

Chronic Pain~ from Inflammation & Behavior

A Newsletter from Robert Gallup, Ed.D.



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Chronic Pain, Fatigue, and Depression are the Result of Conditioned Chronic Inflammation, which is Maintained by Habitual Behavior.

Conditioned alterations of immune responses provide powerful evidence of functional relationships between the brain and the immune system. As early as 1896 there was a description of asthma attacks being conditioned to an artificial rose. In the 1930's there were reports of the conditioning of hay fever attacks to pictures of a hay field. Essentially, what we are talking about here is that a person's expectations, perceptions, and emotions directly affect the immune system, and visa versa.

Research on the connections of behavioral and physiological responses derives from the work of Ivan Pavlov. This is the classic sequential, or simultaneous, pairing of a neutral (such as an artificial rose) stimulus with a stimulus (a real rose) that is known to cause the immune or physiological response. In 1926 Russian scientists Metal'nikov & Chorine carried out the first research program showing that a neutral stimulus (e.g. heat, tactile stimulation) paired with injections of foreign substances could illicit nonspecific and antibody responses.

The next issue:

- How to Really Change Health Behaviors
- Guest Contributor
- Healing Happens! (a case study)
- Recent PNI and Related Research (simply stated)

Modern conditioning studies, such as Ader (1974) and Ader & Cohen, (1975) were initially confined to immunosuppressive responses. Studies now include various conditioning paradigms and the circumstances in which conditioned behavior can result in a range of nonspecific, antigen-specific and cell mediated immune responses.

That expectations and behavior can illicit immune response is critical to current understanding of chronic inflammation (e.g. depression, pain and fatigue). The previous Newsletter reported important research which essentially equates "**placebo**" with "**expectations.**" Please remember that inflammation is physiologically chemical and travels through various body fluids such as blood. The brain can get the messages by fiber or chemical pathways. The site of the sensation such as pain and the pattern of whether a person experiences mostly fatigue or pain or sadness or anger or mania, etc. is based on genetics, where and in what form symptoms have located before, and previous conditioning. Below are several frequently observed scenarios:

1. Well ingrained patterns of emotional response induce neuron derived chemicals to induce immune cells to produce pro-inflammatory peptides> which results in

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“sickness behaviors” such as pain, fatigue, mood changes (like depression), motor impairments, cognitive impairments> may induce neuro stress chemicals> which keeps this cycle going. Trying to “escape” these difficult emotional-cognitive-sensory experiences often leads to maladaptive behaviors which also keep inflammation coming. Pro-inflammatory peptides can cross the blood-brain barrier and/or result in immune cells (such as glia) in the brain producing pro-inflammatory products, The vagal system also can alert the brain.

2. Since the pro-inflammatory peptides can move and affect anywhere in the body, sub-clinical (unconscious) inflammation will be located in the tissue which have been conditioned/typical for that person based on previous history. A major source for this traveling and conditioned inflammatory process is the digestive tract because of the typical diet. So, it may be some of our favorite solids and liquids which are the initial stimulus for the production of pro-inflammatory chemicals, which may be critical in the chronic headaches, benign masses, pain, fatigue, sadness, mania, etc. Of course, genetics is another factor.

3. How we use our bodies and whether our musculo-skeletal system is adequate for our movements and efforts is another area of habitual behavior which is frequently a factor in chronic inflammation. Simply stated, the repeated use of structures which are inadequate for the task at the moment of use, frequently results in a developing pattern of vulnerability to become the site of long term inflammatory symptoms such as pain.

Acute and possibly short term pain or fatigue in a structure that is not given adequate opportunity to heal (by anti-inflammatory chemicals and/or behavior such as rest) is a very common pattern.

Of course, there are important interactions among the above scenarios. What they all have in common is that long term and chronic inflammation can be a result of habitual behavior/Lifestyle. The good news is that there is a road to real healing and change, due to the same connections between behavior and inflammation (immune and nervous systems). We have endogenous (natural) anti-inflammatory systems which can be critically assisted and stimulated by conscious behavior. The only road to real healing is by changing our Health Behaviors. It is on this road that my clients embark

The purpose of this Newsletter (planned to be published three times a year) is to promote the sharing of the science, its applications, and victories towards improving the quality of life for the many who still suffer from chronic inflammation, pain, and fatigue.

The National Crises in Health Care: A Proposed Solution for California

by Safiya Gabriel, MPH, MA

In California, approximately six million people are uninsured out of a population of thirty-five million, and this figure is increasing. We all know that these are individuals and families that work hard, pay their taxes, but are unable to receive basic health coverage. Furthermore, all Californians are affected by the health care crises at multiple levels..

Background

The Health Access Foundation (2005) has summarized some key concerns about this crises:

- Over 80% of the uninsured are in working families with the uninsured person either a worker, or the dependent of a worker. (UCLA Center for Health Policy Research)
- The uninsured are not uninsured by choice. Over 85% of the uninsured are either not offered or not eligible for health insurance from their employer. (UCLA)
- Buying health insurance as an individual is often not an option, as coverage is too expensive for low- and middle-income families that are the vast majority of the uninsured. Coverage is simply not available for many, because of “pre-existing conditions.” (Families USA)

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- Nearly half of all uninsured respondents reported having unpaid bills or being in debt to the facility where they received services. (Access Project at Brandeis Univ.)
- Nearly half of all personal bankruptcies are the result of health problems or large medical bills. (NYU Law Review)
- The cost of health insurance is rising far greater than the rate of inflation for employers and consumers.
- The health care “safety-net” system of public hospitals, emergency rooms, clinics, and medical providers on which all Californians rely in an emergency is in financial crises.
- Ambulances are often diverted from the closest emergency rooms because they are overflowing.

Everybody is impacted when living in a state where a fifth of the population is sicker, less productive, and less financially secure.

A Single Payer Solution for California (CHIRA, SB 840, the Kuehl Bill)

{Editors note: The U.S. **already** has a very successful comprehensive national single payer system, **but**, it is **only for veterans**. Also, Massachusetts recently instituted a very limited “universal health insurance system.”}

The California Health Insurance Reliability Act (CHIRA, Senate Bill 840) would provide fiscally sound, affordable health insurance to all Californians, provide every Californian the right to choose his or her own physician, and control health cost inflation. A new administrative agency would be created to manage a single payer insurance program and to plan for the health needs of the state’s population. California now has the largest state health budget with personal spending estimated at \$163 billion in 2003. Under this bill the state would save at least \$33 billion on health bureaucracy by instituting a single payer reform. (Connecticut Coalition for Universal Health Care, 2005)

Eligibility- Eligibility is based on residency, instead of employment or income. Under CHIRA all residents are covered.. No one will ever lose their health insurance because they cannot afford the high premiums (very recent American Medical Association study concluded that the insurance companies are to blame for the escalating costs), because she or he has lost their job, or because they have a pre-existing condition.

Cost- CHIRA involves no new spending!! The system will be paid for by federal, state, and county monies already being spent on health care and by affordable insurance premiums that replace all premiums, deductibles, out of pocket payments and co-pays now paid by consumers and employers.

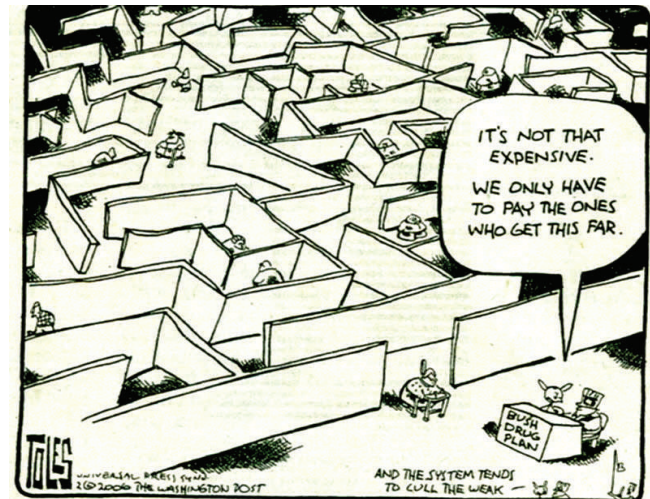
Efficiency- CHIRA eliminates waste by consolidating the functions of many insurance companies into one comprehensive insurance plan, saving the state and consumers billions of dollars each year. Currently, it is estimated that half of every dollar spent of health care is squandered on insurance company profits, overpaid pharmaceutical companies, and clinical and administrative waste. CHIRA will make our health care system more reliable and secure by stabilizing the growth on spending; linking spending increased to state GDP, population growth, employment rates, and other relevant demographic indicators. CHIRA will also place an emphasis on preventive and primary care to improve California’s overall health. All of this with a savings of billions of dollars!!

Benefits- Coverage prescribed by a patient’s health provider that meets acceptable standards of care and practice. Specifically, coverage includes hospital, medical, surgical and mental health; dental and vision care; prescription drugs and medical equipment, such as hearing aids, emergency care and ambulances, skilled nursing care after hospitalization; substance abuse recovery programs; health education and translation

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vices including services for those with hearing and visual impairments; transportation needed to access covered services, diagnostic testing and hospice care.

Vested interests such as insurance companies and pharmaceutical companies are leading the fight against SB 840-CHIRA. Public apprehension regarding something seen as new and different will need to be addressed and confronted with sound information and advocacy by groups, organizations, and individuals supporting and promoting this positive and sound bill.



The new Medicare prescription benefit

Tom Toles
Washington Post

For more information regarding SB 840- CHIRA, and for those who would like to get involved, please contact: Health Care for All Californians at <http://healthcareforall.org> or contact the office of Senator Sheila Kuehl (Senate District 23), 10951 West Pico Blvd., Suite #202, Los Angeles, CA 90064, tel (310-441-9084, fax 310-441-0724.

Healing Happens!!

Vince is a thirty-six year old software programmer, who was referred to me by a colleague of his, whose wife had received my services. His primary complaint was chronic pain in his wrists-hands-forearms, which started about three years earlier and was “getting worse.” He rated the pain in his right upper extremity as generally “6-10/10.” He rated his left as generally “4-6/10.” The diagnosis he was given was “Carpal Tunnel Syndrome.” Vince had seen his primary care physician, a neurologist, and a physical therapist. Vince did not have diabetes, his circulatory system was without pathology, and had broken a metacarpal in his right hand and a wrist bone in his left hand playing baseball more than ten years ago.

Vince stated that therapeutic modalities including thermals, splinting devices, strengthening and pharmaceuticals had not improved his symptoms. The neurologist had ruled out cervical arthritic causes. Vince was very concerned about his weight and vocational future.

During our initial phone consultation, Vince shared that he had two daughters, eight and seven years old. He liked to coach their soccer team, follow sports, throw the Frisbee to his dog, do some repair work on his townhouse, and go out to dinner with his wife. His wife is a teacher. He was concerned that the pain in his arms was beginning to significantly limit some of these activities. Vince describes himself as “a nice guy, developing a short temper, not getting enough sleep, and getting too fat.” He said that even “walking exercise makes my hands hurt worse, so I rest more.” “I used to play in an adult baseball league!”

Initial Meeting- Vince had full power, “some intermittent numbness,” and normal function in both of his arms. He felt that the pain was “a little worse” when he used his wrists repeatedly, especially in significant extension, flexion or when he needed to put a lot of power into a grip. “They hurt at least a little 24/7,” he said. Interestingly enough, he denied that pain was worse when using a keyboard. “It is worse when I’m tired, later in the day, and when I’m stressed out.” Vince felt that his “diet needed work, and I probably need to learn to relax.” “I’m about fifty-five pounds overweight, according to the internet.”

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Vince attended a “spiritual church regularly.” He said that he felt that his relationships with his daughters were good. Vince said that he and his wife had benefited from “couple’s counseling with the HMO a couple of years ago.” “I feel very lucky about my marriage, but I am having a harder time getting erections,” he said. Vince mentioned at least three “good friends” who were male. He felt good about his job and reported excellent performance evaluations. He described close relationships with his own family of origin, as well as his wife’s family.

I explained to Vince: that chronic pain was a symptom of chronic inflammation; how inflammation can become chronic; that it is our Health Behaviors that maintain the chronicity; and that the road to real healing is in real behavioral change which takes time and patience. “I know that you helped my friend’s wife a lot. She told me how it goes.”

Initial Plan- Vince agreed to keep a Discovery Journal to record what he ate, drank, sleep times, mood swings, pain levels three times a day, exercise, and all activities-of-daily-living. In Vince’s home, I trained him in the most ergonomic manner to perform his typical activities, including using his power tools computers. Vince agreed to not perform any “exercise” (walking, firsbee, tools) keeping in mind that his typical activities-of-daily-living including work and soccer coaching do take physical effort. We agreed to meet again in two weeks.

Discovery Journal- Vince’s journaling found> that he ate starch, white flour, significant saturated fat, and some sucrose in each meal. His protein came mostly with a very high fat content. His snacks were some form of ice crème, sweet bake goods, or high fat starch such as potato chips. He consumed soft drinks with each meal and frequently snacked before trying to sleep. Vince also “had a few beers with the guys every Thursday.” He reported 3 or 4 bowel movements a week. Vince slept between five to six and one half hours a night. He felt most ‘cranky” when he awoke in the morning, and in late afternoon. Pain levels were highest after soccer practice, at night, and when he awoke. Vince had gone to church twice, participated in a church sponsored “men’s group” activity, and had gone with is wife “for a night on the town, and sleep over at a hotel near the theater.”

Vince/from a PNI Perspective- Applied PNI looks at several areas of Health Behaviors. Research has shown these behaviors significantly affect Inflammatory Load. All of these have been learned and can change.

Emotional- appeared to have good self esteem and self-efficacy.

Social- appeared to have an excellent social support system.

Spiritual- appeared to feel well connected and satisfied in this area.

Diet- very likely increasing his Inflammatory Load.

Activity Tolerance/Performance- generally aware of how to perform activities, appropriately active.

Sexuality- abdominal fat can decrease erectile function.

Applied PNI looks at Inflammatory Load as the main source of chronic inflammation. The specific target tissue is based on the previous inflammatory history of that locale and genetics. Vince was a baseball player whose upper extremities had suffered trauma, and he is a very frequent user of power tools keyboards. It seemed that Vince’s obesity (adipose cells) may have been producing pro-inflammatory cytokines making an important contribution to his Inflammatory Load. His diet was likely contributing to this Load directly, and by adding fat cells. The digestive system is a significant anti-inflammatory process. His activity tolerance was impaired, likely related to his diet. The decreased activity was both a result and a cause. His low amount of sleep

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was a result of the Inflammatory Load, while also contributing to it with insufficient amounts of sleep. Inflammation is primarily chemical, therefore it travels in our bodies and can affect any tissue, including the brain.

Vince's sense of a "short temper" seems likely secondary to the pain, fear, and frustration from his chronic inflammation, rather than a general personality style. The decrease in activity also appeared to be secondary to these factors, as well as an intelligent adjustment to the chronic pain.

Recommended Changes in Health Behavior

Dietary- include low fat protein and water throughout the day, a lot more soluble and insoluble fiber, Also, reduce sugar, starch, and fat intake. I recommended Vince see the Dietician from his HMO, and I would coach him on how to make the real behavioral changes to accomplish the dietician's specific recommendations. I suggested he join his HMO's support group for those trying to make dietary changes. Peer support is often necessary to accomplish real change.

Enroll in the Mindfulness class offered by his HMO. The group setting would likely enhance its benefits. The primary goal here is to give Vince an important long term tool for self-relaxation.

I would coach Vince on a graded activity and graded rest program. Judicious amounts of walking would be slowly added to Vince's activities so as not to increase his Inflammatory Load, thus slowly increasing his use of calories as his diet reduced his caloric intake. This would increase his activity tolerance. Also, walking can increase production of opioids which are quite anti-inflammatory. We agreed to meet every other week, and I encouraged him to email or call when he needed to.

Three Months Later- Vince had lost twenty-one pounds. His Journal indicated he was indeed following the Dieticians recommendations and felt real personal accomplishment, a sense of support from the support group, and was "sleeping better." "I'm having at least one bowel movement a day." Our sessions utilized Cognitive-Behavioral-Techniques and modeling which were re-framing Vince's real feelings of "deprivation," "loss," "being different," "rage," "fear," and anxiety related to behavioral changes.. These are typical feelings most of us feel when we are sincerely trying to let go of long standing habits, to which we have deep attachments. Vince had very reluctantly decided to "let go of my beer night." I had warned him that when a person really changes their Health Behaviors, the social support system that was encouraging the old behaviors would likely change, too.

Vince was now meditating three to four times a week. He felt this improved his concentration, and had made it easier for him to be self-disciplined in his eating, drinking, and emotional reactions. Initially, Vince was coached to not "exercise." This was because the amount of physical activity he engaged in (including home repair/maintenance and coaching soccer was significant.) Achieving a reduction in his Inflammatory Load was the first goal. We were meeting every other week. Vince reported that his pain levels were "already down to 4-8/10." "No more tens!" "A bonus is that I've got my girls eating better, too."

At Seven Months- Vince had now lost a total of thirty-eight pounds. He reported that "sleeping and erection problems were a thing of the past!" When I "say no to myself about something I want to drink or eat, I don't feel so emotional." Pain levels were now ranging "2-6/10." He reported that several times recently he "woke up pain-free that lasted for a couple of hours." Vince was now exercising. He had a walking schedule of three forty-five minute walks three days a week. He still attended the weight loss support group every other week. "I meditate at least every other day." We would now begin to meet every three weeks.

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At Eleven Months- Vince had now lost a total of forty-nine pounds. “I have nearly whole days without any pain.” He reported his overall pain range to be “1-4/10.” “I feel like I could play ball again!” “My older daughter asked me why I don’t get so upset any more?” “It’s like my wife thinks I’m sexy!” Vince had started jogging on the treadmill in a friend’s workout room twice a week, did limited use of his tools, and was walking with his daughters, wife, and/or his dog two or three times a week. We scheduled our next visit for six weeks.

After Fourteen Months- Vince had lost a total of fifty-three pounds. “Most days I have no pain until evening when I have only a little.” “My hands and arms feel normal.” “Do you think I could go to the batting cages with my friends?” “The food changes were so hard in the beginning.” “I had to learn to think about it differently.” “I learned to just face the anxiety I got when I wanted something that was bad for me.” “Everybody wants it to be easy.” “You told me it would be hard, and it helped me to deal with the hard part.” “The support group, and my wife and kids have helped a lot.” “My Mom told me recently that she had been worried about my health.” “My doctor had told me to lose weight, a few times.” “But, no one had connected the pain with my weight or knew how to help me to really accomplish it.” “There is one friend who seemed to get angry when I’d say I didn’t want to have a beer.” “I haven’t seen him in about five months, but it’s OK because I’ve made two new friends from the support group.” Vince made an appointment with me for three months into the future.

Where Did Vince’s Pain Go?- In PNI, chronic pain is a symptom of chronic inflammation. Vince’s Inflammatory Load qualitatively lessened, primarily as a result of the decrease in extra fat. Adipose tissue can produce pro-inflammatory cytokines. Whatever emotional/social issues he had, that were not allowing him to follow-up on previous advice regarding weight, needed to be addressed as a door to real change. Once the Load was lessened the truly positive Health Behavioral factors which Vince exhibits: such as good self-esteem, good social support, a positive emotional pattern, and a history of being physically active were able to truly promote healing. His activity tolerance returned.

Vince is healing. The “carpal-tunnel” diagnosis did not address the sources of the chronic inflammation. He will likely always be vulnerable in his wrists-hands-forearms to symptoms. He appears to have internalized the tools he has learned and will be well able to make adjustments as he needs to. I received an email from him recently to let me know that he has gone to the batting cages twice with four weeks in between. He said “my symptoms were mild, as long as I cut back on my other physical activities for several days afterward, and was especially good with my diet.”

Recent PNI Research~ Some Important Nuggets to Use

The research “nuggets” shared below primarily came from the journal *Brain, Behavior, and Immunity* (2006). I suggest that readers, who have further interest in PNI, explore this wonderful journal, which is The Official Journal of the Psychoneuroimmunology Research Society. This section will be organized by topic and/or critical factors within Health Behaviors. The statements here are attempts to state simply and succinctly the main conclusions and/or implications of reported research. My goal here is to “translate” some of this very important information to expedite its general functional use.

Stress

- Successful stress management techniques decrease cortisol production.
- Coping skills modulate the relationship between stressful life events and exacerbations in Multiple Sclerosis.
- Social support is a buffer against exacerbation in Multiple Sclerosis.

Robert S. Gallup, Ed.D. Chronic Pain Specialist



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(Nuggets– continued from page 7)

Psychological Dysfunction and the Immune System

- Pro-inflammatory cytokines are a likely cause in affective disorders such as Major Depression, Schizophrenia, and eating disorders.

Neuro<>Immune Connection in All Vertebrates

- Immunological<>neurological communication occurs in all vertebrates studied, so far. An example are the neural innervations of lymphoid tissue and its affect on immune function.

Heart Disease and PNI

- Atherosclerosis is the disorder underlying coronary disease. It is an inflammatory process in which leukocytes interact with structurally intact but dysfunctional endothelium in arteries. Platelets play a key role in this process by binding to leukocytes and promoting their recruitment to the endothelium.. Platelet-leukocyte interactions also stimulate the release of pro-inflammatory and pro-thrombotic factors which promote atherosclerosis.

Immune System and “Sickness Behavior”

- Interleukin-1 (IL-1) acts on the vagus nerve to cause behavioral changes and illness symptoms.
- IL-1 can act on the hypothalamus and pituitary to produce CRH and ACTH respectively.
- Cells of the immune system express receptors for immunomodulatory hormones (such as cytokines) and neuropeptides which these immune cells can also produce.

Exercise

- Aerobic exercise improves intestinal immune function.