waned over time (Chart 7). In fact, the reported preference for greater instruction in a certain Name technique is often a reflection of interest expressed by a small charismatic group of students in one academic year. Such a numerical aberration may result in a technique appearing to be much more popular than it actually is.

An example of this trend can be found in the reports on Palmer HIO. Although 8 of 8 student groups investigating Palmer HIO in 1996 recommended its inclusion in the

curriculum at CMCC, student reports since that time have demonstrated much less interest in learning upper cervical techniques (7 of 16 reports). Similarly, with the exception of heightened interest expressed by some fourth year students in 1999, there has been a general lack of interest in learning Torque Release Technique (TRT). Specifically, 11 of the 21 (52%) students groups considering TRT recommended that it to be included in the curriculum between 1996 and 2001. However, if the results obtained from students in 1999 are set aside, the percentage of student groups expressing an interest in learning Torque Release Technique drops to 4 of 14 (28%). The same trend can be seen with respect to student interest in learning Network Spinal Analysis. While the cumulative score for NSA is 12 of 34 student reports recommending inclusion (35%), this drops to 6 of 23 (26%) if the results gathered from the Year 2000 fourth year students are set aside. Thus, it is the author's opinion that the cumulative results gathered between 1996 and 2001 should be interpreted cautiously. Only by comparing the cumulative data with the results gathered separately each year can the reader obtain an accurate representation of student interests and preferences with respect to Name technique instruction. Using this strategy, it becomes apparent that students have expressed the most consistent interest in learning Thompson Terminal Point, Activator Methods, Gonstead and Active Release Therapy techniques.

Understanding the trend

When studied in controlled isolated trials, many of the *diagnostic* tests used by chiropractors often fail to show inter-rater reliability, sensitivity, or specificity.[34–39] However, a bewildering array of chiropractic *therapeutic* approaches, running the gamut of mechanistic approaches to tonal-based approaches, simultaneously demonstrates favorable clinical results.[40] However, no satisfactory explanation has been shown to adequately explain these paradoxical findings. Given this frustration at what has been called the research-clinical interface,[23] it should not be surprising to learn that most field practitioners have become reliant on a wide variety of different diagnostic inputs to achieve a tentative diagnosis. In other words, because treatment interventions can reasonably be expected to follow diagnostic inputs, and since the current evidence base fails to support the superiority of one diagnostic test over another, it is understandable that a field practitioner may come to use many different chiropractic technique systems comprised of a plethora of diagnostic (and therapeutic) procedures for patient care. Many field practitioners, by virtue of their experiences with patients, come to co-mingle several different chiropractic technique systems into a personalized, hybrid set of clinical tools that they find to be the most efficacious under varying clinical circumstances.

This state of affairs has not gone unnoticed by students at CMCC. Many students seem to believe that the tools of a Diversified model of care may not hold all the clinical answers for all patients under all clinical circumstances and, as the author has previously opined, this may have led to an increased interest in learning different chiropractic approaches. It must be emphasized that students want to *add* those techniques most congruent with a Diversified model of care to their armamentarium of clinical tools rather than replace the Diversified adjustive techniques they are taught in the core curriculum. It has been the author's observation that students seem to manage the clinical uncertainty found at the research/clinical interface by mirroring the solution employed by their more experienced mentors and pursue those clinical approaches that integrate best with the functional-based model offered at CMCC.

The author has heard the argument from some scholars that spinal manipulative therapy (SMT) has been shown to be the most clinically effective method of chiropractic care. However, this is not an accurate representation of the literature. While it would be fair to state that SMT (especially side-posture HVLA) is the most *studied* of the clinical interventions used by chiropractors,[11] it would be unreasonable and illogical to automatically infer that other chiropractic interventions are therefore necessarily less effective. Moreover, there are very few studies comparing the clinical effectiveness of one chiropractic technique to another (however, see 41 for a consensus opinion and rating of studies using different chiropractic techniques for low back pain). Of course, what further obfuscates this issue is, with the notable exception of distraction, instrument adjusting, upper cervical and a few other techniques,[42,43] even among those techniques that have an impressive quantity of articles in the peer-reviewed literature, most of these articles have little to do with clinical outcomes.[44] However, as others have opined, absence of evidence is not evidence of absence and a pau-

city of evidence one way or another does not constitute evidence of ineffectiveness.[see 41]

The rational student

All chiropractic colleges pride themselves on graduating students who are able to critically-appraise the information inundating them from all directions. In essence, all college faculty members desire to produce students who are not mindless automatons that slavishly adhere to the tenets of a particular college's philosophy, but rather are engendered with the tools to make rational decisions with respect to patient care planning. However, knowledge is a double-edged sword. Many college faculty and administrators assume that students will only use their 'finely-honed crap-detectors' to harshly judge information originating from the outside world. In essence, it was thought students would turn a skeptical eye *outwards* towards those individuals hawking chiropractic philosophies based on metaphysical principles, or technique peddlers who, to put it charitably, use bizarre and unusual approaches to patient management. What has been underappreciated by many advocates of this pedagogical approach is that these same students would also marshal these investigative strategies *inward* and question elements of the curricular model in which they are taught. This process is further complicated by the publication of new experimental studies that question many of the principles underpinning the Diversified model of care.[(see 45 and 46)]

The controversies surrounding the utility of motion palpation provides an example of this situation. Motion palpation is notorious for testing poorly with respect to inter-rater examiner reliability,[36] although this may be partially due to the crippling order affect in controlled trials (the motion palpation provided by the first examiner may be equivalent to a low force mobilization, thus altering the potential findings by a second examiner). The author wishes to make clear that this in no way should be interpreted to mean that motion palpation cannot provide important information with respect to joint function either prior to or following a chiropractic intervention such as an adjustment or mobilization. What is does suggest, however, is that elevating a diagnostic procedure such as motion palpation (about which we know little) above other diagnostic tests (about which we know less) may be elitist and not necessarily based on strong scientific reasoning. Furthermore, a recently published textbook on palpation suggested that a practitioner should perhaps use motion palpation more as a qualitative test rather than a quantitative test. That is to say, the *perception* of motion (or lack thereof) may be more important to appreciate (and more detectable) than the determination of a specifically lost vertebral motion (rotation, lateral flexion, and so on).[47]

It is the author's opinion that it is unfair to ridicule a group of chiropractors who choose to use diagnostic procedures that test no worse than the diagnostic procedures used by some Diversified practitioners. In fact, it is possible that the clinical value of diagnostic tests such as motion palpation increases if, rather than be used in isolation, are used in combination with other diagnostic tests (such as leg length analysis, posture, orthopedic and neurological tests and so on) that may also test poorly by themselves. The only exception to this otherwise egalitarian concept is the use of potentially harmful tests such as plain film radiography for the sole purpose of either identifying subluxations or, more troubling still, to monitor patient progression throughout the course of their treatment plan.[(see 48 and 49)]

Arguments such as these may leave some students reasonably questioning the ability of a practitioner to accurately isolate a clinical target and to select a uniquely appropriate adjustment to correct it (i.e. should they preferentially use a lumbar roll to correct for lost vertebral rotation, or a lumbar push?). It is this author's observation that students, now armed with the tools to develop a 'best evidence' approach, are less impressed with explanations or models from sources either outside the college environment or inside the college curriculum which appear to be little more than mythology. Students, now more than ever, are less impressed by any technique proponent whose explanations rely on the doctrine that 'it works" or 'this is the way its always been taught", especially if those approaches are not biologically or biomechanically plausible. In other words, the increasing savvy student is demanding a curriculum more scientific and less folklorish.

At first glance, these opinions may seem paradoxical. On the one hand, students seem to be less tolerant of unscientific approaches to patient care. Yet, one the other hand, students express interest in learning some Name techniques that have less of an evidentiary base than does Diversified technique. While it is difficult to reconcile

these apparently dichotomous findings, it may be that students have adopted a clinically pragmatic approach to this issue, in much the same way that practitioners have adopted an iterative approach to patient management that zeros in on the best treatment *for that patient at that time*. Succinctly put, students desire instruction in those procedures that will best enable them to safely achieve clinical success under a wide variety of clinical circumstances. And, as surprising as it may seem, it is the author's experience that not only are students able to handle this state of uncertainty, they seem to appreciate the intellectual honesty inherent in its acceptance.

Weighing evidence

The course that introduced students to the most commonly used chiropractic Name techniques systems at CMCC emphasized the importance of carefully weighing different types of evidence in order to assess the merits and reasonableness of any chiropractic approach. This follows the opinions of Sackett,[50] Meeker,[1,51] Rosner,[52] Hayes *et al*.[53] and other experts in this area that remind the reader that evidence-based practice must go beyond only inculcating those practice activities that have withstood the rigors of randomized clinical trials (RCTs). These experts agree that 'best practice' is a synthesis of RCTs, meta-analyses of these RCTs, expert opinion, case series, case studies and, perhaps under-appreciated until very recently, the clinical experience of the practitioner. Hayes et al. has recently captured this sentiment by opining that:

"… early formulation de-emphasized traditional determinants of clinical decisions, including physiologic rationale and individual clinical experience. Subsequent versions of evidence-based decision making have emphasized that research evidence alone is not an adequate guide to action. Rather, clinicians must apply their expertise to assess the patient's problem and must also incorporate the research evidence and the patient's preference or values before making a management recommendation" (53:1–2).

In a recent article, Bolton[54] explored this issue in terms of outcome measures. She opined that because chiropractic is holistic, both quantitative and qualitative research studies must be considered. Whereas quantitative studies tend to focus on a priori end points, qualitative research works in the interpretivist paradigm (wherein variables cannot be isolated as they are in the reductionist approach). This design model purposefully observes complexity and interaction in context, adopting a phenomenological approach that looks at the lived experience, behaviors and actions of patients in everyday life. This information is often gathered during outcome studies that focus on measuring outcomes that are relevant and meaningful to the patient. Echoing the opinions of many field practitioners, outcomes research focuses on what actually happens to patients in practice. In simpler terms, quantitative studies seek to assess clinical efficacy of an intervention under ideal, controlled conditions, whereas outcome research investigates the effectiveness of an intervention under everyday and real conditions. Mootz has referred to these two different paradigms as molecular and contextual respectively.[55]

Name techniques and Issues of Jurisprudence

The increasing use of chiropractic technique systems other than Diversified technique by Canadian chiropractors has already drawn the attention of those individuals involved in the development of chiropractic regulations, and will continue to do so. Several areas of jurisprudence now require constant reevaluation. These include; defining what is and what is not a chiropractic technique; the development of standards of care and guidelines; self-regulation; informed consent; and professional practice activities.

i. *Defining a 'chiropractic technique'*

An obvious question that is often asked of the author is: What exactly distinguishes a chiropractic Name technique from other therapeutic approaches? Certainly defining a chiropractic technique as 'something a chiropractor does' is woefully inadequate. Others erroneously conclude that a chiropractic technique is only that activity involving the controlled act of manipulation; that is, a high-velocity low amplitude (HVLA) thrust into the paraphysiological space. Unfortunately, defining a chiropractic technique using this criterion will not capture the vast majority of other chiropractic Name techniques, nor would it allow for an understanding of the contextual differences that exist within the chiropractic profession.

First, it must be emphasized that chiropractic is a health care profession, and not merely a treatment modality,[56] and the practice activities that constitute chiropractic care go beyond manual therapies. That having been said, spinal

manipulation or adjustment is the core clinical mode of action upon which all chiropractors agree.[1] Moreover, chiropractors have developed a unique lexicon to distinguish themselves from other health care providers who may utilize manipulation as a therapy (such as physiotherapists, medical physicians and naturopaths). In the broadest sense, it seems fair to state that a chiropractic adjustment is any load or force applied to a specific body tissue with therapeutic intent.[1] In turn, this load can vary in terms of its velocity, amplitude, duration, frequency, as well as anatomical location, choice of levers and direction of force.[1] Using this approach, vastly different techniques such as NSA, Logan basic, SOT, and Diversified can all be grouped under the umbrella term of a chiropractic technique. Thus, all manipulations are adjustments, but not all adjustments are manipulations. Of course, the chiropractic lexicon also includes terms around which there exists much controversy and confusion, including, but certainly not limited to, subluxation,[57] innate intelligence,[58] and Dis-ease.[59] Lastly, it must be mentioned that some chiropractors exclusively reserve the term 'adjustment' when referring to the correction of spinal subluxations.[27]

ii. *Standards of Care and Guidelines*

These subtle differences between chiropractic adjustments and manipulations are more than just semantic. Understanding the different therapeutic goals of chiropractic care requires an appreciation of cultural or contextual differences among chiropractic practitioners. This appreciation is of particular importance to those individuals responsible for the development of professional quality assurance standards and guidelines. Conversely, in the event that standards and guidelines are developed without consideration of the different world-views within the chiropractic profession, some field practitioners may feel that these guidelines do not apply to them and may reject these guidelines out of hand. Gatterman and her colleagues[60] have recently addressed this issue, opining that the poor differentiation of guidelines from standards of care contributes to mistrust of the guideline development process. In essence, guidelines must allow for flexibility for individual differences, in terms of ideological principles, diagnostic and therapeutic preferences, and individual patient preferences, whereas standards of care are authoritative statements that establish minimum levels of acceptable performance. Thus, rather than be seen as a cookbook from which policy is built, legal restrictions imposed or cost containment derived, guidelines must reflect the ideological differences that exist throughout the profession. As Gatterman et al concluded "to reduce barriers of acceptance and implementation, guidelines should be inclusive, patient-centered, and based on a variety of evidence and clinical experience".[60:14] This would subsequently allow guidelines to be used as an educational tool to better inform practitioners to make more rational decisions with respect to patient care.

iii. *Self-regulation*

The importance of defining what is and what is not a chiropractic technique for the purposes of standards of care became critically important in a recent case before the Supreme Court of Nova Scotia.[61] In that case, the Board of the Nova Scotia College of Chiropractors (NSCC) sought an interlocutory injunction against an individual (and his spouse) accused of practicing chiropractic without a license. The issue at hand was that, although the defendant did not have a license to practice chiropractic in Nova Scotia, he held himself as a 'spinologist' who was performing the Blair Technique Correction on his patients. The Blair Technique is a tonal-based technique comprised of an admixture of Torque Release and upper cervical techniques. If a chiropractic procedure was defined as only those procedures that involved a high velocity, low amplitude (HVLA) thrust into the paraphysiological space, the Blair Technique would not qualify, the defendant would not be practicing chiropractic without a license, and the injunction may have been denied. However, because it was decided that the Blair Technique was a chiropractic technique, the injunction was in fact granted. This is an important landmark in Canadian chiropractic law because it demonstrated the importance, ability and willingness of a chiropractic regulatory body to regulate itself and its members (and those within its jurisdiction).

iv. *Informed consent*

Besides the issue of consent for such interventions as cervical manipulation, the area of chiropractic modes of care also raises unique concerns. While some techniques, such as Diversified, are taught at all accredited chiropractic colleges, and while other techniques, such as Gonstead, Thompson, Activator Methods and Palmer HIO, are taught at a number of accredited chiropractic colleges,

there are also a number of chiropractic techniques used by field practitioners that are taught only at technique seminars. Thus, jurisdictions are faced with the dilemma of permitting a technique to be utilized according to practitioner (and patient) preference, despite the potential lack of proper instruction, quality assurance or guarantee of minimal competency performance. After all, it is the chiropractic college community that is most familiar with designing evaluation instruments, with the administration of competency-based examinations and the collation of performance-based outcomes; It is the accredited colleges that serve as the repository of much of the profession's knowledge, in terms of employing skilled researchers, the ability to design appropriate research projects, the access to needed seed monies, and the networking skills to work with other scholars or research organizations (Universities, Consortiums, Committees and so on). By contrast, these pedagogical and operational skills are often absent from weekend seminars and their proponents.

In addition to issues related to minimal competency performance, there are also concerns by third-party payers as to the appropriateness for many of these Name techniques for patient care, in light of the fact that little, if any, evidence has been published on their clinical effectiveness in peer-reviewed journals. Some regulatory boards, such as the College of Chiropractors of Ontario (CCO), are attempting to develop standards of practice to address these concerns. After much word-smithing and deliberations,[62] the CCO has set the standard of practice to read that a 'technique, technology, device or procedure' must be 'taught in the core curriculum, post-graduate curriculum or continuing education division of one or more colleges accredited by the Council on Chiropractic Education Inc., or in an accredited Canadian or American University in a manner intended to achieve clinical proficiency' or otherwise approved by the CCO, to be permitted for use in a clinical setting.[63]

This proposal has also elicited comments from malpractice carriers.[64] Consider, for example, the case of a patient who alleges they were injured as the result of a practitioner using a Technique that falls outside of the core procedures taught and evaluated at a chiropractic college. The patient might reasonably state he or she would not have consented to the procedure if they were told that the practitioner could only have learned the Technique at a weekend seminar. Conversely, if the patient had provided expressed written consent indicating that he or she was, in fact, aware the Technique their chiropractor was going to use was not taught within the college environment, the patient could not later claim ignorance in this regard. Lastly, there is also the issue of the Technique falling within or outside of the scope of practice in the jurisdiction where the doctor practices. If this determination is not made before the procedure is delivered, there could be issues of coverage eligibility should a civil suit be launched.

v. *Guiding professional practice standards of care*

A better understanding of the clinical effectiveness of different Name techniques, as well as their popularity among both practitioners and patients, may help guide regulators to contemporise their standards of care and guidelines. An example of this approach may be applied to a standard of care that this author finds particularly puzzling. Currently, the use of an activator or other mechanical device is prohibited in Saskatchewan. Specifically, the most recent professional standard states that:

'*no member shall use a machine or mechanical device as a substitute method of adjustment by hand of any one or more of the several articulations of the human body*'.[65]

Historically, there may have been justifiable reasons to prohibit the use of a mechanical device by a field practitioner for patient care. These may have included: lack of evidence of clinical effectiveness; issues of patient safety; concerns that practitioners using mechanical devices may not provide quality patient care (i.e. develop high volume practices); and the lack of physical touch.

In response to these concerns, there is now an abundance of evidence suggesting that patients experience significant therapeutic outcomes while under the care of a chiropractor using an activator,[40] with a favorable safety record. Although a recently published article described three cases of adverse reactions experienced by patients treated with a mechanical assisted device (MAD),[66] each case involved issues not unique to the use of non-manual procedures. One of these cases involved the eventual discovery of a rare tumor of the scapula which failed to respond to two different surgeries, another case involved a chiropractor who did not refer a patient for further investigations even after a lengthy period of non-responsiveness

to care, and the third case involved a practitioner who did not obtain proper consent and had only minimal training in the proper use of the MAD.[66]

Defining what constitutes a 'quality' therapeutic encounter seems to continue to challenge regulators. In general, if a practitioner is capable of gathering sufficient information to address the questions of a 'SOAP' (subjective, objective, action and plan) note, then the encounter is thought to meet minimal standards of care.[67] Thus, if a practitioner is able to obtain this information, even if he or she has a high-patient volume practice, they have met minimum standards of care, regardless of the therapeutic method used.

Lastly, while one of the strengths of the chiropractic encounter rests on it being low-tech and high-touch,[68] there may be instances where the use of a mechanical device may be advantageous. These include; adjusting an osteopenic patient or infant [one study reported that the activator generated a force of less than 50N, compared to 120N during SMT of the neck];[69] circumstances of a large patient and a diminutive doctor; and cases involving patients who have been physically or sexually abused and may resist personal contact.

In summary, considering the popularity of mechanical devices for patient care, the evidence of its clinical effectiveness, a safety record as good as that of SMT, and its diverse clinical utility, the continued prohibition against the use of an activator by the Chiropractor's Association of Saskatchewan may not be defensible at this time in terms of an evidence-based approach. The information reported in this article may aid chiropractic regulatory bodies with the arduous task of keeping abreast of contemporary data as it becomes available, suggesting amendments to standards of care and guidelines as circumstances dictate.

Conclusion

Students at CMCC continue to express interest in learning certain chiropractic technique systems in addition to Diversified technique. Over the past several years, perhaps as a result of the 'new curriculum' implemented at CMCC, students opinions have gravitated towards those name techniques that would best integrate with the functional-based curricular model underpinning the program at CMCC, and have moved away from those techniques systems that may be less congruent with a Diversified approach. Chiropractic technique systems that receive the widest base of interest by CMCC students include Thompson Terminal Point, Activator Methods, Gonstead, and Active Release Therapy techniques. Armed with this seemingly unwavering interest expressed by students, coupled with ongoing demographic trends observed in the professional landscape both in Canada and elsewhere, it seems appropriate for those responsible for curricular content to reflect these interests and to assume a more active role in Name technique instruction. Moreover, in keeping with a preference towards evidence-based practice activities wherever possible, such an approach may augment a student's critical appraisal abilities and potentially prevent the more outlandish techniques from exploiting an inexperienced student.[70] Another factor in favor of the involvement of CMCC into this areas of professional practice is the fact that, unlike other health care professions, when a new chiropractic technique system is developed it stands beside, rather than replaces, the group of other chiropractic techniques already in use, and the list of chiropractic Name Techniques in use shows no sign of diminishing.[27]

This pragmatic, hands-on approach by CMCC would serve several functions. It may capture monies destined to go into the pocket of outside technique instructors and entrepreneurs; it would ensure high level of evidence-based instruction; it may add to a practitioner's marketability for locum services;[71] and it may better prepare students for the exigencies of various clinical circumstances. Moreover, clearly delineating between those techniques that are taught within the college environment from those taught outside of it may also serve to better insulate a chiropractic college from the more questionable (if not outrageous) activities of some field practitioners. Like it or not, it would seem that chiropractors and their academic institutions are judged more by the actions of those at its periphery than those at its core.[72] Lastly, developing a curriculum that resonates well with student's interest may also ultimately reflect favorably in terms of alumni membership.

Lastly, the findings presented here, in combination with demographic trends of the professional chiropractic landscape in Canada, may also influence chiropractic jurisprudence. Issues requiring constant re- evaluation include; issues of informed consent; self-regulation; and ensuring current standards of care and guidelines that are congruent with the current best clinical evidence, and thus defensible.

References

1 Meeker WC, Haldeman S. Chiropractic: A profession at the crossroads of mainstream and alternative medicine. Ann Intern Med 2002; 136:216–227.

2 Andersson GB, Lucente T, Davis AM, Kappler RE, Lipton JA, Leurgans S. A comparison of osteopathic spinal manipulation with standard care for patients with low back pain. N Engl J Med 1999; 341(19):1426–1431.

3 Hurwitz EL, Aker PD, Adams AH, Meeker WC, Shekelle PG. Manipulation and mobilization of the cervical spine. A systematic review of the literature. Spine 1996 Aug 1; 21(15):1746–1759; discussion 1759–1760.

4 Meade TW, Dyer S, Browne W, Frank AO. Randomised comparison of chiropractic and outpatient management for low back pain: results from extended follow up. BMJ 1995; 311:349–351.

5 Nelson CF, Bronfort G, Evans R, Boline P, Goldsmith C, Anderson AV: The efficacy of spinal manipulation, amitriptyline and the combination of both therapies for the prophylaxis of migraine headache. J Manipulative Physiol Ther 1998; 21:511–519.

6 Nilsson N. A randomized controlled trial of the effect of spinal manipulation in the treatment of cervicogenic headache. J Manipulative Physiol Ther 1995; 18:435–440.

7 Skargren EI, Oberg B, Carlsson P, Gade M: Cost and effectiveness analysis of chiropracitc and physiotherapy treatment for low-back and neck pain: 6 month follow-up. Spine 1997; 22:2167–2177.

8 Vernon H, McDermaid CS, Hagino C. Systematic review of randomized clinical trials of complementary/alternative therapies in the treatment of tension–type and cervicogenic headache. Complement Ther Med 1999 Sep; 7(3):142–155.

9 Vernon H. Spinal manipulation and headaches: An update. Top Clin Chirop 1995; 2(3):34–47.

10 van Tulder Mauritis W, Koes BW, Bouter LM. Spinal manipulation for low back pain. Spine 1997; 22:2128–2156.

11 Cooperstein R, Perle SM, Gatterman MI et al. Chiropractic Technique Procedures for Specific Low Back Conditions: Characterizing the Literature. J Manipulative Physiol Ther 2001; 24(6):407–424.

12 Blunt K, Rajwani M, Guerriero R. The effectiveness of chiropractic management of fibromyalgia: a pilot study. J Manipulative Physiol Ther 1997; 20:389–399.

13 Bracher ES, Almeida CI, Almeida RR et al. A combined approach for the treatment of cervical vertigo. J Manipulative Physiol Ther 2000; 23:96–100.

14 Bronfort G, Evans RL, Kubic P et al. Chronic pediatric asthma and chiropractic spinal manipulation: A prospective clinical series and randomized clinical pilot study. J Manipulative Physio Ther 2001; 24(6):369–377.

15 Wiberg J, Nordsteen J, Nilsson N. The short-term effects of spinal manipulation in the treatment of infantile colic: A randomized controlled clinical trial with blinded observer. J Manipulative Physiol Ther 1999; 22(8):517–522

16 Senstead O, Leboueuf–Yde C, Borchgrevink C. Frequency and characteristics of side effects of spinal manipulative therapy. Spine 1997; 22(4):435–441.

17 Terrett A. Vertrobrobasilar stroke following manipulation. NationalChiropractic Mutual Insurance Company. West Des Moines, Iowa, 1996.

18 Haldeman S, Kohlbeck FJ, McGregor M. Risk factors and precipitating neck movements causing vertebrobasilar artery dissection after cervical trauma and spinal manipulation. Spine 1999; 24(8):785–794.

19 Haldeman S, Carey P, Townsend M, Papadopoulos C. Arterial dissection following cervical manipulation: the chiropractic experience. Can Med Assoc J 2001; 165(7):905–906.

20 Haldeman S, Kohlbeck FJ, McGregor M. Unpredictability of cerebrovascualar ischemia associated with cervical spine manipulation therapy. Spine 2002; 27(1):49–55.

21 Meeker WC. Concepts germane to an evidence-based application of chiropractic theory. Top Clin Chiropr 2000; 7(1):67–73.

22 Giles LGF. Anatomical basis of low back pain. Baltimore: Williams & Wilkins; 1990.

23 Cooperstein R, Haas M. The Listing Paradox: Driving a truck through a paradox. Dynamic Chiropracitic. Oct, 2001

24 Rupert RL. A survey of practice patterns and the health promotion and prevention: attitudes of US chiropractors. Maintenance Care: Part 1. J Manipulative Physiol Ther 2000; 23:1–9.

25 Rupert RL, Manello D, Sandefur R. Health promotion services administered to US chiropractic patients aged 65 and older. Maintenance Care Part II. J Manipulative Physiol Ther 2000; 23:10–17.

26 Jamison JR, Rupert RL. Maintenance care: towards a global description. J Can Chirop Assoc 2001; 45(2):100–105

27 Cooperstien R, Gleberzon BJ. Towards a Taxonomy of Subluxation-Equivalents. Top Clin Chiropr 2001; 8(1):49–60.

28 Gleberzon BJ. Name Techniques in Canada: Current trends in utilization rates and recommendation for their inclusion at the Canadian Memorial Chiropractic College. J Can Chiropr Assoc 2001; 44(3):157–168.

29 Waalen D, Saranchuk R, Gleberzon BJ. A systematic approach to the review and modification of a Technique Curriculum. J Chiro Ed 1999; 13(1):80–81.

30 Christensen M, Kerkhoff D, Kollasch MW et al. National Board of Chiropractic Examiners. Job Analysis of Chiropractic. A project report, survey analysis and summary of the practice of chiropractic within the United States. 2000. Greeley, CO.

31 Christensen M, Kerkhoff D, Kollasch MW et al. National Board of Chiropractic Examiners. Job Analysis of Chiropractic. A project report, survey analysis and summary of the practice of chiropractic within the United States. 1993:84. Greeley, CO.
32 Philips R. We need to bring order to our techniques. Dynamic Chiropractic 2002; 20(1):1,28–31.
33 Kopansky-Giles D, Papadopoulos C. Canadian Chiropractic Resource Databank (CCRD). A profile of Canadian chiropractors. J Can Chiropr Assoc 1997; 41(3):155–191.
34 Leboeuf-Yde C, Kyvik KO. Is it possible to differentiate people with or without low-back pain on the basis of tests of lumbopelvic dysfunction. J Manipulative Physiol Ther 2000; 23(3):160–167.
35 French S, Green S, Forbes A. Reliability of chiropractic methods commonly used to detect manipulable lesions in patients with chronic low-back pain. J Manipulative Physiol Ther 2000; 23(4):231–238.
36 Hestboek L, Lefoeuf-Yde C. Are chiropractic test for the lumbo-pelvic spine reliable and valid? A systematic critical literature review. J Manipulative Physiol Ther 2000; 23(4):258–274.
37 Troyanovich SJ, Harrison DD. Motion Palpation: It's time to accept the evidence. (letter to the editor). J Manipulative Physiol Ther 2000; 23(1):61–62.
38 Meijne W, van Neerbos K, Aufdemkampe G et al. Intraexaminer and interexaminer reliability of the Gillet tests. J Manipulative Physiol Ther 1999; 22(1):4–9.
39 Haas MH, Raphael R, Panzer D et al. Reliability of manual end play palpation of the thoracic spine. Chiropractic Technique 1995; 7:120–124.
40 Gleberzon BJ. Chiropractic 'Name Techniques': A review of the literature. J Can Chiropr Assoc 2001; 45(2):86–99.
41 Gatterman MI, Cooperstein R, Lantz C, Perle S, Schneider M. Rating specific chiropractic technique procedures for common low back conditions. J Manipulative Physiol Ther 2001; 24(7):449–456.
42 Lawrence D. Chiropractic 'Name Techniques': A review of the literature. Letter to the editor. J Can Chiropr Assoc 2001; 45(3):201
43 Harrison DD. Chiropractic 'Name Techniques': A review of the literature. Letter to the editor. J Can Chiropr Assoc 2002; 46(1):61.
44 Gleberzon BJ. Chiropractic 'Name Techniques': A review of the literature. To the editor in reply. J Can Chiropr Assoc 2001; 45(3):201–203.
45 Ross JK, Bereznick DE, McGill S. Atlas-axis facet asymmetry: implications in manual medicine. Spine 1999; 24:1203–1209.
46 Bereznick DE, Ross JK, McGill S. The frictionless properties of the thoracic skin-fascia interface: Implications in spine manipulation. Clin Biomech 2002; 17(4):297–303
47 Byfield D, Kinsinger S. A Manual Therapist's Guide to Surface Anatomy & Palpation Skills. Butterworth-Heinemann. First Printing. Oxford, UK, 2002: 1–33.
48 Harrision DE, Harrison DD, Troyanovich SJ, Harmon S. A normal spinal position: Its time to accept the evidence. J Manipulative Physiol Ther 2000; 23(9):623–644.
49 Haas M. The routine use of radiographic spinal displacement analysis: A dissent. J Manipulative Physiol Ther 1999; 22(4):254–259.
50 Sackett DL. Evidence-based medicine (Editorial). Spine 1999; 23(10):1085–1086.
51 Bolton JE. The evidence of evidence-based practice: What counts and what doesn't count? J Manipulative Ther Physiol 2001; 24(5):362–366.
52 Rozner AL. Fables and foibles: Inherent problems of RCTs. WFC 6th Biennial Congress, Paris 2001 (symposium proceedings):314–315.
53 Hayes B. Clinical expertise in the era of evidence-based medicine and patient choice. ACP Journal Club 2002; Mar–Apr; 136–A11.
54 Bolton JE. The Evidence in Evidence-Based Medicine: What count's and what doesn't count? (Commentary). J Manipulative Physiol Ther 2001; 24(5):362–366.
55 Mootz RD. The contextual nature of manual methods: Challenges to the paradigm. J Chiropractic Humanities 1995; 5(1):28–40.
56 Gleberzon BJ, Mootz R. Different health-care strategies of the older patient. In: Chiropractic care of the older person (Ed: Gleberzon BJ). Butterworth-Heineman, Oxford UK. 2001. First Printing. 341–357.
57 Keating JC Jr. The Specter of dogma. J Can Chiropr Assoc 2001; 45(2):76–80.
58 Keating JC Jr. The meaning of innate. (commentary). J Can Chiropr Assoc 2002; 46(1):4–10.
59 Owens E. Theoretical constructs of vertebral subluxations as applied to chiropractic practitioners and researchers. Top Clin Chiropr 2000; 7(1):74–79.
60 Gatterman MI, Dobson TP, Lefevbre R. Chiropractic quality assurance: standards and guidelines. J Can Chiropr Assoc 2001; 45(1):11–17.
61 The Board of the Nova Scotia College of Chiropractors v Timothy Kohoot and Laura Kohoot No. 172528. Nov 2/2001
62 Oral presentations by several members during the College of Chiropractors of Ontario's 'Consultation Day', Toronto, Ont. June 1, 2002.
63 Technique, Technologies, Devices or Procedures. Standard of Practice S-010. Approved by Council June 22, 2002. College of Chiropractors of Ontario.
64 Dunn G. Oral presentation before the College of Chiropractors of Ontario's 'Consultative Day'. Toronto, Ont. June 1, 2002.
65 Chiropractic Association of Sasketchewan. Professional Standards 19 (1)c. Amended Oct, 2001.

66 Nykoliation J, Mierau D. Adverse effects potentially associated with the use of mechanical adjusting device; a report of three cases. J Can Chiropr Assoc 1999; 43(3):161–167.
67 Definition of a Chiropractic Visit. Guideline G-004. April 10,1999. College of Chiropractors of Ontario.
68 Coulter ID. A philosophy for alternative health care. Butterworth-Heinemann. Oxford, UK. 2001.
69 Kawchuk GN, Herzog W. Biomechanical characterization (fingerprinting) of five novel methods of cervical spine manipulation. J Manipulative Physiol Ther 1993; 16(9):573–577
70 Cooperstein R, Schneider MS. Assessment of chiropractic techniques and procedures. Top Clin Chirop 1996; 3(1):44–51.
71 Bovay S. Name Technques in Canada: current trends in utilization rates and recommendations for their inclusion at CMCC. Letter to the Editor. J Can Chiropr Assoc 2001; 45(1):62.
72 Perle SM. Position Paper on Chiropractic Philosophy, History and Technique. 2000.