

June 2002

Diseases of Meaning, Manifestations of Health, and Metaphor

Jobst KA, Shostak D, Whitehouse PJ. *J Altern Complement Med* 1999;5:495-502.

Disease and health are commonly thought of as distinct opposites. We propose a different view in which both may be seen to be facets of healthy functioning, each necessary for the other, each giving rise to the other.

Thus, disease may be thought of as a manifestation of health. It is the healthy response of an organism striving to maintain physical, psychologic, and spiritual equilibrium.

Disease is not necessarily to be avoided, blocked, or suppressed. The process should therefore be facilitated because it is an integral part of the dynamic equilibrium that we ordinarily think of as health. In many cases, perhaps all, people get ill because there is something going "wrong" in their lives. This could occur in a whole range of ways-relationships, environment, food, or job.

Our view is that disease is a meaningful state that can inform health workers how to help patients to heal themselves.

In this way, instead of being meaningless, people's problems become diseases of meaning, enabling people to see that things are not necessarily "going wrong" but are, in fact, helping them become stronger, to live more fully and with more understanding. Seen from this perspective, depression; cancer; heart disease; neurodegenerative and autoimmune disease; dementia; and conditions such as community violence, genocide, and the problem of environmental devastation are "diseases of meaning."

World Health Organization forecasts make it clear that diseases of meaning will continue well into the next millennium to be the major cause of suffering and death worldwide. To deal with them, the world needs to reformulate the biomolecular paradigm that has been exploited in the last two centuries. It does not address the reasons why these diseases arise, attending mainly to their molecular consequences. A paradigm that includes the importance of meaning must now be given top priority. The concept that diseases are a manifestation of health is in itself a different approach.

Volume and Outcome

Within chiropractic there are those who contend that high volume practice is in some way synonymous with care of an inferior quality. Based upon a similar logic, which suggests that increased quantity is necessarily accompanied by a decrease in quality, one might think that high volume hospitals, and high volume surgeons for that matter, would offer care of inferior quality. However, the findings of many studies carried out in a multitude of hospital settings now provide compelling evidence that the opposite is in fact true. That's right, low volume hospitals do a much worse job, as do low volume surgeons, compared to high volume hospitals and high volume surgeons. It seems counter-intuitive at first but I guess there's something to the old saying, *practice makes perfect*.

Take for example the following few most recent studies in this area:

A study published on April 11th, 2002 in the *New England Journal of Medicine* examined hospital volume and mortality in the United States. Using information from the national Medicare claims database and the Nationwide Inpatient Sample, these authors examined the mortality associated with six different types of cardiovascular procedures and eight types of major cancer resections between 1994 and 1999 (total number of procedures, 2.5 million). The authors conclude, "Medicare patients undergoing selected cardiovascular or cancer procedures can significantly reduce their risk of operative death by selecting a high-volume hospital."⁽¹⁾

Other authors assessed whether patient outcome following radical prostatectomy is associated with how many of these procedures are performed at hospitals yearly. The authors concluded, "Hospital volumes inversely related to in-hospital mortality, length of stay and total hospital charges after radical prostatectomy."(2)

So what about surgeons as opposed to hospitals? Is there a difference between high volume surgeons as opposed to low volume surgeons? One study explored the volume-mortality relationship for 3 groups of cancer procedures to determine whether higher-volume hospitals, higher-volume surgeons, or both are associated with lower in-hospital mortality. It was concluded, "For all 3 procedure groups, the risk-adjusted in-hospital mortality is significantly lower when the procedures are performed by high-volume providers."(3)

So how does all that relate to high and low volume chiropractic practices?? Do high volume chiropractic practices get more people well than their low volume counterparts? Do patients attending high volume chiropractic practices receive care of lesser quality, or care of better quality than those attending low volume practices? Is it fair to extrapolate the findings, which suggest that high volume hospitals, and surgeons, have better outcomes, across to high volume chiropractic practices and chiropractors?

Unfortunately, at this point in time, we don't know whether there is a difference in the outcomes in those patients attending high as opposed to low volume chiropractors. But it does make sense that those who do a lot of adjusting might get very good at it. Furthermore, if a high volume practitioner is seeing 4 times more people than a low volume practitioner, but the two have the same incidence (number of new cases/population/time) of complaints lodged against them, then the high volume practitioner will be servicing 4 times the number of people in that community but may also have 4 times the number of complaints lodged against him.

Despite all the hypothetical scenarios one can conjure up, we really don't have research that takes into account all the variables at this point in time. Therefore, if we are going to strive to practice in accordance with the best evidence, as the ACC paradigm suggests we should, we will not be too quick to judge the quality of care provided by the chiropractor down the road. The reality might just be that he is doing an equal, or God forbid, far superior job compared to you and I.

References:

- 1) Birkmeyer JD, Siewers AE, Finlayson EV, Stukel TA, Lucas FL, Batista I, Welch HG, Wennberg DE. Hospital volume and surgical mortality in the United States. *N Engl J Med* 2002;346:1128-37.
- 2) Ellison LM, Heaney JA, Birkmeyer JD. The effect of hospital volume on mortality and resource use after radical prostatectomy. *J Urol* 2000;163:867-9.
- 3) Hannan EL, Radzyner M, Rubin D, Dougherty J, Brennan MF. The influence of hospital and surgeon volume on in-hospital mortality for colectomy, gastrectomy, and lung lobectomy in patients with cancer. *Surgery* 2002;131:6-15.

Use of alternative medicine by HIV-positive gay men: an exploratory study of prevalence in the Netherlands

Knippels HM, Weiss JJ. *AIDS Care* 2000; 12:435-46.

Although many HIV-positive individuals use alternative medicine, little is known about user characteristics. In this study, the prevalence of alternative medicine use in a sample of 70 HIV-positive gay men is assessed and characteristics of alternative medicine users are identified. **Seventy-one per cent (50/70) of the sample used at least one alternative therapy since HIV serostatus notification, alone or in combination with traditional medicine.** A logistic regression was used to identify those measures, which are characteristic of alternative users. It revealed that the typical user is a person with symptomatic HIV disease, who reports little or no pain and actively tries to cope with disease-specific problems while expressing his feelings about them.

Preventive/Maintenance Care Defined

The following definition and references are extracted from the web-site of the American Chiropractic Association (ACA) Preventative/Maintenance Care describes elective health care that is typically long-term, by definition not therapeutically necessary but is provided at preferably regular intervals to prevent disease, prolong life, promote health and enhance the quality of life. This care may be provided after maximum therapeutic improvement, without a trial of withdrawal of treatment, to prevent symptomatic deterioration or it may be initiated with patients without symptoms in order to promote health and to prevent future problems. This care may incorporate screening/evaluation procedures designed to identify developing risks or problems that may pertain to the patient's health status and give care/advice for these. **Preventative/maintenance care is provided to optimize a patient's health.** (1-4)

References:

1. Chapman-Smith D. Scope of Practice. The Chiropractic Profession. NCMIC. Toronto, Canada; Harmony Printing Limited, 2000; 94-5.
2. Chapman-Smith D. Long-Term Care-Justification and Reimbursement. The Chiropractic Report. Jan 1994; 8(1); 2.
3. Haldeman S, et al, eds. Guidelines for Chiropractic Quality Assurance and Practice Parameters. Gaithersburg, Maryland; Aspen Publishers; 1993; Chapter 8; 115-127.
4. Henderson DJ, et al, eds. Clinical Guidelines for Chiropractic Practice in Canada. Supplement to JCCA; 1994; Glossary; 193-4.

The Melbourne Asthma Study: 1964-1999

Phelan PD, Robertson CF, Olinsky A. J Allergy Clin Immunol 2002;109:189-94.

A group of children with a past history of wheezing were randomly selected from the Melbourne community at the age of 7 years in 1964, and a further group of children with severe wheezing was selected from the same birth cohort at the age of 10 years.

These subjects were followed prospectively at 7-year intervals, with the last review in 1999, when their average age was 42 years. Eighty-seven percent of the original cohort who were still alive participated in the 1999 review.

This study showed that the majority of children who had only a few episodes of wheezing associated with symptoms of a respiratory infection had a benign course, with many ceasing to wheeze by adult life. Most who continued with symptoms into adult life were little troubled by them.

There was a loss in lung function by the age of 14 years in those with severe asthma, but the loss did not progress in adult life.

There was no significant loss of lung function in those with milder symptoms.

In elaborating on the significance of this studies findings the authors state, "The Melbourne study has provided further confirmation of the favorable outcome of children whose episodes of wheezing are associated with symptoms of a respiratory infection...It is important that this group of children with minor wheezing not be over treated, especially with therapy that may have long-term side effects. They have a mild illness without serious long-term implications. This point needs to be repeatedly made to parents who can become anxious about the recurrent episodes and seek curative treatment."

Changes in General Health Status During Upper Cervical Chiropractic Care

Hoiriis KT, Burd D, Owens EF. Changes in General Health Status During Upper Cervical Chiropractic Care: A Practice-Based Research Project Update Chiropr Res J. 1999;vol 6.

Objective: To study the effectiveness of upper cervical care related to the general health status of patients. This project uses the RAND (SF-36) Health Survey and a global well-being scale (GWBS) as primary outcome measures.

Methods: Field doctors were recruited to contribute sequential information from their new patients. The patients were followed through the course of care until maximum improvement for the presenting complaint was noted. The SF-36 was given to patients at the initial visit, after four weeks and at the end of the care plan (the level of maximal chiropractic improvement, MCI). The GWBS was completed at each visit. Radiographic analysis of upper cervical subluxation was recorded. Data are continually being collected from field practitioners and entered into a computerized database. This update summarizes the results from the first two years of the study.

Results: The SF-36 data reduces to health scores ranging from 0 to 100 in eight discreet dimensions or subscales: physical function (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (V), social function (SF), role emotional (RE) and mental health (MH). The mean SF-36 results for 4 week data (n=161) and MCI (n=85) show statistically significance changes from initial values (n=311). All subscales showed improvement with the greatest average gain seen for role physical (39 points).

Conclusions: In this chiropractic population, **the improvement in average SF-36 scores might be attributed to changes in health due to the spinal correction.** However at this point in time there is no data available from a control population to support that conclusion.

Editor's Comment: This paper can also be found in the Proceedings of the World Federation of Chiropractic, 5th Biennial Congress, Auckland, NZ, May 17-22, 1999.

Active range of Motion in the Cervical Spine Increases after Toggle Recoil

Whittingham W, Nillson N. J Manipulative Physiol Ther 2001;24:552-5.

It has generally been assumed that spinal manipulation has the effect of increasing spinal range of motion. However, past research has not shown whether there is an increase in active range of motion after chiropractic adjustments.

The objective of this double-blind randomized controlled trial was to determine if there are changes in active cervical range of motion after spinal manipulation of the cervical spine. One hundred and five patients were randomized into 2 groups. After a baseline observation period, Group 2 received toggle recoil to the cervical spine, whereas Group 1 received sham adjustment. In the next trial phase, Group 1 received toggle recoil, whereas Group 2 received no treatment. This was followed by the final trial phase, in which Group 2 received sham adjustment and Group 1 received no adjustment. After each trial phase, active range of cervical motion was measured with a strap-on head goniometer by 2-blinded examiners.

After receiving toggle recoil, active range of motion in the cervical spine increased significantly ($P < .0006$) in Group 2 compared with Group 1, and this difference between the two groups disappeared after the third trial phase in which Group 1 also received adjustment, as expected.

It is concluded that Toggle recoil of the cervical spine increases active range of motion.

Abnormal Spinal Curvature and Its Relationship to Pelvic Organ Prolapse

The researchers used a protocol described in 1974 by Milne and Lauder, that appeared in the *Annals of Human Biology* 1974;1:327-337, and was described as follows:

"Patients were placed in a fully erect position. A semi-flexible rod was then pressed against the spinal contour in the midline. This instrument consists of a strip of flexible metal covered with plastic, 60 cm in length that can be bent in one plane only. It retains the shape into which it was bent, effectively outlining any covered surface. The measurements were taken from the C7 spinous process down to the level of the lumbosacral joint space, closely adhering to the midline of the back.... Lumbar spinal curves were considered normal if there was any presence of lumbar lordosis (lumbar width>0) and thoracic kyphosis exceeded lumbar lordosis.

Results: Ninety-two (of 363) patients had abnormal spinal curves according to the study criteria. Complete loss of lumbar lordosis was found in 69 patients. Of the 92 with abnormal curvature, 84 had or previously had pelvic organ prolapse. When compared with patients with normal curvature, patients

with an abnormal spinal curvature were 3.2 times more likely to have development of pelvic organ prolapse.

Conclusion: An abnormal change in spinal curvature, specifically a loss of lumbar lordosis, appears to be a significant risk in the development of pelvic organ prolapse.

Editor's Comments: Other studies have similarly found an association between abnormal lumbar lordosis/thoracic kyphosis and organ prolapse. For example one study found that women with advanced uterovaginal prolapse have less lumbar lordosis than women without prolapse.(2) Another study found that women with a higher degree of thoracic kyphosis had a greater chance developing uterine prolapse.(3)

References:

1. Mattox TF, Lucente V, McIntyre P, Miklos JR, Tomezsko J. Abnormal spinal curvature and its relationship to pelvic organ prolapse. *Am J Obstet Gynecol* 2000;183:1381-4; discussion 1384
2. Nguyen JK, Lind LR, Choe JY, McKindsey F, Sinow R, Bhatia NN. Lumbosacral spine and pelvic inlet changes associated with pelvic organ prolapse. *Obstet Gynecol* 2000;95:332-6.
3. Lind LR, Lucente V, Kohn N. Thoracic kyphosis and the prevalence of advanced uterine prolapse. *Obstet Gynecol* 1996;87:605-9.

Editorial - Time to abandon the "Tendinitis" myth [Abridged version]

Khan K, Cook J, Kannus P, Maffulli N, Bonar S.

BMJ 2002;324:626-27. Painful, overuse tendon

conditions have a non-inflammatory pathology.

Most health care practitioners were taught, and many still believe, that overuse tendinitis is a largely inflammatory condition and will benefit from anti-inflammatory medication. **Unfortunately this dogma is deeply entrenched.** Ten of 11 readily available sports medicine texts specifically recommend non-steroidal anti-inflammatory drugs for treating painful conditions like achilles and patellar tendinitis despite the lack of a biological rationale or clinical evidence for this approach.

Light microscopy of patients operated on for tendon problems reveal collagen separation thin, frayed, and fragile tendon fibrils, separated from each other lengthwise and disrupted in cross section. There is an apparent increase in tenocytes with myofibroblastic differentiation (tendon repair cells) whereas classic inflammatory cells are usually absent.(1) Animal studies show that within two to three weeks of tendon insult tendinosis is present and inflammatory cells are absent.

A critical review of the role of various anti-inflammatory medications in soft tissue conditions found limited evidence of short term pain relief and no evidence of their effectiveness in providing even medium term clinical resolution of clearly diagnosed tendon disorders.(2) Laboratory studies have not shown a therapeutic role for these medications. Corticosteroid injections provide mixed results in relieving the pain of tendinopathy. (3,4)

Most importantly, we must acknowledge, at least till contrary data appear, that **anti-inflammatory pharmacotherapy does not provide significant long-term benefit in tendinopathy.**

If general practitioners embraced the tendinopathy paradigm, it would provide patients with an accurate description of their condition. By accepting the need to allow time for collagen turnover and remodelling, doctors would be free to provide patients with a realistic prognosis that better reflects the finding of prospective clinical studies.(5)

These conditions often take months rather than weeks to resolve. It is time for medical educators to accept the irrefutable evidence that the term tendonitis must be abandoned to highlight a new perspective.

References:

1. Bonar F, Harcourt P, Astrom M. Histopathology of common overuse tendon conditions: update and implications for clinical management. *Sports Med* 1999;27:393-408.
2. Almekinders LC, Temple JD. Etiology, diagnosis, and treatment of tendonitis: an analysis of the literature. *Med Sci Sports Exerc* 1998;30:1183-90.
3. Hay EM, Paterson SM, Lewis M, Hosie G, Croft P. Pragmatic randomised controlled trial of local corticosteroid injection and naproxen for treatment of lateral epicondylitis of elbow in primary care. *BMJ* 1999;319:964-8.
4. Stahl S, Kaufman T. The efficacy of an injection of steroids for medial epicondylitis. A prospective study of sixty elbows. *J Bone Joint Surg* 1997;79-A:1648-52.
5. Paavola M, Kannus P, Paakkala T, Pasanen M, Jarvinen M. Long-term prognosis of patients with achilles tendinopathy. An observational 8-year follow-up study. *Am J Sports Med* 2000;28:634-42.

What is Heart Rate Variability?

Chiropractic care is concerned with the integrity of the nervous system.

The sympathetic and parasympathetic nervous systems are responsible for physiological regulatory mechanisms. Heart rate variability (HRV) is a non-invasive measurement developed over the past two decades to determine the balance of the autonomic nervous system. HRV is a phenomenon where the heart rate of a normal individual changes continuously around its mean value. This constant changing in heart rate is a response to the interplay between sympathetic and vagal modulation of sinus node pacemaker activity. An increased activity in one system is accompanied by decreased activity in the other.

Analysis of HRV data generates important information concerning sympatho-vagal balance. HRV measurement is a recording of ECG readings and monitoring the heart rate changes. HRV has been used in assessing a wide variety of clinical presentations. Research has found that lowered HRV (and therefore a lesser ability to adapt) is associated with aging and increased incidence of sudden death. (1) Furthermore, abnormal changes in the balance of the two components of the ANS have been documented in the following dis-ease states: depression, Irritable bowel syndrome, Fibromyalgia, Chronic fatigue syndrome, migraine, Carpal tunnel syndrome, Parkinson's disease and Infantile Colic.

Now preliminary studies (2,3) using HRV analysis have suggested that chiropractic adjustment of the upper cervical spine may lead to changes that reflect a shift in balance between sympathetic and parasympathetic output to the heart.

References:

- 1) Zhang J. Using heart rate variability to monitor the balance of the autonomic nervous system. Sixth annual subluxation conference 1998;Oct 11.
- 2) Igarashii Y, Budgell B. Case Study: Response of Arrhythmia to Spinal Manipulation: Monitoring by ECG with Analysis of Heart-Rate Variability. *Chiropr J Aust* 2000;30:
- 3) Bugell BS, Hirano F. Innocuous mechanical stimulation of the neck and alterations in heart-rate variability in healthy young adults. *Auton Neurosci*. 2001 Aug 13;91(1-2):96-9.

Osteopaths again researching the visceral condition-specific role of Osteopathic manipulation

One recently published pilot study assessed the impact of osteopathic manipulative treatment (OMT) as an adjunct to standard psychiatric treatment of women with depression. (1) After 8 weeks, 100% of the OMT treatment group and 33% of the control group tested normal by psychometric evaluation. No significant differences or trends were observed between

groups in levels of cytokine production or in levels of anti-HSV-1, anti-HSV-2, and anti-EBV antibody. There was no pattern to the osteopathic manipulative structural dysfunctions recorded. The findings of this pilot study indicate that OMT may be a useful adjunct in the care of depressed women.

Another randomized pilot study evaluated the benefit of osteopathic manipulation in elderly with **pneumonia**. The authors recruited 21 individuals older than 60 years who were hospitalized with acute pneumonia. Although the mean duration of leukocytosis, intravenous antibiotic treatment, and length of stay were shorter for the treatment group, these measures did not reach statistical significance. However, the mean duration of oral antibiotic use did reach statistical significance at 3.1 days for the treatment group and 0.8 day for the control group.

The authors concluded that, "Osteopathic manipulative treatment may reduce antibiotic use and length of stay; however, a larger study is needed to clarify this outcome."(2)

In yet another outcomes study, the authors randomly assigned patients with **pancreatitis** to receive standard care plus daily OMT for the duration of their hospitalization (n = 6) or to receive only standard care (n = 8). Results indicated that patients who received OMT averaged significantly fewer days in the hospital before discharge (mean reduction, 3.5 days) than control subjects, although there were no significant differences in time to food intake or in use of pain medications. These findings suggest the possible benefit of OMT in reducing length of stay for patients with pancreatitis.

References:

- 1) Plotkin BJ, Rodos JJ, Kappler R, et al. Adjunctive osteopathic manipulative treatment in women with depression: a pilot study. *Am Osteopath Assoc* 2001;101:517-23.
- 2) Noll DR, Shores J, Bryman PN, Masterson EV. Adjunctive osteopathic manipulative treatment in the elderly hospitalized with pneumonia: a pilot study. *J Am Osteopath Assoc* 1999;99:143-6.
- 3) Radjeski JM, Lumley MA, Cantieri MS. Effect of osteopathic manipulative treatment of length of stay for pancrea a randomized pilot study. *J Am Osteopath Assoc* 1998;98:264-72.

QUOTES

The following is a quote from: **Meeker W, Haldeman S. Chiropractic: a profession at the crossroads of mainstream and alternative medicine. *Ann Intern Med* 2002;136(3):216-27.**

"A 2002 study in the *Annals of Internal Medicine* reported that patient use of chiropractic has tripled in the last two decades."

The following is a quote from: **Herzog W. Reflex responses associated with spinal manipulation. *Proceedings of the International Conference on Spinal Manipulation. Vancouver, British Columbia, July 16-18, 1998, pp. 105-107.***

"The onset of the actual thrust did not coincide with the timing of afferent activation. This suggests that the audible release, interpreted by some as the benchmark of chiropractic manipulation, may not be all that it is cracked up to be."

Does the Chiropractic Profession Need a Common Conceptual Framework?

John A. Astin PhD, Assistant Professor, University of Maryland School of Medicine.

(The following quotes have been extracted from a presentation made by Dr. Astin during the WFC sponsored conference on philosophy in Chiropractic education at Fort Lauderdale Nov. 10-13, 2000)

" I would argue that the fact that vitalistic theories are shared by as many disciplines as they are, rather than being a rationale for eliminating them, in fact lends them some cross cultural/ cross disciplinary validation

.....t
here is now growing
interest within the scientific community in studying the existence of so-called "subtle energies" and

their potential role in various health care disciplines. The National Institutes of Health have in fact recently set aside significant research funding for studying such "frontier" areas of health care. As scientists, I believe we must be very careful not to prematurely conclude that a particular theory could never exist before we have adequately and fairly studied it "

"I would like to make one final point. The concept of a vital and intelligent energy within the body and the role of spinal manipulation in restoring its free flow is, in my estimation, one if not the most uniquely defining features of chiropractic. And since a concern voiced by many of the presenters at this conference was the profession's finding and clarifying a unique niche in an increasingly competitive healthcare marketplace, these vitalistic concepts and the particular ways that chiropractic has historically conceptualized its role in health and well being could ultimately serve as one of the professions uniquely defining features."

Why People do not seek Chiropractic Care

Jain N, Astin JA. J Altern Complement Med 2001 Dec;7(6):689-96

Previous research indicates widespread use of complementary and alternative medicine (CAM). Compared to so-called CAM professions in North America, chiropractic has made large inroads into private and public health care financing systems. This study asked the question, "Why do many people fail to avail themselves of chiropractic and CAM care?" Understanding these factors may be particularly important given the increasing evidence suggesting that certain of these approaches may be efficacious.

METHODS: A two-page survey was mailed to a randomly selected sample of 1680 Stanford University alumni. A total of 601 responses were received (response rate, 35.8%).

RESULTS: The following variables predicted disuse of CAM in general: (1) being male (2) being healthy (3) lack of physician support for CAM use, and (4) believing CAM treatments are ineffective or inferior.

The following specific patterns were seen:

- Disuse of massage was associated with being male and younger; lack of physician support predicted disuse for all treatments except acupuncture and homeopathy;
- The belief that CAM treatments in general are ineffective predicted disuse of all therapies except chiropractic;
- The perception that CAM produced negative side effects predicted disuse of chiropractic;
- Lack of knowledge of CAM predicted disuse of herbs, chiropractic, and homeopathy;
- Positive health status was associated with disuse of chiropractic;
- And finally, the perception that providers were not in accessible locations predicted disuse of all CAM therapies.

CONCLUSIONS: Study findings indicate people are less likely to use CAM if they are male, are in good health, believe that the therapies are in general ineffective or inferior to conventional methods, perceive that conventional medical doctors are not supportive, and to a lesser extent feel they do not have adequate knowledge of CAM. Specifically, avoidance of chiropractic is associated with concerns for safety and side effects. For treatments that are more provider-based as opposed to self-care based, lack of accessibility to providers may explain disuse.

Editors Comment: Resolving these concerns and difficulties for the public may go some way toward making us accessible to a larger proportion of our respective communities.

Getting Back from What You Give

Ever stop and think about the possibility that in providing chiropractic care to someone you become the indivisible part of an equation that sees not just the patient changed by the encounter, but you as well? Interestingly, there now exists compelling evidence to suggest that the development and regular use of a particular palpatory skill changes brain function and may even change brain architecture. (1-5)

In one study (2) multiple microelectrode maps of the hand representation within and across the borders of cortical area 3b were obtained before, immediately after, or several weeks after a period of

behaviorally controlled hand use. Basically, owl monkeys were conditioned in a task that produced skin stimulation of the distal phalanges of one or more fingers. Analysis of microelectrode mapping experiment data revealed that:

- A) Stimulated skin surfaces were represented over expanded cortical areas.
- B) The internal topography of representation of the stimulated and immediately surrounding skin surfaces differed greatly from that recorded in control experiments.
- C) Borders between the representations of individual digits and digit segments commonly shifted.
- D) The absolute locations--and in some cases the areas or magnifications--of representations of many skin surfaces not directly involved in the trained behavior also changed significantly. However, the most striking changes were related to the representations of the behaviorally stimulated skin in every studied monkey. These experiments demonstrate that functional cortical remodeling results from behavioral manipulations in normal adult owl monkeys. We hypothesize that these studies manifest operation of the basic adaptive cortical process(es) underlying cortical contributions to perception and learning.

In another study (3) the effects of sensory deprivation on forepaw representation in the primary somatosensory cortex (SI) in adult rats was investigated. Cortical maps were constructed from high-resolution multiunit recordings of the response of layer IV neurons to somatosensory stimuli. The main features of the forepaw representation were described in terms of areal extent and topography of the cortical map, and sensory submodality, size, and location of the receptive field (RF) of small clusters of the cortical neurons. The results demonstrate that continuous sensory experience is needed for the organizational features of primary somatosensory cortex maps to be maintained.

More generally, these studies, which have also been shown to apply to humans through the use of magnetoencephalography, corroborates the view that cortical cutaneous maps are maintained in a permanent state of use- dependent fluctuation. (2-5)

References:

- 1) Pascual-Leone A, Cohen L, Hallett M. Cortical map plasticity in humans [letter]. *Trends Neurosci* 1992;15:13-4.
- 2) Jenkins WM, Merzenich MM, Ochs MT, Allard T, Guic-Robles E. Functional reorganization of primary somatosensory cortex in adult owl monkeys after behaviorally controlled tactile stimulation. *J Neurophysiol* 1990;63:82-104.
- 3) Coq JO, Xerri C. Tactile impoverishment and sensorimotor restriction deteriorate the forepaw cutaneous map in the primary somatosensory cortex of adult rats. *Exp Brain Res*. 1999;129:518-31.
- 4) Coq JO, Xerri C. Environmental enrichment alters organizational features of the forepaw representation in the primary somatosensory cortex of adult rats. *Exp Brain Res* 1998;121:191-204.
- 5) Mogilner A, Grossman JA, Ribary U, et al. Somatosensory cortical plasticity in adult humans revealed by magnetoencephalography. *Proc Natl Acad Sci U S A* 1993;90:3593-7.

One fifth of all new drugs have life-threatening adverse effects; some dangers don't become evident for years

Journal of the American Medical Association (JAMA), May 1, 2002.

Twenty percent of all new drugs are found to have serious or life-threatening effects unknown or undisclosed at the time of drug approval, according to a study published in the *Journal of the American Medical Association (JAMA)*.

The study, by researchers at Harvard Medical School and Public Citizen, a nonprofit consumer advocacy organization, found that half of these serious adverse effects are detected within seven years after a drug is first introduced onto the market. Damage to the liver, heart and bone marrow, as well as pregnancy risks, are the most common problems that arise after new drugs are introduced.

Sixteen drugs were withdrawn from the market over the 25-year study period, half of those withdrawals taking place within two years of a drug's introduction.

The study also analyzed drug entries in the "Physicians' Desk Reference" (PDR), the most common source of drug information for doctors. The authors examined 26 volumes of the "PDR," from 1975-2000, to determine how many drugs were found to have new serious adverse effects that were not known when the drug was first released. The study authors found that the estimated probability of acquiring a new black box warning or being withdrawn from the market over 25 years was 20 percent.

"This study will change the way I talk to patients about the use of new drugs," said Dr. Karen Lasser, study author and primary care doctor and researcher at Cambridge Hospital and Harvard Medical School. "If there is a safer, effective drug that has been in use for a number of years, I would strongly recommend it over a newer drug whose safety profile is unknown. I would prescribe a new drug only when absolutely necessary, and then watch for adverse effects very, very closely."

Prescription drug adverse effects are a major public health problem.

"Twenty million patients, almost 10 percent of the U.S. population, were exposed to the five drugs withdrawn from the market between September 1997 and September 1998," said Dr. Paul Allen, study co-author, an internal medicine specialist at Cambridge Hospital and Harvard Medical School. "Yet the drug companies push the public and doctors to use new drugs that are more profitable but also more dangerous."

The authors recommend that the U.S. Food and Drug Administration (FDA) not approve new drugs that are found to have safety problems in pre-marketing trials, especially when safer, equally effective therapies already exist, or when a new drug treats a benign condition.

"For many years, we have recommended to doctors and patients not to use new drugs until they have been on the market for at least five years, unless the drug is an important advance over existing treatments, which is rarely the case," said Dr. Sidney Wolfe, Director of Public Citizen's Health Research Group and study co-author. "This study provides much more extensive evidence for this cautious approach to treating patients."

The other study authors (Drs. Steffie Woolhandler, David Himmelstein and David Bor) are Associate Professors at Harvard Medical School.

New study puts stroke from neck adjustment at *less than 1* in 5 million adjustments

A new Canadian study, reported in the October 2, 2001 issue of the *Canadian Medical Association Journal* (CMAJ), puts the risk of stroke following neck adjustment at 1 in every 5.85 million adjustments. The study, which is based on patient medical files and malpractice data from the Canadian Chiropractic Protective Association, evaluated all claims of stroke following chiropractic care for a ten-year period between 1988 and 1997.

"This study is based on the most factual evidence available for determining the risk of stroke associated with neck adjustment," said Dr. Paul Carey, one of the principal authors of the study. "There has been much recent speculation about this risk, and some neurologists have expressed concern that the risk may be higher than previously believed. This study indicates that there is no cause for undue alarm, and that the risk may, in fact, be considerably lower than previously thought."

The study identified 23 reported cases of stroke following neck adjustments (also known as cervical manipulation), as diagnosed by the treating physician, over the ten-year period. This was compared to the estimated 134.5 million neck adjustments performed by chiropractors in Canada over the same time frame.

Today's publication points out that earlier surveys of neurologists who reported stroke following chiropractic treatment were not rigorous, and did not review patient charts to determine the type of adjustment that was performed, or even whether an adjustment was performed during the chiropractic visit implicated in the stroke.

"Unnecessary alarm has been created by the release of unpublished data in the past based on flawed methodology," explained Carey. "While it is possible that the experience of chiropractors does not reflect all strokes that occur following neck adjustment, this most recent study establishes such an extremely low degree of risk that patients can feel confident about the safety of neck manipulation performed by chiropractors."

Carey pointed out that other very common treatments for headache, and neck and back pain carry much higher risks of serious complications.

He also noted that the study supports the recent research published in CMAJ by the Institute for Clinical Evaluative Studies, which found that the incidence of stroke associated with neck adjustments is so rare, it was not possible for the researchers to establish a meaningful rate of occurrence despite the high number of cervical adjustments that are performed.

The study, titled "Arterial dissections following cervical manipulation: the chiropractic experience" was authored by Scott Haldeman, DC, MD, PhD, FRCP; Paul Carey, DC; Murray Townsend, BSc, DC; and Costa Papadopoulos, MHA, CHE.

Visit these websites for more information on chiropractic

[research www.chiroweb.com](http://www.chiroweb.com)

www.fcer.org/html/research.htm

www.c3r.org

www.chiroclinic.com.au

www.ccachiro (research page)

**"A people that value its privileges above its principles soon lose both."
*Dwight D. Eisenhower (1890-1969), Inaugural Address, January 20, 1953***