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Into what Risk Category does Chiropractic Adjustment of the Cervical Spine belong?

In a recent review, Haldeman, Kohlbeck and McGregor reported a potential risk of dissection of a vertebral artery after 'manipulation' of between 1:400,000 treatment sessions to 1:1.3 million. In exploring the topic of informed consent, as it relates to chiropractors practicing in the UK, the authors of a paper recently published in JMPT (1), summarise risk categories with work done by Sir Kenneth Calman (2). Calman is a former Chief Medical Officer in London (1991-98) and former Chairman of the Executive Board of the World Health Organisation and the European Environment and Health Committee.

Calman's Risk Categorisation:

- **HIGH:** a greater than 1 in 100 chance (1%) of an accident occurring
E.g., transmission of chicken pox or measles
- **MODERATE:** a 1 in 100 to 1 in 1000 chance (0.1-1%)
E.g., death from smoking 10 cigarettes a day
- **LOW:** a 1 in 1000 to 1 in 10,000 (0.1-0.01%)
E.g., death from a road traffic accident
- **VERY LOW:** a 1 in 10,000 to 1 in 100,000 (0.01-0.001%)
E.g., death from accident at home or work
- **MINIMAL:** a 1 in 100,000 to 1 in a million (0.001 - 0.0001%)
E.g., death on railway
- **NEGLIGIBLE:** a less than 1 in a million chance (<0.0001%)
E.g., death by strike of lightning

ASRF Update Editor's Comment - Reflecting on Haldeman et al's figures related to the risk of VBA following neck 'manipulation', and Calman's risk categories, it could be said that, based on the best available data, manipulation of the cervical spine is of **minimal** or **negligible** risk.

1. Langworthy JM, le Fleming C. *Consent or Submission? The Practice of Consent within UK Chiropractic*. J Manipulative Physiol Ther 2005; 28:15-24.
2. Calman KC. *Cancer: science and society and the communication of risk*. Br Med J 1996; 313:799-802.

The Future of Chiropractic Revisited: 2005 to 2015

In 1998 the Institute for Alternative Futures (IAF) issued a major report on the future of chiropractic care in the US. IAF has revisited its research to develop its report: The Future of Chiropractic Revisited: 2005 to 2015. The report is available on IAF's website:

<http://www.altfutures.com>.

The following points summarise the report -

Opportunities

- * Inclusion of chiropractic in the Department of Defense and the Department of Veterans Affairs.
- * Research possibilities to reinforce the benefit of chiropractic care. * Consumer directed healthcare.

Challenges

- * The divisions within the profession over philosophy and scope.
- * The rise of competition from other health care providers.
- * The pressure managed care continues to place on reimbursement rates.

Scenarios for Chiropractic 2015

Given these challenges and opportunities, and related trends IAF developed four scenarios for chiropractic in 2015:

- * The first scenario looks at the slow and steady growth of chiropractic in the care of back and neck pain.
- * The second scenario shows a darker future where internal conflicts and outside pressure cause a downward spiral in chiropractic.
- * In scenario three, chiropractors pursue evidence based practice and greater collaboration with other healthcare providers.
- * In scenario 4, a vanguard of chiropractors combine evidence based practice and greater collaboration with a wellness approach to disease to become "healthy life doctors."

Highlights

- * IAF's forecast of chiropractors. In our extrapolative scenario, scenario 1, IAF forecasts that the profession will grow from 74,000 chiropractors in 2005 to 87,000 chiropractors in 2015.
- * For this report IAF did a small but novel survey of leaders at the chiropractic colleges, asking them to "locate" colleges on a scale defined by the differences among chiropractic professional associations.
- * Comprehensive lists of drivers and forecasts for each of the four scenarios.

IAF's Insights

The IAF futurist team looking at the chiropractic field sees an enigma:

* Chiropractic is the largest and most well established complementary and alternative medicine (CAM) in the United States, but in practice many chiropractors are barely holistic or integrative.

* Chiropractic is still well positioned to take advantage of newfound interest in complementary and alternative care by providing more integrative care themselves. But since we made that recommendation in 1998 DCs have done relatively little to make this integration more real.

IAF's Recommendations

IAF makes a series of recommendations to the profession to help them achieve a more preferred future. Some key recommendations, among others are:

- Accelerate Research
- Continue to Strive for High Standards of Practice
- Develop greater integration with mainstream healthcare
- Anticipate and Engage Consumer Directed Care
- Create greater unity within the profession
- Enhance Individual DC's Contribution to Public Health
- Prepare for the Future of Prevention & Wellness
- Develop Geriatric Chiropractic

Source: Institute for Alternative Futures <http://www.altfutures.com>.

Does Surgery Unfavourably Perturb the “Natural History” of Early Breast Cancer?

A review paper, recently published here in Europe, in the *European Journal of Cancer* (1), is causing quite a bit of controversy and debate. The report's lead author, Professor Michael Baum of the Portland Hospital in London, says that having surgery for breast cancer might cause tumours to grow and proliferate, especially in young patients whose cancer isn't advanced.

The authors conclude their review by stating,

Therapeutic revolutions occur after a crisis develops when there is a general recognition that clinical interventions are not producing positive results predicted by the prevailing paradigm.

The attitude of pre-modern surgeons to surgery for breast cancer was influenced by the very real possibility of doing more harm than good by operating upon women with breast cancer.

Up until the end of the 19th century, the general consensus was clearly that, unless forced by the circumstances, surgical resection should be avoided for disease much more advanced than very early stage tumours. Twentieth century progress in antisepsis, anaesthesia, and surgery changed this point of view. The first three quarters of that century saw more and more aggressive operations performed while the last quarter century reversed this trend, with reduction of the size of breast cancer operations based largely on the teachings of Fisher.

A new crisis is upon us now in that trials of early detection have resulted in unexpected disadvantages to certain subgroups and there is previously unreported structure in early hazard of relapse, clinical data that suggests the act of surgery might accelerate the appearance of distant metastases.

The explanation we propose that agrees with these results, as well as physicians of antiquity, is that surgery can induce angiogenesis and proliferation of distant dormant micrometastases, especially in young patients with positive nodes.

What we now have is a new model of the disease that owes its genesis in part to the interpretation of the results of natural history databases or clinical trials by way of hazard rate plots rather than Kaplan-Meier curves. We can now see a new signal appearing against background noise, that challenges the assumption of linear dynamics in favour of non-linear mathematics or chaos theory. This "signal" is the early peak of hazard for relapse that follows surgery within 48 months, whereas the stretched flatter curve thereafter might be the "echo" of the natural history of breast cancer left unperturbed by surgical interference.

If that is true then the act of wounding the patient creates a favourable environment for the sudden transfer of a micrometastasis from a latent to an active phase.

We must refocus on the host-cancer balance. We believe that careful reconsideration of both the therapeutic and deleterious effects of the wounding associated with breast cancer resection is in order. Breast cancer and the women who bear it comprise a complex system. The dynamics of the system are not linear. The entry into this complex system by any potentially therapeutic intervention could have very different outcomes depending upon the conditions of the complex dynamic host-cancer relationship at the "time" of the intervention.

Reference:

Baum M, Demicheli R, Hrushesky W, Retsky M.. *Does surgery unfavourably perturb the "natural history" of early breast cancer by accelerating the appearance of distant metastases?* European J Cancer 2005; 41:508-15.

Delisting Chiropractic and Physiotherapy: False Saving?

The following news item appeared in a recent edition of the Canadian Medical Association Journal (CMAJ) (1).

Delisting chiropractic services in BC and Ontario, and limiting community-based physiotherapy in BC, Alberta and Ontario are false economies, both professional associations claim.

The Ontario government hopes to save \$100 million annually by delisting chiropractic services in December 2004 and another \$100 million by cutting community-based physiotherapy this spring. Ontario plans to use the savings from delisting "less critical" services to boost cancer and cardiac care, and home- and long-term care.

However, a report by Deloitte Consulting Services commissioned by the Ontario Chiropractic Association predicts a 7%-14% increase in the number of patients visiting emergency departments and a 1.3%-2.6% increase in visits to family physicians, as Ontarians try to avoid paying for a chiropractor.

Graydon Bridge, president of the Canadian Chiropractic Association, says Ontario's delisting will "actually cost as much as \$200 million as patients are diverted to more expensive and possibly less effective options." Manitoba, Saskatchewan and Alberta provide partial funding for chiropractic services.

In BC, chiropractic and community-based physiotherapy were delisted in 2002 for all but the poorest 20% of residents. The savings of \$130 million annually were funnelled into premium assistance subsidies.

Reference:

Dales J. *Delisting chiropractic and physiotherapy: false savings?* CMAJ 2005; 172:166.

Time to (Evidence-base) Practise what we Preach.

A commentary by Professor Jennifer Bolton, in the latest edition of *Clinical Chiropractic* (1), provides a number of thought provoking questions about the practice of chiropractic and evidence-based health care. Professor Bolton states -

The move to 'evidence-based practice' over the last decade or so has brought with it changes in the way clinical research is conducted and disseminated and changes in the way clinicians are expected to use the evidence from that research. In spite of the theory of evidence-based practice having been around for more than a decade, the practicality of integrating clinical research evidence into clinical practice arguably remains today's biggest challenge facing all healthcare professions. Remarkably, evidence showing that evidence-based practice either changes the way in which clinicians practice or improves care for patients is still lacking. Indeed, the evidence points to most clinicians hardly ever referring to research evidence, but instead relying on 'trusted sources' and 'networks'.

From its definition, however, evidence-based practice is about the *use* of research evidence, not for, or by, external stakeholders, but by individual practitioners treating individual patients.

For chiropractic practice to become evidence-based, as espoused by the champions of evidence-based practice, clinicians need to be able to act both as 'research-users' and as 'research-providers'. Both roles are implicit in clinicians adopting an evidence-based approach to their practice although, inevitably, individual preferences and interests will mean that not all clinicians will act in a similar capacity in each role. As 'research-users', clinicians will need to attain the skills to articulate clinical scenarios into questions that can be answered by the available evidence; to find, and then appraise, the evidence and, finally, to apply the evidence in the management of an individual patient. As 'research-providers', clinicians will need to attain the skills to undertake research that answers meaningful clinical questions that arise in everyday practice, and then to be able and willing to disseminate that evidence in a publishable format.

As 'research-users', not only do clinicians need to attain evidence-based practice skills, but also, just as importantly, researchers must come down from their ivory towers and deliver evidence that is relevant and easy to apply in practice. Although researchers concentrate on large-scale studies, including RCTs and observational studies such as surveys, cohort and case-control designs, the results must be capable of being extrapolated from large groups of subjects to something that is meaningful in a practical, everyday setting. Unless this is the case, neither the clinician nor the patient will be able to make any sense of a study's findings for their own unique purposes.

Next, what about clinicians as 'research-providers'? Clinicians have always found the case report of interest because it is so relevant to clinical practice, and the pages of *Clinical Chiropractic* attest to the stand that case reports are a valuable part of the evidence base. But are they research? The answer, in my opinion, is that they are, providing they add new knowledge to the evidence base. This means that case reports must be innovative and unique and not simply telling clinicians what they already know.

If chiropractors are to become more involved as both 'research-users' and as 'research-providers', how is this to be achieved? Unfortunately, along with the other healthcare professions, this is not an easy question to answer. From our own experiences of putting on workshops and seminars in evidence-based practice for chiropractors in the field, the interest is dramatically disappointing to say the least. Moreover, a recent review shows that, while standalone postgraduate seminars in evidence-based practice only increase knowledge, it is real-time teaching, integrated with actual clinical practice, that leads to changes in attitudes, skills

and, most importantly, behaviour. This is why we may be left with the realisation that it is only by educating and training our future clinicians in the skills of evidence-based practice that any real change will be made within the profession. If this is the case, then the responsibility falls squarely on the shoulders of chiropractic educators to support this practice by teaching and by example. Time will tell whether this message has got through to the various chiropractic educational institutions around the world.

Reference:

Bolton JE. *Time to (evidence-base) practise what we preach. A commentary.* Clin Chiropractic 2005; 8:1-4.

The Deleterious Effects of Omitting Breakfast

Background: Breakfast consumption, which a number of studies suggest has declined in recent years, is recommended despite inconclusive evidence of health benefits.

Objective: This study's aim was to ascertain whether eating breakfast (EB) or omitting breakfast (OB) affects energy intake, energy expenditure, and circulating insulin, glucose, and lipid concentrations in healthy women.

Design: In a randomized crossover trial, 10 women underwent two 14-d EB or OB interventions separated by a 2-wk interval. In the EB period, subjects consumed breakfast cereal with 2%-fat milk before 0800 and a chocolate-covered cookie between 1030 and 1100. In the OB period, subjects consumed the cookie between 1030 and 1100 and the cereal and milk between 1200 and 1330. Subjects then consumed 4 additional meals with content similar to usual at predetermined times later in the day and recorded food intake on 3 d during each period. Fasting and post-test meal glucose, lipid, and insulin concentrations and resting energy expenditure were measured before and after each period.

Results: Reported energy intake was significantly lower in the EB period ($P = 0.001$), and resting energy expenditure did not differ significantly between the 2 periods. OB was associated with significantly higher fasting total and LDL cholesterol than was EB (3.14 and 3.43 mmol/L and 1.55 and 1.82 mmol/L, respectively; $P = 0.001$). The area under the curve of insulin response to the test meal was significantly lower after EB than after OB ($P < 0.01$).

Discussion: The prevalence of obesity has increased in industrial countries in recent decades. At the same time, OB has become more common, possibly because of efforts to lose weight. The results of this study have showed the potential importance of breakfast consumption to insulin sensitivity and plasma cholesterol concentrations, which are known risk factors for cardiovascular disease. The current study also reports higher EIs with OB than with EB. This indicates a potential mechanism by which breakfast omission could lead to weight gain in the longer term. Further long-term studies are required to ascertain the potential magnitude of such effects and whether they interact with any genetic characteristics.

Conclusion: Omitting breakfast impairs fasting lipids and postprandial insulin sensitivity and could lead to weight gain if the observed higher energy intake was sustained

Reference:

1. Farshchi HR, Taylor MA, Macdonald IA. Deleterious effects of omitting breakfast on insulin sensitivity and fasting lipid profiles in healthy lean women. *Am J Clin Nutrition* 2005; 81:388-96.

Trends in use of Complementary and Alternative Medicine by US Adults: 1997-2002.

Background: Complementary and alternative medicine (CAM) use by US adults increased substantially between 1990 and 1997, yet little is known about more recent trends.

Objective: To compare CAM therapy use by US adults in 2002 and 1997.

Design: Comparison of two national surveys of CAM use by US adults: (1) the Alternative Health/Complementary and Alternative Medicine supplement to the 2002 National Health Interview Survey (N=31,044) and (2) a 1997 national survey (N = 2055), each containing questions about 15 common CAM therapies.

Main Outcome: Measures Prevalence, sociodemographic correlates, and insurance coverage of CAM use.

Results: The most commonly used CAM modalities in 2002 were herbal therapy (18.6%, representing over 38 million US adults) followed by relaxation techniques (14.2%, representing 29 million US adults) and **chiropractic (7.4%, representing 15 million US adults)**. Among CAM users, 41% used two or more CAM therapies during the prior year. Factors associated with highest rates of CAM use were ages 40-64, female gender, nonblack/non-Hispanic race, and annual income of \$65,000 or higher. Overall CAM use for the 15 therapies common to both surveys was similar between 1997 and 2002 (36.5%, vs. 35.0%, respectively, each representing about 72 million US adults). The greatest relative increase in CAM use between 1997 and 2002 was seen for herbal medicine (12.1% vs. 18.6%, respectively), and yoga (3.7% vs. 5.1%, respectively), **while the largest relative decrease occurred for chiropractic (9.9% to 7.4%, respectively)**.

Conclusions: The prevalence of CAM use has remained stable from 1997 to 2002. Over one in three respondents used CAM in the past year, representing about 72 million US adults.

Reference:

Tindle HA, Davis RB, Phillips RS, Eisenberg DM. Trends in use of complementary and alternative medicine by US adults: 1997-2002. *Alternative Therapies in Health and Medicine* 2005; 11:42-9.

Predicting Health-Related Quality of Life in Patients With Low Back Pain

Background - There is disagreement on the relative contribution of pain, physical impairment, functional status, and psychological factors on the disability and HRQOL.

Objective - The objective of this study is to predict the HRQOL in patients with low back pain.

Study Design - Cross-sectional surveys of health-related quality of life (HRQOL) in patients with low back pain.

Methods - Data were collected from 232 patients with low back pain who were consecutively recruited from several clinics of physical medicine and rehabilitation. Every patient received physical examination and completed a set of questionnaire, including the Brief Questionnaire of the World Health Organization on quality of life (WHOQOL-BREF), Modified Roland and Morris Disability Questionnaire, and visual analogue scale for pain intensity and for HRQOL. These patients were observed with a mail questionnaire 8 weeks later. The results of WHOQOL-BREF were also compared to those obtained from another 213 healthy volunteers who were accompanied persons with patients, volunteer workers in hospitals, and hospital employees.

Results - Results showed that there were significant correlations of HRQOL with pain intensity, disability scale, and disability days. The significant predictors for HRQOL included physical domain, psychological domain, pain intensity, and family income. Among all the 232 study patients, 100 of them responded to the follow-up questionnaire. Changes in environmental domain, disability days, educational level, receiving herb drugs, and physiotherapy were the significant predictors for the changes of HRQOL.

Conclusions - The HRQOL of patients with low back pain depended on *functional status and psychological factors more than simple physical impairment*. Future intervention may need to put more emphasis on improving functional status and psychological stress for these patients.

Key Points

- * Low back pain is rarely fatal but profoundly affects functioning, so the HRQOL of the patients is significantly less than healthy persons in the physical and psychological domains.
- * It is more important to improve the functional status rather than simple pain relief for the HRQOL promotion.
- * The significant predicting factors for HRQOL were psychological and physical domains, family income, and pain intensity. Meanwhile, the predictors for the changes of HRQOL were: the changes of environmental domain and disability days, receiving herbal drugs, physiotherapy, and educational level.
- * The HRQOL promotion of patients with LBP seemed to depend on the improvement of functional status and psychological factors rather than that of physical impairment.

Reference:

Hornig YS, Hwang YH, Wu HC, Liang HW, Mhe YJ, Twu FC, Wang JD. *Predicting Health-Related Quality of Life in Patients With Low Back Pain*. Spine 2005; 30:551-55.

Cervical Artery Dissection. A Comparison of Highly Dynamic Mechanisms: Manipulation Versus Motor Vehicle Collision.

The objective of this paper was to examine the similarities and dissimilarities between cervical chiropractic manipulative therapy and whiplash, and their respective relation to cervical artery dissection.

The authors carried out a literature review using MEDLINE-Pub Med and MANTIS literature searches. They report having generated a total list of 99 relevant articles. Additional references were collected from citations incorporated within the included articles.

The authors report that both neck manipulation and motor vehicle collision events apply loads to the spinal column rapidly. While neck manipulation loads are slower to develop and displacements smaller, they may reach peak amplitudes on maximum effort comparable to those seen in low-velocity collision experiments. In contrast to reports that the vertebral artery experiences elongations exceeding its physiological range by up to 9.0 mm during simulated whiplash, strains incurred during cervical manipulative therapy have been reported to be approximately one ninth of those required for mechanical failure, comparable to forces encountered in the course of diagnostic range of motion examination. Additionally, long-lasting abnormalities of blood flow velocity within the vertebral artery have been reported in patients following common whiplash injuries, whereas no significant changes in vertebral artery peak flow velocity were observed following cervical chiropractic manipulative therapy.

The authors conclude, “Perceived causation of reported cases of cervical artery dissection is more frequently attributed to chiropractic manipulative therapy procedures than to motor vehicle collision related injuries, even though the comparative biomechanical evidence makes such causation unlikely. The direct evidence suggests that the healthy vertebral artery is not at risk from properly performed chiropractic manipulative procedures.”

Reference:

Haneline M, Triano J. *Cervical artery dissection. A comparison of highly dynamic mechanisms: manipulation versus motor vehicle collision*. J Manipulative Physiol Ther. 2005; 28:57-63.