

THE CHIROPRACTIC REPORT

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PROFESSIONAL NOTES

Cervical Spondylosis – Appropriateness of Spinal Surgery

The late 1990s saw the first two controlled trials comparing surgical and non-surgical management of patients with pain and dysfunction from cervical spondylosis, degenerative changes in the vertebrae, joints and surrounding tissues in the neck. These, together with a newly published systematic review of all the evidence, report:

- No significant benefit from surgery at 12 months follow-up.
- Risks of “non-fatal complications” of up to 8%, and risk of fatalities of up to 1.8%.
- That the occurrence of these risks and complications “in a disease process with a potentially benign course is of undoubted gravity.”

The systematic review is by Fouyas, Statham et al. from the Department of Clinical Neurosciences, University of Edinburgh in the UK, and was completed for the Cochrane Collaboration. The significance of this deserves explanation. The Cochrane Collaboration,

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ADJUSTMENT OF THE SPINE, MANIPULATION OF THE MEDIA

A. INTRODUCTION

BY ANY STANDARDS chiropractic neck manipulation is a safe and effective treatment for many patients with common and disabling forms of neck pain and headache – a treatment that is at least as appropriate as any other. This claim is supported by independent expert reviews of the scientific evidence from highly respected institutions.^{1,2,3}

Notwithstanding this, chiropractors have experienced an unprecedented level of attack on cervical manipulation in the general media and medical press over the past two years, often accompanied by calls for a ban on the procedure. There have been dramatic articles in Australia, North America, Norway and South Africa. One, outrageously, calls chiropractic neck manipulation the “thalidomide” of manual therapy.⁴

2. The origin of most of this, it is now clear, is Canada where political opponents of the profession led by Dr. Murray Katz, a pediatrician from Montreal and Dr. John Norris, Professor of Neurology at the University of Toronto, have orchestrated a campaign of consummate media manipulation relying on two strategies:

a) An alleged death following chiropractic manipulation which, at their urging, has resulted in an inquest. After two years of delay and publicity the Lana Lewis Inquest commenced in Toronto on April 22, 2002. Scheduled to last 6 weeks, the inquest has already run for 12 weeks, adjourns for summer during July/August, then returns for a further six weeks in September/October. It has become the most publicized and dramatic inquest in the history of the profession. There is considerable irony in this since the overwhelming weight of the expert evidence, including that of Dr. Michael Pollanen, the forensic pathologist who performed the original

autopsy, is that Ms. Lewis died of natural causes relating to end-stage atherosclerosis in her vertebral arteries. There was no artery dissection or other injury linked to neck movement say these experts, and her death, approximately 3 weeks after her last visit to her chiropractor, was in no way related to her chiropractic care.

b) Alleged startling new evidence from an important study by Canadian neurologists that stroke following neck manipulation is a much more frequent and serious problem than previously reported – “30-50 cases per month” in Canada, Dr. Norris announced on national television in July 2000. However, under rigorous cross-examination at the Lewis Inquest during the past month, Dr. Norris has made dramatic admissions – that the SPONTADS study he was referring to was nothing more than a preliminary informal survey, that it has not produced a single case documenting stroke caused by chiropractic manipulation, and that the figure of up to 50 strokes per month given by him was not only sheer guesswork and wrong but could fairly be characterized as “absurd”.

3. In many countries chiropractors frequently find themselves asked to defend the safety and appropriateness of neck manipulation. The best evidence on these matters was dealt with at some length in the March 2001 issue of this Report.⁵ This issue now provides:

a) Suggestions on how to deal with the media, the public and patients on this subject.

b) Additional information on the Lewis Inquest, the Canadian Stroke Consortium and its SPONTADS study.

B. HOW TO ADDRESS THE SUBJECT

4. What are the real issues behind the exaggerated attention given to the risks

of cervical manipulation, what are the emotions you are confronting? For example, there is no point in demonstrating that serious harm is extremely rare if your audience believes that neck manipulation has no specific benefits at all – and therefore that any risk of serious harm, however remote, is unacceptable. It is clear that many medical critics with no expertise in the field feel that manual therapy generally only produces benefits through placebo/non-specific effects. For them you might as well massage the shoulders or rub the scalp for neck pain – that is safer and just as beneficial. To quote Dr. Norris “There is no evidence whatsoever that manipulation has any effect on headache nor any reason why it should.”⁶

This, of course, is a biased personal view that ignores the clear scientific evidence to the contrary, but it illustrates the need to talk about much more than safety when discussing cervical adjustment. Here are our suggestions.

1. Sympathy First. If you are asked to discuss the safety of neck manipulation in circumstances where, whatever the actual cause may be, a person has experienced significant harm, it is obviously important to express sympathy for the patient. There is a personal tragedy involved for the person and his/her family. Ultimately that is more important to most people than any professional issue.

2. Appropriateness is the Issue. At the outset, establish that the issue for any healthcare intervention is *appropriateness*, and that this involves consideration of two balancing factors – *effectiveness* and *safety*, or *risk/benefit ratio*. Anyone who wants to talk about risk only is demonstrating that he or she is biased or doesn't understand the issues. Therefore:

a) Stay with the issue of appropriateness until the persons you are talking to acknowledge, or at least give you ample opportunity to explain, that any discussion of the merits of neck manipulation is meaningless unless you are looking at both benefits and risks – at what is technically called *appropriateness*.

b) Challenge a critic with the question “Did you know that several reviews of the scientific literature from leading authorities have agreed that neck manipulation is *safe*, *effective* and *appropriate* for patients with a number of very common complaints – for example common

forms of neck pain and headache? Your authorities here are:

i) **Quebec Task Force Report (1995).**¹ For this report, titled *Whiplash Associated Disorders: Redefining Whiplash and Its Management*, leading medical researchers and clinicians from North America and Europe reviewed the literature and then provided treatment guidelines for whiplash injuries. Joint manipulation and mobilization were recommended to improve range of motion and reduce pain, and as part of management based on early return to function and activities as opposed to rest or immobilization in a cervical collar.

ii) **RAND Corporation Report (1996).**² The RAND (Research and Development) Corporation in Santa Monica, California, has the largest non-university health sciences research center in the US and enjoys an international reputation. For the past 20 years a central area of research at RAND has been the appropriateness of various healthcare procedures, and RAND assists many professional groups with research aimed at establishing standards or guidelines, including the American Medical Association.

RAND's 1996 report *The Appropriateness of Manipulation and Mobilization of the Cervical Spine* was the work of a multidisciplinary expert panel whose 9 members included two neurologists, a neurosurgeon, an orthopedic surgeon and primary care medical and chiropractic doctors. On the scientific evidence of effectiveness and safety both manipulation and mobilization were found appropriate for patients with many common categories of neck pain and headache where cervical signs of tenderness and limited range of motion were present. Conclusions of the RAND Report, published in the leading medical journal *Spine*,⁷ included:

- “Manipulation is probably slightly more effective than mobilization or physical therapy for some patients with sub-acute or chronic neck pain, and all three treatments are probably superior to usual medical care.”
- “Manipulation and/or mobilization may be beneficial for muscle tension headache”.

iii) **Duke University Report (2001).**³ This report was a systematic review of the scientific literature from medical experts at the Duke University Evidence-Based Practice Center in North

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Carolina. This is one of the 12 research centers across the US given the EPC trademark status by the US Department of Health and Human Services. The Duke Report studied all behavioral and physical treatments for two common forms of headache – tension-type headache (TTH) and cervicogenic headache (CGH) – and found cervical manipulation appropriate for both. This was largely on the basis of randomized controlled trials led by chiropractic researchers. No other physical treatment (e.g. acupuncture, mobilization, massage, electrotherapies) had proven benefit for CGH.

The Duke Report notes that best estimates suggest “that cervical spinal manipulation has a very low risk of serious complications” and concludes that “adverse effects are uncommon with manipulation and this may be one of its appeals over drug treatment.”

In summary, it is clear from the scientific literature – both randomized controlled trials (RCTs) and review of these by leading independent experts and insti-

tutions – that neck manipulation is beneficial and appropriate for many patients with common conditions.

5. Next – Effectiveness. Once you have established the point that neck manipulation is an appropriate treatment, elaborate first on effectiveness – firstly this is logical (scientific reviews proceed in this way, discussing effectiveness before risks) and secondly time runs out very quickly in a media interview. You don't want to be cut off after a focus on risks/safety only. Evidence of effectiveness is addressed more fully in a recent issue of this Report,⁵ but key points are:

a) Chiropractic neck manipulation has proven specific benefits – i.e. objective physiological effects. A key one, for example, is increased active range of motion in the cervical spine, and this benefit remains for many weeks after a course of treatment is complete. (Several chiropractic studies have demonstrated this but the best evidence to quote is an Australian randomized controlled trial from Whittingham and Nilsson which reported “a consistent and statistically significant increase in active range of motion in the cervical spine after manipulation”.⁸ For details see the March 2002 issue of this Report).

b) For patients with many common types of neck pain and headache chiropractic manipulation is at least as effective as any other medical or surgical treatment.^{1,2,3,7} (Headaches may be medically diagnosed as migraine or tension-type or stress headaches, but many patients have a cervical spine component to their headaches, which are now identified by the International Headache Society as cervicogenic headaches).

6. Next – Safety. Firstly, acknowledge frankly that neck manipulation is a risk factor for stroke and that, however small that risk might be, it is obviously a matter of serious concern and study for the chiropractic profession – and medical specialists and others who provide neck manipulation. It is a matter on which chiropractors want to work closely with the medical profession in the best interests of patients. Following that key points are:

a) Explain that the risk of serious injury is extremely small and remote – both in absolute terms, and in comparison with other common treatments for neck pain and headache. Injury is so rare that you require tens of millions of patients to study the matter.

b) Best estimates of the risk rate of stroke are that it is somewhere between 1 in 1 million or 2 million treatments. (Data from prospective studies and malpractice records provide a range of 1 in 400,000 to 1 in 5.85 million. Allan Terrett in his major recent text *Current Concepts in Vertebrobasilar Complications Following Spinal Manipulation* (2001)⁹ – which, incidentally, is an excellent example of chiropractic concern and scholarship in this field – reviews all the evidence and places the risk at about 1 stroke per 2 million cervical manipulations. Dr. Hamilton Hall, Professor of Medicine, University of Toronto, an orthopedic surgeon who has practiced manipulation, gave expert evidence in May 2002 saying that the risk rate he accepts and would recommend in a patient consent form is 1 per 1 million treatments.)

c) A risk of 1 in 2 million can probably be better understood by the average person, as Terrett explains, as 1 incident per 25 chiropractors all of whom have a 40 year career in practice. In other words the great majority of chiropractors never see such an incident in their lives. By any standards, chiropractic management, which includes neck manipulation but not drugs or surgery, is very safe.

d) Of these rare cases of injury and stroke, some patients experience a full or substantial recovery, some distressingly do not.

7. Risks/Benefits/Appropriateness of Other Treatments. It is only at this point, if at all and time so allows, that you refer to other treatments. Ideally the comparison with other treatments will be raised by the person questioning you, so that your negative comment is by invitation. Points are:

a) *Serious Injury and Death – NSAIDs.* The most common form of medication recommended in medical practice for non-specific neck pain is non-steroidal anti-inflammatory drugs (NSAIDs). These have less effectiveness than manual therapy (mobilization or manipulation)^{10,7} and a much higher risk rate of serious injury.^{9,11} Many patients with chronic neck pain who would receive manipulation if they consulted a chiropractor are medically diagnosed as having cervical arthritis or spondylosis and given NSAIDs. Best estimates of hospitalization and death amongst these patients from gastrointestinal ulcers and bleeding are 40,000 per million (4%) and 4,000 per million (4%) respectively.

In the US this amounts to 32,000 hospitalizations per annum and 3,200 deaths.^{9,11}

b) *Serious Injury and Death – Surgery.* Surgery is commonly used to relieve chronic pain and loss of function arising from degeneration in the cervical spine. A newly published systematic review of such surgery from the UK reports:

i) No significant benefit from surgery at 12 months follow-up.

ii) Risks of “non-fatal complications” of up to 8%, and risk of fatalities of up to 1.8% (18,000 per million).

iii) That the occurrence of these risks and complications “in a disease process with a potentially benign course is of undoubted gravity.”¹²

Given the number of these operations performed in the UK, for example, this translates to approximately 1 death per week for surgical methods with no proven effectiveness. There are now over 1,000 chiropractors in the UK, where the profession has practised neck manipulation on a daily basis for over 75 years without causing the death of a single patient. (See Professional Notes in this Report for further details from this systematic review).

c) *Comparison with Mobilization.* Manual therapy may be divided into joint manipulation (techniques with thrust that take a joint through its full range of movement) or joint mobilization (slower techniques without thrust and a smaller range of movement within the joint.) Is mobilization more appropriate than manipulation because, as is true, there have been more reports of stroke following manipulation? To answer this we need to look, once again, at both effectiveness and safety:

i) *Effectiveness.* As noted in the RAND Report, current research suggests that manipulation is more effective than mobilization. This may be because one of the immediate effects of manipulation is to produce greater active ranges of joint movement than mobilization.¹⁴ Although there has been no controlled trial comparing mobilization and manipulation for patients with neck pain there has been for back pain, where similar principles apply. In the Meade et al. trial in the UK, the cornerstone of chiropractic management was manipulation and the cornerstone of physiotherapy management was mobilization, and this Medical Research

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founded in 1993 and organized by a Steering Group of 12 whose secretariat is in Oxford in the UK, has strong and growing international support in its ambitious goal of using foremost reviewers and scientific methods to locate and summarize the evidence of effectiveness of treatments in all areas of healthcare (e.g. back pain, headache, etc.)

The Collaboration currently has 15 centers in 13 countries. Its review groups, working on a voluntary and unpaid basis, search for, collect and analyze all randomized controlled trials relating to specific health conditions and treatments, and their reviews are published in an electronic database both in full text and in abstract form. Many reviews, as with the present one published in *Spine*, also appear in leading scientific journals. Accordingly, a review for the Collaboration has high credibility.

The two controlled studies examining neck surgery and reviewed by Fouyas, Statham et al. are:

1. A 1997 Swedish study by Persson et al. comparing surgery and two non-surgical treatments (physiotherapy – undefined – and use of a hard cervical collar) in patients with cervical myelopathy (“spasticity and weakness in the lower limbs, with or without ‘numb and clumsy’ hands”).
2. 1999 Czech study by Bednarik et al. comparing surgery with “a soft cervical collar, anti-inflammatory drugs, intermittent bedrest and prevention of vigorous activities” in patients with cervical spine radiculopathy (“pain along the cutaneous distribution of one or more cervical spinal nerve roots associated or not with weakness and hyporeflexia”).

These high risk rates for procedures with unproven effectiveness are important because such surgery is common and more than half the middle-aged population have cervical spondylosis. In 10-15% of this population spondylosis is associated with root or cord compression. Over 4,000 of these surgeries are performed annually in the UK and, with mortality rates up to 1.8%, this suggests 50-70 deaths per annum – conservatively 1 per week.

Surgeons, not used to being challenged by controlled trials and evidence-based practice, will be defensive about these findings and perhaps allege that they have better personal success rates. But Fouyas, Statham et al. have a warning for them. In the two recent trials measurements of functional improvement after surgery were made by blinded, independent assessors. They reported an average 40% improvement in pain reduction which “was much more modest than the estimated improvement of 80-90% for patients in most of the reports (in which the surgeon’s bias was not eliminated)”. This, say Fouyas, Statham et al., “underscores the importance of recruiting an independent assessor of outcome.”

(Fouyas IP, Statham PFX, Sandercock PAG (2002) *Cochrane Review on the Role of Surgery in Cervical Spondylotic Radiculomyelopathy*, *Spine* 27(7):736-747.)

Dutch Manual Therapy for Neck Pain. The evidence supporting the effectiveness of all forms of skilled manual therapy for neck pain continues to grow. Chiropractors will be interested to know of a well-designed trial from the Netherlands published in

May in the *Annals of Internal Medicine*, official journal of the American College of Physicians, which concludes that “in daily practice manual therapy is a favorable treatment option for patients with neck pain compared with physical therapy or continued care by a general practitioner.”

Details of this trial, in which manual therapy was given by Dutch manual therapists (MTs) – physical therapists (PTs) with formal postgraduate qualifications in manual therapy – are:

1. **Subjects.** The subjects of the trial were 183 patients from general medical practice, aged 18-70, with non-specific neck pain for at least two weeks. Patients with specific pathologies, or who had received physical therapy or manual therapy during the past six months, were excluded. Subjects could have concurrent headache and referred pain to the upper extremities as long as neck pain was their main symptom. Most had experienced neck pain for under three months, but had suffered a number of previous episodes of pain, and overall they rated the ‘bothersomeness’ of pain at 7.6 on an 11 point scale.

2. **Interventions.** Patients, who were well-matched for age and pain severity through pre-stratification, were randomly assigned to 6 weeks of treatment in 1 of 3 groups:

a) **Manual Therapy.** This comprised one 45 minute treatment session per week using 6 Dutch PTs who were formally qualified and experienced MTs. They used muscle and joint mobilization, though not manipulation, and coordination/stabilization techniques. Specific choice of techniques within these categories was left to the choice of the MTs to reflect normal practice.

b) **Physical Therapy.** Two 30 minute treatment sessions per week by 5 experienced PTs who used active exercise therapies (for strength, range of motion, stretching, postural training, etc.) as the “cornerstone” of treatment, but could also use manual traction and massage and electrotherapies.

c) **Continued Care by GP.** This comprised standardized care from the patient’s own general practitioner (GP) on a similar basis to practice guidelines from the Dutch College of General Practitioners for back pain. Care included analgesics (paracetamol or NSAIDs), advice on prognosis, psychosocial issues, self-care (heat application, home exercises) and ergonomics (e.g. pillows and work postures), and general encouragement that there would be successful recovery. On the first visit patients received an educational booklet with advice on exercises, and patients were offered optional 10 minute follow-up visits scheduled every two weeks. In other words this was “good GP care”.

Patients in the manual therapy and physical therapy groups were allowed to continue use of medication already prescribed for their neck pain or to use over-the-counter analgesics.

3. **Outcome Measures.** Results were measured at 3 weeks (i.e. halfway through the treatment phase) and at 7 weeks. Primary measures were patient perceived recovery from pain and functional disability using 3 subjective scales – a 6 point perceived recovery questionnaire (from “much worse” to “completely recovered”), an 11 point physical dysfunction scale, and the Neck Disability Index.

Secondary outcome measures were both subjective (the patient's rating of the severity of his/her "most important functional limitation") and objective (range of motion of the cervical spine measured by a digital inclinometer).

4. Results.

a) Patients in all groups improved, but the success rate one week after treatment ended (i.e. at 7 weeks) was significantly higher for manual therapy patients (68.3%) than PT (50.8%) and continued GP care (35.9%) patients.

b) Physical dysfunction, pain and functional disability were less severe in the manual therapy patients than the other two groups, with some of this difference "already statistically significant at 3 weeks."

c) At 3 weeks more patients worsened with GP care (number: 9) than with PT care (3) or manual therapy (0).

d) Reflecting their better results, manual therapy patients had fewer absences from work (13%) than PT patients (29%) and GP patients (26%).

The overall conclusion, and message for family physicians, was that "manual therapy is a favorable treatment option for patients with neck pain." Hoving, Koes et al. consider whether the "hands-on approach" of both physical therapy and manual therapy, with more frequent visits and patient interaction, might explain the better result – in other words that benefits are placebo/non-specific rather than the objective results of treatment. They discount this for two reasons:

- The differences between the results in the PT and manual therapy groups, in circumstances where the muscle and joint mobilization "formed the main contrast . . . and was considered to be the most effective component."
- The postulated objective of manual therapy, the restoration of normal joint motion, "was achieved as indicated by the relatively large increase in the range of motion of the cervical spine" for manual therapy patients.

For chiropractors none of this is surprising but it raises the next question – how would Dutch manual therapists have performed in comparison with Dutch chiropractors using a full range of adjustive techniques which include both mobilization and manipulation? There is no study comparing chiropractic manipulation and PT mobilization for neck pain. The Meade et al. trial in the UK published in the *British Medical Journal* in 1990 provided that comparison for patients with non-specific back pain, and those receiving chiropractic manipulation did significantly better. And in a Canadian trial Cassidy, Lopes et al. demonstrated that manipulation resulted in a greater increase in range of motion in the cervical spine than mobilization. The clinical experience of chiropractors is clearly that thrust techniques produce greater benefit than non-thrust techniques. A definitive answer will only come from further research.

Final comment on this new trial is that US physicians are being given the message that skilled manual treatment of the cervical spine is both legitimate and more appropriate than traditional patterns of medical and physical therapy management, including active physical therapy involving exercises and motivation of the patient. It is a concern, therefore, that there has been so much unfounded criticism of the appropriateness of neck manipulation in recent years, creating the impression for many physicians that chiropractic manipulation might be less safe than other forms of manual therapy. These matters are fully discussed in the main article in this Report.

(Hoving JL, Koes BW et al. (2002) *Manual Therapy, Physical Therapy, or Continued Care by a General Practitioner for Patients with Neck Pain*, *Annals Int Med.* 136:713-722).

The Art of Chiropractic

Permission, Courtesy, Respect, Professionalism

In this continuing feature clinical pearls on the art of patient management are given. These are from experienced practitioners. This month, thank you to Thomas J. Potisk, DC of Milwaukee, Wisconsin.

Doctors appreciate respect – so do patients. When a doctor acknowledges and recognizes that the patient may have limited time and money and is subject to pressure also, a mutual respect develops and the situation becomes win-win.

When making a recommendation to a patient, ask "May I explain the tests that I think need to be performed?" and then "These will take approximately X minutes. Do you have time for this today?" After explaining the results, a good follow up is: "Are you ready to start treatment today?" Then explain the treatment.

Far too often doctors get into a routine and they begin to assume that the patient wants the tests or treatments they are about to perform. Asking permission to proceed not only relaxes the patient but lowers your liability because you've gotten their consent.

Never assume that permission has already been obtained by staff. Ask "Has the receptionist explained our procedures and policies?"

For gaining referrals, avoid the harsh "Why don't you bring in your spouse and child for a spinal exam." Instead ask, "Many of my patients bring their family here for preventive check-ups. Would you be interested in how that works?" An appropriate time to ask this, naturally enough, is when the patient has praised your treatment.

For building a preventative or maintenance care practice, I have found that an effective question is "If there were a way of preventing this problem from reoccurring and avoiding new problems would you be interested?"

At the end of your practice day reflect upon and take notice of how many times you asked questions versus issued advice and orders. The ratio should be about 50:50. Don't be afraid to ask your staff for their perspective of your performance. Here, as in many areas, they can be your best source of input.

Particularly in this era of cold, managed health care and increasingly busy lifestyles, asking the patients for their permission goes a long way in gaining their respect and building a successful practice.

Council trial published in the *British Medical Journal* reported significantly better results with chiropractic manipulation.¹⁵

ii) **Safety.** Significant injury after either mobilization or manipulation is very rare – both are safe. It is unknown whether there is any actual difference in risk rates. Individuals have suffered stroke after mobilization and many normally safe neck movements such as turning to back a car, dancing or painting a ceiling. The slightly higher number of cases of injury reported after manipulation may simply reflect the fact that this has historically been a much more common procedure than mobilization.

8. Causation/Prevention/Consents.

a) **Causation.** Classically in these rare cases of injury and stroke associated with chiropractic care, there is a dissection of one of the two vertebral arteries in the upper cervical spine. This means some damage to the inner layer (intima) of the wall of the artery, not complete severance of the wall. A thrombus or blood clot develops and part of this – called an embolus – breaks away and travels on in the bloodstream to block a smaller artery supplying blood to the brain. This gives rise to an ischaemic stroke.

It is not clear what causes the damage to the artery in the first place. Where there has been chiropractic manipulation, many people intuitively assume it is the neck manipulation. But ask yourself these questions:

- On Super Bowl Sunday how do all those football players get through an afternoon of violent neck movements without injuring their vertebral arteries? How do millions of ordinary people get through violent neck movements every day – including countless whiplash injuries in motor vehicle accidents – without suffering an artery dissection and stroke?
- In contrast, why are there occasional reported cases of dissection and stroke following completely normal neck movements – a recent review documents 58 cases involving normal activities such as walking, kneeling in prayer, household chores, tennis and swimming, coughing and sneezing, wallpapering, yoga, etc?¹⁶

Most experts now accept that the prime cause is an inherent or genetic weakness in the connective tissue in the wall of the vertebral arteries found in rare individuals.^{16,17}

The first detailed research into the forces actually reaching the vertebral arteries from chiropractic manipulation, mobilization and manual diagnostic procedures, is now being performed by Walter Hertzog, PhD and his colleagues at the Human Performance Laboratory at the University of Calgary in Canada, using cadavers and sophisticated markers and measurements. Early results, presented at professional meetings and to be published in JMPT later this year, indicate that even the most forceful manipulation to the cervical spine produces forces on the artery that are far too small to stretch or otherwise cause damage to healthy arteries. Civil engineers use a safety factor of 6 – they build a bridge that can carry a load 6 times higher than the maximum anticipated load of a bridge. Hertzog et al's measurements suggest that the human body is even more successfully designed than that – it takes more than 6 times the maximum possible force of a neck manipulation to damage tissue in the vertebral artery wall.¹⁸

b) **Prevention.** Little can be done to predict which rare patients may be at risk. Previously it was thought that pre-manipulative tests, in which the neck was held in a position of extension and rotation to see if there was any dizziness or other symptoms of

reduced blood flow in the vertebral arteries, had value. They do not. Other proposed risk factors have been age, gender, migraine headaches, hypertension, diabetes, birth control pills and smoking. But a thorough new review based on 64 cases from throughout North America collected over 16 years shows that these risk factors were no higher amongst stroke patients who had received neck manipulation than amongst the US population in general.¹⁷

It has been suggested that, practicing defensively, chiropractors should avoid cervical adjustment techniques that combine rotation with extension, and most now do. But there is no convincing evidence that such techniques actually pose more risk of harm. More cases of injury have followed rotation/extension adjustments, but this may simply reflect the historical fact that this has been a common form of adjustment. There are also cases of stroke following various other techniques of manipulation and mobilization – and also simple every day movements in life as already mentioned.

Remember how rare these cases are – the great majority of chiropractors, delivering many neck manipulations daily, progress through their whole professional lives without ever experiencing a single case of significant injury. In the words of Haldeman et al., “Cerebrovascular accidents after manipulation appear to be unpredictable and should be considered an inherent, idiosyncratic and rare complication of this treatment approach.”¹⁷

c) **Consents.** The informed consent of patients to treatment involves ethical and legal issues. Because there is a known possible risk of serious injury, even if extremely rare, patients should be advised of that for ethical reasons. For legal reasons the consent should be in writing.

There is a change in practice underway here. Until recent years most chiropractors did not seek written informed consent, and medical doctors who provide neck manipulation never gave any warning to patients – in medical terms the risk was deemed far too remote for this.^{19,20} Even though there is still no strict legal requirement in various jurisdictions, chiropractic clinical guidelines in North America now call for a signed consent, as a matter of patient rights, ethical practice and risk management.

8. General Considerations. To conclude, here are a few general points:

a) **Acknowledge the risk.** Don't suggest the risk is so minimal it should be ignored, or quote the lowest risk rate you can. Acknowledge a risk that is significant, of serious concern to the profession, and that a patient should know about. Demonstrate, however, that it is a very rare and therefore acceptable risk – by any standards neck manipulation is safe and appropriate.

b) **Quote independent authorities.** A Ford salesman recommending a Ford car is less convincing than a GM salesperson or another competitor recommending a Ford. Medical experts at Duke University's Evidence Based Practice Center saying chiropractic cervical manipulation is safe and effective for tension-type headache, largely on the basis of an impressively designed chiropractic trial by Boline, Kassak et al., is more convincing to third parties than quoting Boline, Kassak et al. themselves.

c) **Don't be aggressive.** You are less believable if you appear defensive, emotional, aggressive. Be calm and analytical – the best expert witnesses are – or good humored and enthusiastic.

The day after judgement in the Wilk case, representatives of the

chiropractic and medical professions appeared on US national television arguing about the findings and the likely results of the case. Many chiropractors were gratified that the judgement against the American Medical Association was being aired so prominently. However the president of the company that prints this Report, when asked for his impression of the TV encounter said “each was as bad as the other – they both just want to criticize the other profession”. The message – be professional, fair, and focus on how the message is received by the average member of the public.

d) Know your facts. Commence any interview or discussion knowing the main points you want to make, and be sure of the key evidence and facts upon which you rely.

C. THE LEWIS INQUEST

Lana Lewis of Toronto, aged 45, died of complications from a stroke on September 11, 1996. She had been receiving cervical adjustment for migraine, and was last treated by her chiropractor 6 days before her first symptoms of stroke and 3 weeks before her death. Because of this temporal connection the treating neurologist thought that her stroke may have been caused by her chiropractic care and referred the matter to the Coroner’s office.

On autopsy it was found that there was no injury linking the stroke and chiropractic treatment. Specifically, there was no dissection of either of the vertebral arteries. On the other hand, Ms. Lewis had many risk factors for stroke, including a long history of hypertension, migraines, tobacco use and a family history of vascular disease, and the autopsy revealed advanced atherosclerosis in the vertebral arteries and cerebrovascular system. The Coroner decided that no inquest was necessary. However, under extreme pressure from some medical critics and Ms. Lewis’ family that decision was subsequently reversed and an inquest finally began on April 22, 2002.

11. All expert evidence given to date in the Lewis Inquest has been from expert witnesses called by the Coroner’s office, rather than on behalf of the family or the chiropractic profession. These include the experts deemed by the Coroner’s office to be the most independent, informed and expert. It is highly significant therefore that the great weight of this expert evidence has been that Ms. Lewis died of natural causes in no way related to her chiropractic care. Those testifying to this effect include:

- a) Dr. Michael Pollanen of Toronto, the forensic pathologist who provided the original and a subsequent pathologist’s report.
- b) Dr. Scott Haldeman, neurologist and chiropractor from Los Angeles, the one expert from outside Canada chosen by the Coroner.
- c) Dr. Hamilton Hall of Toronto, orthopedic surgeon and Professor of Medicine, University of Toronto.
- d) Dr. Richard Moulton, a leading Canadian neurosurgeon who is Head, Division of Neurosurgery, St. Michael’s Hospital, Toronto.

Two witnesses, retired pathologist Dr. John Deck and neurolo-

Lana Lewis Inquest – Information

For ongoing reports on this inquest, and the evidence being presented, visit the Canadian Chiropractic Association’s website www.ccachiro.org/media.

gist Dr. John Norris both of Toronto, have testified that the chiropractic treatment was a probable cause, even in the absence of vertebral artery dissection, but their view has been expressly rejected by the other experts.

12. While the principal issue in the inquest is the exact medical history of Ms. Lewis, an important secondary issue has become the safety/risk rate of neck manipulation. This is largely because of the media focus on this subject in the two years leading up to the inquest, generated by the media contacts of Dr. Katz and the apparent existence and importance of as-yet-unpublished new evidence announced by Dr. Norris.

In the Canadian print, radio and television media in June/July 2000 Dr. Norris, Chair of a Canadian Stroke Consortium, explained that early results of a new study revealed that the true risk of stroke after neck manipulation was 1 in 5,000 treatments, not the 1 in 1 to 2 million claimed by the chiropractic profession and, as already mentioned, that this translated into 30-50 strokes a month. At the inquest last month Dr. Norris has acknowledged that those figures are not supported by evidence, were “sheer guesswork” and are wrong.

However the international media have bought his earlier story, which has been constantly repeated and only now challenged in court. In February 2002, for example, Dr. Norris and his colleagues presented their alleged – but still unpublished – findings at the American Stroke Association’s 27th International Stroke Conference in San Antonio, Texas and this led to a fresh round of scare stories in the US media. It is important, therefore, to briefly explain the true status of this much-rumored but unpublished Canadian ‘study’.

D. THE CSC’S SPONTADS STUDY

13. The Canadian Stroke Consortium (CSC) is a national network of stroke physicians throughout Canada formed in 1992 to collect data on all forms of stroke. The literature suggests that only 1.3 per 1,000 cases of stroke involve vertebrobasilar artery dissection (VAD),¹⁶ and that there are many spontaneous and traumatic causes of these relatively rare VAD strokes. Neck manipulation is only one, stroke from many everyday neck movements, as already discussed, are others.

Dr. Norris is now the Immediate Past Chair of the CSC. In 1999, under the direction of him and others, the CSC commenced a study named SPONTADS (spontaneous vs traumatic artery dissections) to collect information on the frequency and causes of arterial dissections prior to stroke. This could have been an important study since little is known about the relative importance of risk factors for VAD. Preliminary evidence suggests, for example, that the careless intubation of patients for general anesthesia presents a much greater risk of VAD than neck manipulation.^{21,22} Larger studies are required.

However early fears that the SPONTADS study was more political than scientific, because of its unscientific nature, its timing, and Dr. Norris’s surprising willingness to leak alleged results to the media prior to publication, are now confirmed. The way in which data has been collected from neurologists is by means of a short one page questionnaire asking them to give their impression on cases they have seen – which is known as a retrospective recall survey. This survey form is then faxed to the study center. The questionnaire being used is obviously biased. Although the literature describes numerous movement-related causes of these rare cases of dissection, the questionnaire asks whether the patient had received manipulation but

doesn't refer to any other specific example of head movement or trauma.

In a blatantly inaccurate and misleading news release in early 2002, previewed by Dr. Norris and naming him as contact person, the CSC actually alleged that the SPONTADS survey was "a major prospective study" and that it had already been published. Under cross-examination at the Lewis Inquest in June Dr. Norris confirmed that this was wrong – no study had been published, and SPONTADS was merely a precursor or pilot study to test whether a more thorough SPONTADS II study could be undertaken.

Accordingly, you can dismiss any reference to the SPONTADS study with the above facts. There will soon be more valuable information with which to condemn it. One of the witnesses being called at the inquest by the Canadian Chiropractic Association, specifically to comment on the nature of good scientific evidence and the true status of the SPONTADS data, is the renowned epidemiologist Dr. David Sackett, formerly of Oxford University and known as the father of evidence-based medicine.

E. CONCLUSION

14. It is difficult to receive justice in the media, which are more interested in a victim and a fight than scientific evidence and the reputation of a profession. However chiropractors and their professional associations must be informed, proactive and professional in responding as effectively as possible to the present attack on their profession. Hopefully the information here given will assist.

And while no one in the Canadian chiropractic profession wanted or deserved the present inquest, which has had a significant impact on practices for the meantime, it has at least brought matters to a head. Before it is over many leading

authorities – including those yet to be called such as Dr. David Sackett, Dr. Adrian Upton, Head, Division of Neurology, McMaster University and Dr. Paul Carey, President, Canadian Chiropractic Protective Association – will have documented ever more clearly for their colleagues and the public that chiropractic neck manipulation is a safe, effective and appropriate intervention for many patients. **TCR**

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