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Glucose & Insulin Dynamics

The Powerful Influence of Circadian Rhythms

TANYA LEE, ND

As clinicians who heavily rely on dietary interventions as part of our treatment protocols, a deep knowledge of the natural physiology of glucose and insulin is key in providing accurate and effective advice to our patients. This article is intended to provide a detailed summary of glucose tolerance and insulin sensitivity in relation to the circadian system.

The Circadian System: A Review

Circadian rhythms are endogenously generated periodic patterns that occur in 24-hour diurnal cycles. The purpose of the circadian system is to optimize energy production and utilization by temporally separating opposing metabolic processes (ie, anabolic and catabolic processes) according to the "circadian day" and "circadian night." This is a survival mechanism for energy conservation.

The circadian system is made up of 2 parts. The "master clock," or "core oscillator," is located within the suprachiasmatic nucleus (SCN) of the hypothalamus and is considered the central pacemaker of our circadian system. The photosensitive retino-hypothalamic tract uses the light-dark cycle to synchronize circadian timing to the external environment. The master clock then entrains the second component of the circadian system – the "peripheral clocks" – which are located in almost all tissues in the body, including other regions of the brain and metabolically active tissues such as the liver, muscle, and adipose tissues.[1-3] This is achieved mainly through the diurnal patterns of melatonin and cortisol secretion. The peripheral clocks are also

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Posttraumatic Stress

The Return to Wholeness – Part 1

DEBRA GIBSON, ND

PTSD: it's an acronym that doesn't need explaining these days, as it seems that every week another horrific event occurs for which posttraumatic stress disorder may be either a cause, a probable effect, or both at once. The "irritable heart," "hysteria," "shell shock," and "battle fatigue" of earlier times – that later reappeared as a long-festering wound of the Vietnam War, associated with ruined lives of drug and alcohol abuse, troubled relationships, and social alienation – has now entered mainstream awareness. In the wake of 9/11 and the many-place-names of homegrown violent tragedy; with increasing acknowledgement of pandemics of childhood, sexual, and domestic abuse; and as waves of modern warriors have returned home to the stresses and strangeness of "normal" life, awareness of the aftereffects of trauma has, over time,

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Are your toughest to treat patients not improving even while following your standard successful treatment protocol?

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Friday July 13, 2018 (1:00-5:30 PM)

1:00-1:30 PM	**Carolyn Ledowsky, ND**	Why is methylation so important. What is it we do?
1:30-2:15 PM	**Debby Hamilton, MD, MPH**	Environmental Toxins and infections in Autism
2:15-2:30PM	**Panel: Carolyn Ledowsky, ND & Debby Hamilton, MD, MPH**	Questions
2:30-3:00 PM	**BREAK**	
3:00-3:45 PM	**Andrew Rostenberg, PhD**	Genetic Roots of Stress and Anxiety. How the gut affects your mood.
3:45-4:15 PM	**Andrew Rostenberg, PhD**	Gut Case Studies
4:15-5:00 PM	**Nicole Bijslma, ND, LAc**	Endocrine Disrupting hormones – Who's at risk?
5:00-5:15 PM	**Panel: N. Biljsma, ND, LAc**	Questions
5:15 PM	**Carolyn Ledowsky, ND**	Close

Saturday July 14, 2018

8:00-8:45 AM	**Carolyn Ledowsky, ND**	Genetic SNP's that affect susceptibility to environmental toxins
8:45-9:30 AM	**Sara Wood, ND**	Organophosphate and Endocrine Disrupters How to Test & Evaluate - Case Studies & Treatment
9:30-9:45 AM	**Sara Wood, ND & Carolyn Ledowsky, ND**	Questions
9:45-10:45 AM	**Carolyn Ledowsky, ND**	Pathway planner & Case studies
10:45-11:15 AM	**MORNING BREAK**	
11:15-12:30 PM	**Matthew Pratt-Hyatt, PhD**	Organic Acids Evaluation and methylation insights
12:30-12:45 PM	**Matthew Pratt-Hyatt, PhD**	Questions
12:45-1:45 PM	**LUNCH**	
1:45-2:30 PM	**Andrew Rostenberg, DC**	Organic Acids Case Studies (RECORDING)
2:30-3:15 PM	**David Quig, PhD**	What is Awry in Essential Methionine and Folate Metabolism
3:15-3:30 PM	**David Quig, PhD**	Questions
3:30-4:00 PM	**AFTERNOON BREAK**	
4:00-4:45 PM	**Carrie Jones, ND, MPH**	When Hormones, Organic Acids and Genetics Collide: How to put the puzzle pieces of testing together.
4:45- 5:00 PM	**Carrie Jones, ND, MPH**	Questions
5.00pm		Close

Sunday July 15, 2018

8:00-9:30 AM	**Carolyn Ledowsky, ND & Nicole Bijslma, ND, LAc**	Other environmental factors – heavy metals, viruses, lyme, mold, vaccines, diet. Who's susceptible
9:30-9:45 AM	**Questions: Carolyn Ledowsky, ND & Nicole Bijslma, ND, LAc**	
9:45-10:45 AM	**Stephanie Seneff, PhD (VIA DIRECT LINK LIVE)**	Glyphosate disruption of methylation
10:45-11:00 AM	**Questions: Stephanie Seneff, PhD**	
11:00 - 11:30 AM	**MORNING BREAK**	
11:30-12:15 PM	**Carolyn Ledowsky, ND**	GlyphosateGenetic SNP's and case studies
12:15- 1:00 PM	**Carolyn Ledowsky, ND**	Putting it all together for patient assessment– where to start?
1:00 PM		Close

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influenced by environmental and behavioral factors, which should ideally be synched to the metabolic rhythm established by the endogenous clock. The circadian clock modulates a number of metabolic processes, such as cholesterol synthesis, glucocorticoid secretion, insulin sensitivity and secretion, hepatic gluconeogenesis, and glucose tolerance.[4] When the synchronous relationship between the endogenous and exogenous factors is disrupted, a state widely known as "circadian misalignment" results, which has been associated with the development of metabolic disease.[3]

Patterns of Insulin-Mediated Glucose Metabolism

It has been well established that the natural diurnal pattern of glucose tolerance is as follows: highest tolerance in the morning, with a gradual decrease into the evening, and lowest tolerance during mid-sleep.[5,6] A study observing 13 metabolically normal, overweight women, found that 4-hour postprandial glucose excursion was higher after dinner as compared with after breakfast. Another study, by Saad et al, demonstrated similar results in healthy volunteers.[6,7]

One might assume that the oscillating patterns of insulin secretion and sensitivity would be heavily dependent on the diurnal patterns of glucose. However, it appears to be greatly influenced by the master circadian clock, as represented by the presence of clock genes in the pancreatic islets of Langerhans.[8] This was demonstrated in a study by Boden et al, in which patterns of insulin secretion rates were observed in 21 healthy, normal-weight volunteers that were exposed to 3 constant levels of plasma glucose over 68 hours, using glycemic clamps at 5 mmol/L, 8.8 mmol/L, and 12.6 mmol/L.[9] Insulin secretion rates appeared to follow a diurnal pattern with all 3 glycemic clamps, peaking at noon and 6 PM, and falling as the evening progressed into the night.[9] This suggests that insulin sensitivity is higher in the morning compared to the evening.

Another study of healthy volunteers showed that despite a lower number of calories being consumed in the morning, an equal amount of insulin was produced at breakfast and dinner. This indicated that insulin secretion rates, and therefore sensitivity, are higher in the morning compared to the evening.[10] Yoshino et al observed no difference in insulin levels between breakfast and dinner, thus coming to the same conclusion.[11] Polonsky et al found that among obese volunteers, basal and postprandial insulin levels were higher compared to those of healthy volunteers, and that these levels failed to return to baseline between meals.[10] Saad et al also observed that insulin sensitivity, pancreatic ß-cell responsiveness, and hepatic insulin are all higher at breakfast than at dinner.[6]

Glucose Regulation: Roles of Melatonin & Cortisol

Melatonin and cortisol are considered the primary hormones connecting the oscillating rhythms of the master clock to the peripheral organs. At the start of the light cycle, light is detected by the SCN, which then signals the pineal gland to inhibit melatonin synthesis. During this time, the SCN activates the sympathetic nervous system, promoting the release of cortisol. In contrast, when the retina detects the start of the dark cycle, the pineal gland and the parasympathetic nervous system are activated, leading to the secretion of melatonin and the inhibition of cortisol.[12]

Melatonin receptors have been found on the alpha, beta, and delta cells of the pancreatic islets of Langerhans.[8] When melatonin binds to these receptors, insulin secretion is inhibited, resulting in low insulin levels during the night, while melatonin levels are high.[8] This antagonistic interaction between insulin and melatonin has been demonstrated by Boden et al: in healthy subjects, melatonin levels peaked when insulin secretion rates were at their lowest at midnight, and were at their lowest levels when insulin secretion rates were at their peak at noon.[9] Patients with type 2 diabetes have been found to have reduced melatonin levels, and is represented by the upregulation of pancreatic melatonin receptors.[13] While melatonin appears to have an antagonistic effect on the secretion of insulin, melatonin itself may influence the amplitude of insulin secretion more than dictate the actual oscillating patterns of insulin.[14]

It is well known that type 2 diabetes and other disorders of glucose metabolism are major complications of conditions characterized by excess cortisol, such as Cushing's disease.[15] Excess cortisol impairs glucose metabolism through a number of complex pathophysiological mechanisms, including abnormal insulin secretion and pancreatic ß-cell function, increased hepatic gluconeogenesis, and hepatic and adipose lipogenesis.[15]

There appears to the be a naturally positive correlation between insulin sensitivity and cortisol levels, as demonstrated in studies conducted by Van Cauter et al.[5,16] This team studied 8 participants fed compositionally identical meals throughout the day. As expected, the subjects' postprandial glucose levels were higher in the evening in comparison to the morning. Insulin secretion rates were also higher in the evening but were not considered significant, as they were not proportional to the elevation of postprandial glucose levels observed during this time. The magnitude of postprandial cortisol peaks was highest in the morning and decreased into the evening. This inverse relationship between postprandial glucose levels and the magnitude of postprandial cortisol peaks as well as postprandial insulin response, indicates a positive correlation between the diurnal pattern of cortisol and insulin sensitivity.[5]

Consequences of Circadian Misalignment

Daily behavioral patterns are the main cause of circadian misalignment in humans. Improper fasting/feeding times and light/dark exposure – such as artificial light, shift work, and the willful avoidance of circadian-consistent sleep-time – all play significant roles in circadian misalignment.[3] In mice, manipulating behavior patterns, such as restricting feeding times, has been found to produce clock-gene disruptions.[17] In humans studies, severe circadian misalignment caused by shift work is an independent risk factor for type 2 diabetes and increased risk of cardiovascular disease.[18]

Many have questioned whether the impairment of glucose tolerance and risk of metabolic disease is associated more with increased caloric intake and the consumption of lower-quality foods/high-fat diet that tends to be associated with a shift-work lifestyle. Taking this question into account, a number of laboratory-controlled studies that induced circadian misalignment in healthy volunteers have shown that circadian disruption, caused by eating and sleeping at paradoxical circadian times, is an independent risk factor for metabolic dysfunction. A randomized crossover study, performed by Al Naimi et al, compared the metabolic profiles of 8 non-obese male shift-workers eating the same meals over the course of a day-shift or a night-shift.[19] Higher postprandial glucose and triacylglycerol levels were observed during the night shift, a finding that has been demonstrated in many other studies.[3,4,20-23]

Mild circadian misalignment can occur even in those who work and sleep according to the circadian day and the circadian night. In modern society it is common for people to allow their social and work obligations to influence their sleep-wake patterns. Those categorized as being an "evening chronotype" have a preference for working and eating late at night, have later bedtimes, and have a tendency to skip breakfast. This insidious deprogramming of the circadian alignment, resulting from artificial light exposure during the later hours, as well as from improper food timing, is associated with increased risk of type 2 diabetes and higher body mass index.[24] This was demonstrated in a 2011 study of 10 young adults, in which shifting the evening meal from 7 PM to 10:30 PM elevated 5-hour postprandial glucose levels after the later evening meal as well as after breakfast the next day, as compared with the earlier meal.[25]

Clinical Applications

Eating in alignment with circadian rhythms has been shown to reduce the risk of metabolic disease.[2] By understanding the influence of circadian oscillations on insulin sensitivity and glucose tolerance, we can better educate our patients on the importance of food timing and the prevention of insulin resistance and metabolic disease, especially in those who exhibit the "evening chronotype" patterns. The obvious suggestions of higher caloric intake at breakfast compared to dinner has long been suggested for the prevention of metabolic disease.

With our knowledge of the diurnal pattern of glucose tolerance and insulin sensitivity, and the effects of melatonin and cortisol on insulin secretion, the encouragement of an evening meal that is low in or devoid of carbohydrates, and eaten a few hours before the natural rise of melatonin, can be considered a step up to improve metabolic outcomes. Shift workers and those who frequently travel across time zones would be ideal populations for applying this knowledge to, as they have the highest susceptibility to the development of insulin resistance and type 2 diabetes. Eating foods of low-glycemic load during a night shift should be encouraged, due to reduced glucose tolerance and insulin sensitivity during the night-cycle.

Melatonin supplementation is a logical intervention for dysregulated melatonin secretion in these populations. Animal studies showing the positive in-vivo effect of melatonin supplementation in type 2 diabetes are plentiful. Although human studies are minimal by comparison, a few recent human studies found melatonin administration to lower overall plasma fasting glucose and insulin resistance as well as increase insulin sensitivity in type 2 diabetics.[26,27] Given the acute inhibitory effects of melatonin on insulin secretion, timing of melatonin supplementation away from significant carbohydrate consumption should be considered, as melatonin administration has been found to impair glucose tolerance.[28,29]

Understanding more fully the circadian system's influence of insulin-mediated glucose metabolism allows diet-oriented clinicians to provide patients with detailed knowledge regarding how their eating patterns are not only affecting their current health status, but can also predict the degree of metabolic disruption in the future.

References available online at ndnr.com

Tanya Lee, ND, received her Bachelor of Science degree (Honours) in Biochemistry and Biomedical Sciences from McMaster University, and was trained as a naturopathic doctor at the Canadian College of Naturopathic Medicine. Dr Lee practices full-time between 2 clinics, located in Toronto and Milton, Ontario. Although her primary-care practice focuses on family medicine, Dr Lee treats a wide variety of conditions, including endocrine disorders, infertility, digestive problems, cardiovascular disease, diabetes, insomnia, and fatigue. She has a special interest in the treatment of autoimmune diseases, as well as pediatric health.

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seeped into our daily lives and our cultural consciousness.

Maybe that's not entirely a bad thing – because, after all, traumatic stress has been with us for as long as violence, war, and catastrophe have intruded upon the illusory safety of human existence. But for society to learn to recognize the downstream consequences of trauma on mind, spirit, and body, and to begin to identify paths to recovery and wholeness – to recognize that there *are* paths to recovery, and to explore, illuminate, and broaden access to them – is what may set apart our time (era), with its particular mix of seemingly senseless tragedy and psychic pain, from those that have gone before (times past).

The qualities and common practices that naturopathic physicians bring to patient interactions – an innately holistic perspective; a thorough and in-depth intake interview; appointments more extended than is typical for physician visits; empathic attunement; an active commitment to "first, doing no harm" – make us unusually well-equipped among healthcare providers to discern, enquire about, and make space for sensitive exploration of the potential role of trauma in our clients' health issues, and where possible, with permission, to gently open conversations around options for support and healing.

> Awareness of the aftereffects of trauma has, over time, seeped into our daily lives and our cultural consciousness.

Posttraumatic Stress: Disorder or Injury?

In recent years, a movement originally started by a retired Army general has sought to remove from the diagnosis "Posttraumatic Stress Disorder" the word "disorder" (due to its stigmatizing potential) and to replace it with "injury" (deemed to be more accurate, given what is now known about the physiology of posttraumatic stress).[1,2]

Because the reasoning behind this nomenclature change makes sense to me, and also because many common life experiences have the potential to engender more symptoms on the spectrum of posttraumatic injury than meet criteria for a PTSD diagnosis (such as chronic illness, ongoing financial challenge, or repeated loss), after discussion of formal diagnostic criteria, and except as the term "PTSD" is used in quotation, this article will use the designation PTSI (posttraumatic stress injury) to refer to posttraumatic stress-related health issues.

Diagnosis: A Work in Progress

The formal psychiatric definitions of posttraumatic stress disorder are evolving. In the most current diagnostic manual for psychiatry (DSM-5), PTSD moved from the category of anxiety disorders to a new category of trauma- and stressor-related conditions, a change that implicitly acknowledges its complexity and distinctness from the anxiety disorders. This new grouping of stress-induced psychological issues includes Acute Stress Disorder, or ASD, which shares some characteristics of PTSD but which resolves after a relatively short period of time.

According to DSM-5, posttraumatic stress effects may follow a life-threatening, terrifying, and/or horrific event or events. Posttraumatic stress symptoms lasting for 1 month are considered a posttraumatic stress disorder; beyond 3 months, PTSD is considered chronic (c-PTSD).[3] ICD-11 (International Classification of Disease, the 11th Revision of the medical coding system generated by the World Health Organization), due to be finalized and released in 2018, reportedly includes in its draft document criteria for "complex PTSD" (CPTSD) a variant of PTSD which follows multiple traumas that may be experienced over extended periods of time (such as with domestic abuse or genocide), and with a different, expanded symptom profile (compared to DSM-5 criteria).[4]

Common symptoms of adult PTSD [in childhood it presents somewhat differently], organized for clinicians as the CAPS-5 (clinician-administered PTSD scale),[5] include re-experiencing the precipitating trauma(s), avoidance behaviors, negative changes in mood and brain function, and hyperarousal. These may be expressed as:

- Intrusive, recurring, and distressing memories, thoughts, images, dreams, or flashbacks of the traumatic event
- Emotional numbness or deadness, feelings of detachment from others, and possible difficulty experiencing loving feelings. Feelings of guilt, shame, or blame (of self or others) are common.
- Avoidance of thoughts, conversations, places, people, activities, or anything which may trigger memories of the trauma and cause distress or anxiety. Common "tools" for avoidance include numbing behaviors, such as self-abuse with alcohol and other substances.
- Apathy toward formerly pleasurable activities. In general, a pessimistic view

of the future; it may be difficult to make future plans.
- Attraction to risk-taking and behaviors reckless, or destructive to self and/or others
- Difficulty getting to sleep or staying asleep; irritability, possibly accompanied by anger and volatility; difficulty concentrating; increased vigilance; an increased startle reaction. Chronic hyperarousal may manifest as depression.

Gender differences and similarities in the experience of trauma,[6] as well as factors contributing to the increased incidence of PTSI in women (approximately twice that in men), are now beginning to be investigated.[7,8] Multiple traumas increase vulnerability to PTSI, as does greater intensity, duration, or scope of the precipitating event (the so-called "dose-response" effect).[9] Correlations with childhood neglect and abuse ("developmental trauma"[10]), family traumatic history ("intergenerational transmission of trauma"[11]), genetic and epigenetic influences,[12] and preexisting or comorbid anxiety and depression, mental health issues, substance abuse, and sleep disorders, are adding depth and dimension to the understanding of the difficult landscape of PTSI.

The Neurobiology of Fear

The defining characteristics and behaviors of PTSI have been explicated over time as external manifestations of internal effects of trauma on mind, body, and spirit through activation of "fear circuitry": patterns of reaction and interaction within the brain (the medial prefrontal cortex, limbic system, memory centers involving the amygdala and hippocampus, and the hypothalamic-pituitary axis) and the body (adrenal glands, sympathetic and parasympathetic nervous systems) in response to severe stress and trauma.[13] The natural process of fear extinction, by which normal responses to fear-inducing stimuli attenuate over time, is disrupted. The brain is "hijacked"[14]: the fear switch, once flipped on, can't be shut off, and the sufferer swings between traumatic memories of the past and apprehension of potential threats in the future, unable to find a place in the present. In the words of Bessel van der Kolk, MD, a pioneering research clinician in posttraumatic stress disorder and the neurobiology of trauma:

> *People with PTSD lose their way in the world. Their bodies continue to live in an internal environment of the trauma. We all are biologically and neurologically programmed to deal with emergencies, but time stops in people who suffer from PTSD. That makes it hard to take pleasure in the present because the body keeps replaying the past.*
>
> *(van der Kolk, 2009)*[15]

Traditional Trauma Treatment

Treatment of PTSI can do more harm than good. Traditional talk therapies and widely used "desensitization" therapies, such as cognitive processing and prolonged exposure (despite their amenability to the randomized controlled trial model), carry risk of re-traumatization and have rates of success that are at best modest (about 50%); they are also qualified by high drop-out rates that are not factored into much of the trial data.[10,16] Pharmacologic strategies (primarily SSRIs, SNRIs, and benzodiazepines) may manage, to varying degrees, the depression, anxiety, insomnia, anger, and substance abuse that often accompany posttraumatic stress; however, none of these effectively engages with the deep and interconnected wounds to mind, body, and spirit of complex PTSI. A possible exception is the psychedelic drug MDMA (aka ecstasy), which has shown promise, particularly when combined with psychotherapy.[17,18] (A comprehensive review of MDMA has been previously published in *NDNR*.[19])

The mixed results of standard treatment contribute to a misperception – not just by the public but also by much of the healthcare community, including many mental health professionals – that PTSI is a tough nut to crack, so sufferers had best just learn to live with it. As Belleruth Naparstek, a psychotherapist who has developed guided imagery for prevention and treatment of traumatic stress disorders, observes:

> *You can recover from posttraumatic stress. Certainly, you can significantly reduce – not just manage – its symptoms. But – and here's the thing – not with traditional treatment. The problem is, a lot of my colleagues don't know this yet. So they go about it in traditional ways and pronounce the condition incurable, based on the results they get.*
>
> *(Naparstek, 2010)*[20]

In Part 2: Trauma treatment is evolving to a multidisciplinary, holistic, stage-based care model that appears to improve outcomes while reducing risk of harm. Naturopathic treatment approaches (both fundamental and those more specific to healing the neurobiologic wounds of PTSI) can be integral to this emerging standard of care.

Debra Gibson, ND, graduated from the National College of Naturopathic Medicine (NCNM, now NUNM) in 1983, and has practiced for more than 30 years. The intersection of body, mind, and metaphysics is of particular interest in her work. She currently practices in Cos Cob, CT.

The brain is "hijacked": the fear switch, once flipped on, can't be shut off, and the sufferer swings between traumatic memories of the past and apprehension of potential threats in the future, unable to find a place in the present.

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Soul, Mind and Body Alignment

The "soul is the boss" and has the power to heal.

LINDA L. BROWN, BA, ND

It has generally been acknowledged that a human being consists of not only a physical body but also mind and emotions. However, the mind, consciousness, spirit, and soul have been largely excluded from physical sciences[1] and its application to modern medicine. The study of Mind-Body Medicine ("the power of thoughts and emotions to influence physical health"[2]) is becoming more mainstream, as is the concept of "mindfulness." In some circles, the power of the spirit or soul to influence health is also gaining recognition. "Soul Mind Body Medicine" seeks to align all 3 components (soul, mind, and body) in the quest to find the root cause of illness and to heal through natural and non-invasive methods.

A Brief History

"Body Space Medicine" was a term coined by Dr Zhi Chen Guo, a renowned TCM doctor in China. This form of medicine "uses Chinese herbs, energy healing and message or spiritual healing, together with quantum medicine, to adjust and regulate the body and treat illness."[3] Through this medicine, Dr Guo was able to develop an antidote to SARS (severe acute respiratory syndrome) during the global SARS outbreak. The fundamentals of his work formed the foundation of a body of knowledge pioneered by his protégé and spiritual son, Dr Zhi Gang Sha. Dr Sha is a doctor of Western Medicine in China, and a doctor of Traditional Chinese Medicine in China and Canada; he is also a master of Tai Chi, Qi Gong, and Tao Calligraphy.

Dr Sha's work and teachings about Soul Power and "Soulfulness" are based on his insights that the "soul is the boss" and has the power to heal. He takes the concept of "mind over matter" a step further and introduces the idea of "soul over matter." Dr Sha posits that physical healing is incomplete without first healing at the soul level. In his words, "Heal the soul first, then healing of the mind and body will follow."[4]

Dr Sha created a system known as "Soul Mind Body Medicine." The process involves 5 steps: Mind Power (visualization); Body Power (including specific hand and body positions); Sound Power (chanting mantras to stimulate vibration); Soul Power (making a connection to one's soul, as a form of prayer); and Tracing Power (tracing special "One-stroke" calligraphy – Tao Shu Fa – with hands or body movement). These 5 steps form the basis of Soul Mind Body Alignment.

Soul Mind Body Medicine Explained

In Traditional Chinese Medicine, illness is a function of imbalances in the 5 elements: Wood, Fire, Earth, Metal, Water, and Wood. An excess or deficiency of energy, or *Qi*, will lead to blockages. Cells are made up of matter and are constantly contracting, causing the internal cellular matter to transform to energy outside of the cell. When cells expand, the energy outside of the cells turns into matter inside the cells. This is a law of cellular vibration. One's state of health is dependent on the relative balance in this cellular transformation process.[4]

An Energy Blockage is an excess of energy. A Matter Blockage is an excess of matter. Soul Mind Body Medicine also groups illness into a third type: Spiritual (or Soul) Blockages. "Soul is the content of information within one's vibrational field," the essence of everything, and is divided into positive and negative information.[5] In this system, the negative information is the root cause of illness. Soul Blockages are intertwined with the Law of Reciprocity, or cause and effect.[5] Simply stated, becoming "stuck" in patterns of illness can be influenced by thoughts and actions recorded in our vibrational field.[5]

The first 4 steps of this Soul Mind Body system may be applied to blockages related to any type of health issue or life challenge. These could include physical illness or pain, sickness of the organs, systems, or cells (including cancers and other serious chronic conditions), back pain, mental/emotional issues, relationship or financial challenges, and more. Soul Mind Body Medicine may also include a "healing blessing" from a spiritual teacher.

The fifth step, Tracing Power, includes the additional action of writing or tracing calligraphy. Research has shown that "The act of brush handwriting results in physiological slowdown and relaxation, as indicated by the changes in heart rate, blood pressure, respiration, and skin temperature after calligraphic writing."[6] The associated decrease in perceived stress can put the body into a state that is more conducive to healing. In the Soul Mind Body Medicine system, a unique form of calligraphy, called Tao Calligraphy, is used. It was created by Dr Sha, based on a style known as Yi Bi Zi, or "one-stroke writing," where all characters are written using 1 continuous stroke. Writing or tracing it taps into a powerful energy field.

Effects & Benefits

In an abstract written by Peter Hudoba, MD, FRCS; Rulin Xiu, PhD; and Zhi Gang Sha , MD (and presented at the 24th Annual ISSSEEM Conference, Science Symposium,[7] and at the 2017 AIHM Conference[8]), the authors discuss a recent clinical research study that followed 55 subjects for 2 years. They subjects had suffered from various illnesses and were each given a spiritual healing blessing, followed by daily self-healing practices and meditations. Many of the subjects also continued conventional medical treatment. In retrospective data analysis, most "exhibited improvement in general wellbeing, an increase in optimism and energy level, as well as improvement in their symptoms. 21 subjects (38%) reported marked improvement or complete recovery, 28 (50%) reported moderate improvement, 1 (1.8%) unchanged, 3 (5.4%) continued to deteriorate, and 2 died (3.6%) (terminal cancers). In some cases, image studies (Xray, CT, MRI) confirmed marked reduction or complete remission of neoplastic or other lesions."[7,8]

CASE STUDY 1

B.L., a 43-year-old female, was diagnosed in 2008 with Stage-2 triple-negative invasive ductal carcinoma of the left breast. She had been advised to undergo chemotherapy and radiation, and was also given the option of mastectomy followed by radiation.

Following lumpectomy, she declined further conventional treatment; however, she was willing to receive non-invasive naturopathic care and sought alternative therapies, in addition to lifestyle changes of her own choosing. She committed to doing annual follow-up mammograms and checkups through her oncologist and surgeon. Medically, she was deemed non-compliant, declining all treatment, and was warned of the high chance of recurrence.

Dietary changes included a raw vegan diet, juicing, and elimination of sugar and wheat.

Lifestyle changes included running as exercise, meditation for stress reduction, and increased sleep.

Supplements included iron, vitamin D, an alkalizing agent, herbal immune support, probiotics, and essential fatty acids.

Additional miscellaneous measures included time in nature, massages, emotional/energy therapies, emotional counseling/support, and mindset shift.

Initially, the patient incorporated daily practice of the Soul Mind Body "Cancer Recovery Program" for 1 month.

After 2 months, she received a healing blessing from a spiritual teacher, and continued Soul Power meditations, chanting, and practices several times per week, each time ranging from 15 minutes to 1 hour.

Results & Impressions

Semi-annual medical physical examinations and test results (oncologist and surgeon), as well as annual mammograms, indicated no changes to physical structures, and no signs of recurrence.

B.L. reported decreased anxiety, increased joy, gratitude, and feelings of well-being and self-empowerment through the Soul Mind Body practices.

She gradually changed to a less-restricted diet, with decreased focus on lifestyle changes for cancer. After 6 years, she was released from surgical and oncological care and follow-up. She has incorporated Tao Calligraphy writing and tracing into her maintenance practice. She is now 10 years cancer-free.

CASE STUDY 2

G.G. a 65-year-old male medical doctor, had suddenly developed severe, left-sided Bell's palsy in 2005. He experienced left eye heaviness and drooping, as well as paralysis of the left brow and facial muscles. These symptoms were more pronounced in the latter part of the day.

He had tried numerous conventional and alternative treatments, neuropathic medicines, facial exercises, tapping and taping therapies, acupuncture, Korean hand meridian needling, and pulsing therapies, with little impact. Taping was the most effective, but significant Bell's palsy remained.

The Bell's palsy persisted until 2016. While attending a calligraphy training class and learning to write Tao Calligraphy, G.G. received correction from a teacher on the calligraphy work he was doing. Within 60 seconds of implementing the corrections, he could feel his face changing, muscles moving, nerves awakening. There was an immediate onset of transformation, with approximately 60% instantaneous improvement.

Conclusion

Soul Mind Body Medicine and soul-healing practices can be used on their own or can be successfully combined with conventional medicine or any other type of therapy to enhance health outcomes. The simple practices can be easily taught to patients for their own daily use, to enhance and support their overall healing.

Linda L. Brown, BA, ND, graduated from CCNM in 2001. Dr Brown is in private practice in Toronto, Ontario, where she sees mostly stressed-out, burned-out women with low energy, digestive problems, and allergies. She works with emotional therapies, addressing soul, mind, and body in her healing and self-healing work. Dr Brown enjoys cultural travel; in 2010 she went to Nicaragua with Natural Doctors International to bring much-needed healthcare and support to the local communities. She is also an accomplished percussionist, and for the last 20 years has brought joy and healing through drumming, music, and sound vibration.

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Relational Medicine

Perception, Epigenetics, & the Vis – Part 1

ALLISON CREECH, MED, ND

A fundamental focus in naturopathy is to support the Vis Medicatrix Naturae and to help remove whatever obstructs its harmonious flow. When the Vis energy is in a state of congruence, meridian pathways will move in a healthy and dynamic rhythm, and physiologic set-points will reflect a healthy biochemistry. Neuroendocrine signals will promote growth and optimal functioning. Epigenetic influences will activate to promote cellular adaptation within an optimal environment, and life force will radiate freely through every system. Emotional flexibility, cognitive kindness, and a secure sense of self are able to manifest. In other words, when the Vis is in congruence, a human being will thrive.

The science of epigenetics has clarified the creative power we have as individuals for creating wellness in our lives. With awareness and intent, we can actively mediate the environmental, nutritional, and perceptual signals that play a role in cellular physiology and systemic organization. These signals cue the body and tell it what is necessary for adaptation. The body is intrinsically resilient and is designed to adapt to the environment in which it finds itself. This is true not only in terms of adaptation to an external environment, but also – and perhaps even more so – in terms of our internal environment. Our experience matters, and the way we perceive our experience has a significant influence on health. This is true on a cellular level and it is true for us as human beings.

Perception as a Determinant of Health

So, where do our pathways for wellness become distorted? How do obstacles that obstruct or distort the Vis arise? The conventional answer in most medical circles, and for many decades, has of course been genetics. However, this story is now being rewritten with a relational understanding of biology, and scientists from multiple disciplines are explaining how different facets of an interconnected being express themselves.

As our understanding of the mind-body continuum evolves, our perceived experience of self, life, and relationships takes on new significance. Daniel Siegel, MD, founder of the emerging discipline of interpersonal neurobiology, has spent decades exploring questions related to brain and mind, including how both can change as we influence one another. In his words:

> *Interpersonal neurobiology isn't a form of therapy, but a form of integrating a range of scientific research into a picture of the nature of human reality. … For a person to change, the mind must change. We now know "mind" is coming both from interpersonal processes and from brain structure or neurobiology. … Everything we experience, memory or emotion or thought, is part of a process. … Relationships, mind and brain aren't different domains of reality—they are each about energy and information flow…*
>
> *Interpersonal relationships that are attuned promote the growth of integrative fibers in the brain. It is these regulatory fibers that enable the embodied brain to function well and for the mind to have a deep sense of coherence and well-being. Such a state also creates the possibility of a sense of being connected to a larger world. The natural outcome of integration is compassion, kindness, and resilience. … Integration is the fundamental mechanism of self-regulation…*
>
> *So we can define mental health as the ability to monitor ourselves and modify our states so that we integrate our lives. Then things that appeared unchangeable can actually be changed. … We can then use the focus of our attention to integrate both our brain and our relationships. Ultimately we can learn to be open in an authentic way to others, and to ourselves.*
>
> *(Daniel Siegel, MD)*[1]

In their 2012 article,[2] Shonkoff et al also called for an evolution of our understanding of health and illness across the lifespan, explaining that "advances in fields of inquiry as diverse as neuroscience, molecular biology, genomics, developmental psychology, epidemiology, sociology, and economics are catalyzing an important paradigm shift." They go on to present an "ecobiodevelopmental framework" that shows "how early experiences and environmental influences can leave a lasting signature on the genetic predispositions that affect emerging brain architecture and long-term health."

> When our experience is fundamentally one of safety, a neuroendocrine message for growth and ease is sent through the body.

In this view of wellness, relational experiences are recognized as powerful determinants of health and as either an expression of fluid Vis energy or of rigidity and constraint. The interpersonal domain is particularly important in early life, as our experience establishes both neural circuitry and perceptual filters, or templates, by which we will evaluate all subsequent experience. Held outside of conscious awareness, these foundations of perception invisibly shape our experience of self, other, and experience in the world for the rest of our lives. We learn to perceive ourselves and the world around us through our relationships, and those perceptions are then translated as both a psychological

and biological reality. We are working here with the concept of perception as a primary determinant of health, and an understanding that our relationships are significant in the way our perceptual templates for life are formed. We will explore this concept in different expressions – psychologic, physiologic, and epigenetic – and doing so will help to develop an integrated biopsychosocial understanding of medicine where mind and body, genes, and environment, all engage in a dynamic flow of information and energy that guides our development as humans.

Perceptual Templates

The structures that organize our perception emerge through our experience within a biopsychosocial context of development. Our first perceptual templates are created long before we have the cognitive or verbal capacity to describe our experience. Instead, they are wired in neurologically and programmed into physiology according to our lived, sensory experience. They are visceral. They are also invisible for most people, as they simply create the filters by which we experience the world. We don't recognize their presence or their influence because they are so fundamental to our experiential organization.

One of the first perceptual structures to organize around our experience in life has to do with feeling safe. When our experience is fundamentally one of safety, a neuroendocrine message for growth and ease is sent through the body. Dopamine, oxytocin, vasopressin, growth hormone, and other chemical messengers of well-being are communicated throughout the body. As mind-body templates are created at the first level of perceptual organization, that sense of safety is embedded in both psychology and physiology. Vis energy is promoted, and patterns that promote resilience define homeostasis. On the other hand, when our experience is characterized by prolonged states of fear and distress, we see a shut-down of growth and repair mechanisms, and the body closes off into a state of protection. Again, the cascade of neurohormone signals confirms this as biological reality, specifically flooding the body with cortisol, norepinephrine, cytokines, histamines, and other inflammatory agents. The experience of distress will be the primary influence on templates at the first level of perceptual organization, and will function as set-points for subsequent development.

Secure Attachment

In early life, the distress-safety cycle is mediated by our interactions with loving caregivers. Cortisol, released in any situation where an infant has needs that are unmet, almost instantly subsides when the child receives physical care and loving connection. In that state of connection, children learn that they are safe, that their needs are valid and will be met, and that others are reliable. This is the foundation of secure attachment and a perceptual experience of "I am safe." As explained by Jack Shonkoff, MD, founder of the Center on the Developing Child at Harvard University, our relationships are the single most important factor in determining the basic direction of development: loving adult support provides a buffer, which protects the child from toxic stress and prevents it from negatively impacting their developing brain, with long-term consequences for "learning, behaviour, and both physical health and mental health."[3]

In essence, the first relationship we experience creates a perceptual filter that defines our sense of safety and of trust in connection with self and others. With loving and responsive attention, mind-body set-points are established that promote wellness and resilience throughout life. Renowned psychologist Erik Erikson described this phenomenon in his classic work on the stages of psychosocial development across the lifespan, in which he described the patterning that develops around the theme of trust vs mistrust in an infant's first year of life.[4] This pattern is generally maintained across time as a hidden engineer of perception and experience. Other psychologists have also studied the impact of early relationships, particularly with regards to our experience of safety in the world. In their seminal work on attachment, John Bowlby and Mary Ainsworth began an active study into the nature of the mother-child relationship and its impact on the child's psychological development.[5] Their research spanned decades and evolved into a theory of attachment that linked a child's cognitive, emotional, and social adaptation with maternal sensitivity and responsive care. Bowlby also noted attachment as an engagement system that reduced stress and promoted safety for the infant.[5]

Childhood Trauma

Expanding a biopsychosocial understanding of health over the lifespan, modern researchers have documented the relationship between the experience of a lack of safety in childhood and specific health outcomes as adults. The definitive Adverse Childhood Experiences (ACE) study, published as a collaboration between Kaiser Permanente and the CDC in 1998,[6] examined the impact of a set of "adverse childhood events," including divorce, parental substance abuse, physical/sexual/emotional abuse, domestic violence, parental mental illness or incarceration, and physical neglect or emotional neglect. They found that the more exposure children had to these events, the more likely they were to experience negative health outcomes as adults, including ischemic heart disease, cancer, chronic lung disease, skeletal fractures, and liver disease. They were

also more likely to have poor health habits, attempt suicide, and be diagnosed with depression.[7]

Interestingly, the correlations between ACE and medical outcomes exist even when controlling for poor health behaviors, and in fact demonstrate how trauma changes the brain such that poor health habits are more likely as a person attempts to cope with their experience.[8] This and other literature that has begun to delve into the impact of childhood trauma is moving towards a "developmental origins of health and disease hypothesis," which suggests that "increased susceptibility to disease following early life experiences is shaped by epigenetic modifications such as DNA methylation and chromatin modifications."[9,10] So, again, we see a dynamic interplay between lived experience, brain structure, perceptual templates of mind, and epigenetic/cellular regulation. These are powerful determinants of health that go largely unidentified and unrecognized as a place where we have agency.

Am I Safe? Attachment as a Foundation of Perception

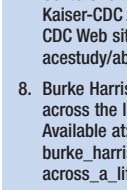
Attachment is most simply defined as the quality of security and responsiveness that an infant experiences in relationship with its primary caregiver during the first year of life. That relationship shapes the development of our mental systems, both in terms of brain structure and an organized set of perceptions ("mind"). If an infant experiences consistent loving and attentive care, cycles of stress and soothing emerge that instill a state of trust, connection, and safety. This experience is wired-in both physically and psychologically, and begins to shape the perceptual filters of experience. A child also learns to self-soothe based on the quality of engagement they receive in the first years of life, thereby establishing an internal regulatory system that will mediate emotions, offset stress, and buffer the effects of cortisol throughout the lifespan. Thus, a secure experience within our first relationship fosters a sense of trust and a psychological sense of well-being, plus builds a favorable stress response system and supports healthy brain development. This template will organize all subsequent experience.

As described by the Harvard's Center on the Developing Child[11]:

> *"The architecture of the brain is constructed through an ongoing process that begins before birth, continues into adulthood, and establishes either a sturdy or fragile foundation for all the health, learning, and behavior that follow. … The interaction between genes and experiences literally shapes the circuitry of the developing brain and is critically influenced by the mutual responsiveness of adult-child relationships, particularly in the early childhood years."*

Through its influence on unconscious patterns of organization and perception, our relational experience in early childhood exerts its influence throughout the lifespan and is significant in determining all levels of health.

In Part 1, we have set a foundation for relational medicine and built an appreciation for how perception in general, and attachment in specific, are powerful determinants of biopsychosocial wellness. In Part 2 of this article, we will delve more deeply into the perceptual and epigenetic correlates of our relational experiences in early life, and look more closely at some of the effects that they have in our adult lives. We will also return to the concept of relational medicine and better understand how we can support the Vis through engaged and responsive patient care.



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Mind/Body Health

Bio-Electric Chemistry Connections

DARRELL S.C.S. MISAK, ND, RPH

We have all heard or read somewhere, in our personal health quests, about the connection between physical and psychological well-being. If you wake up sore and tired, your mental desire to take on the day is less than optimal. Conversely, if you awaken with the mental excitement that today is special, then your physical health complaints become something you can deal with. There are mind-body books that describe all disease as figments of imagination, as well as religious beliefs and teachings that all things are possible through faith and belief. Finding balance in life is a key principle taught in most self-help books; and in natural law, balance and equilibrium correlate with measured stability via Bio-Electric Chemistry analysis.

In the September and October 2016 issues of *NDNR*, I introduced the principles of Bio-Electric Chemistry, the foundation of Dr Carey Ream's Biological Theory of Ionization (RBTI), and the quantum associations of all things in relation to energy. I explained how you can analytically measure energy efficiency through a simple in-office urine and saliva test, and use the results to know and predict areas of disease, deficiencies, symptom patterns, and vital force gains or losses. When you consider these principles and how they apply to nature and health, it makes sense that stability in your chemistry will be reflected in both the physical and mental spheres. Recognizable patterns in chemistry variables can explain anxiety, anger, poor sleep, work exhaustion, headaches, poor focus, brain fog, loss of memory, brain trauma, and more. A key principle of chemistry stabilization that alleviates many of these and other complaints is sugar and pH regulation.

As a reminder, Dr Reams determined the perfect equation for human biological optimization, which can be measured using urine and saliva:

$$1.5_{brix}\ 6.4_{urine\ pH}/6.4_{saliva\ pH}\ 6.5C_{(conductivity)}\ 0.04M_{(cell\ debris)}\ 3_{(nitrate\ nitrates)}/3_{(ammonia\ nitrates)} + CS_{(common\ sense)}$$

As you learn to understand the natural laws that govern the bio-electric nature of the human body, you will see that when you work to adjust one part of the equation, all of the variables change. This stresses the important point that the numbers are not perfect unless all the numbers are perfect in an equation – a simple math fact. Please be aware, as I explain the concepts of sugar regulation and how to gain energy, that there must be adequate detoxification to handle the increased waste load. In other words, there must be adequate measurable waste through salts, cellular debris, and nitrogen byproducts that demonstrates an ability to handle that waste; otherwise, the body accumulates more burden, and energy efficiency decreases. Until you understand how to basically monitor energy in and out, please do not experiment on your clients, as detox reactions can be more than some can handle, and such patients should be under close supervision.

Energy-In vs Energy-Out

As previously mentioned in my *NDNR* articles and others, understanding "Energy-In vs Energy-Out" is the place to start. Energy-In is monitored by sugar (brix) regulation, pH control, and salt balance, whereas Energy-Out is monitored by salt balance, cellular waste, and nitrate processing. The measurable variable with the most influence on both conscious and subconscious well-being is the brix level and sugar regulation, as it reveals the potential available energy and is directly associated with oxygen availability to the liver and brain.

The brix is measured by a refractometer, which is recognized to test urine specific gravity or total dissolved solids, represented in urine primarily by the amount of sugars being eliminated. As sugars become either too high or too low, there is an associated decreased oxygen availability on a cellular level, along with myriad associated symptoms. Some of these predictable and potentially severe symptoms include: fatigue, mood swings, anger episodes, phobias, heart rhythm irregularities, dizziness, motion sickness, vertigo, morning sickness, spacey feelings, suicidal depression, body aches, temperature sensitivity, headaches, sleepiness after meals, insomnia, and more. All of these symptoms begin to disappear through *vis medicatrix naturae* as you support and correct sugar regulation. However, as you improve potential energy, that energy must efficiently become available throughout the system. This is where pH and conductivity come in.

The pH measurement represents the resistance level for the potential current flow. In chemistry, we learn that pH represents hydrogen concentration, which does not consider the potential positive (cationic) or negative (anionic) nature that hydrogen can assume, since it is only composed of only 1 negative and positive charge. Electromagnetically, hydrogen is considered an isotope, as it can spin clockwise (cationic) or counter-clockwise (anionic) based on the environment; and since cations and anions contain potentially different amounts of energy, the amount of available energy of the hydrogen molecule is dependent on this rotation. The pH, as represented in a bio-electric model, is a measure of resistance and the friction (heat generation) between anions and cations. It represents a key factor in measuring the total amount of energy and reserve energy in the body; hydrogen becomes the working element of pH measurement because of its simplicity of a single charge.

Dr Reams showed that in biological life, the optimal electrical flow and magnetism is produced at a pH of 6.4 and that a urine pH above or below this value results in either anionic or cationic tendencies that can create an incorrect frequency due to the wrong ratio of energy. This in turn affects mineral "energy" and the mineral's ability to get into the system. In other words, mineral utilization becomes less efficient. This reduced mineral efficiency, which correlates with pH patterns, is associated with symptoms characteristic of specific mineral deficiencies. Finally, pH values direct the need for various anionic or cationic calcium forms. Dr Reams showed that all forms of biological life use more calcium by weight and volume than any other element and that a lack of appropriate forms of calcium is a primary cause of organ degeneration in the body – a concept that challenges current cellular calcium theories.

Biological Optimization

When considering Energy-In monitoring, urine brix, pH values of both urine and saliva, and urine conductivity values are measured with samples taken 1.5-2 hours after eating a meal. This time is chosen to get a representation of the body's ability to extract energy from the food eaten, thus allowing time for disintegration, dissolution, absorption, and metabolism (ie, digestion) to occur. At the ideal values, based on the perfect equation (1.5 brix, 6.4 urine and saliva pH, 6.5 urine conductivity), optimal available energy and mineral utilization efficiency occurs. Urine conductivity represents total salts including soluble nitrogen waste (urea), and denotes whether the body is retaining too much salt or losing it. Whereas pH represents speed and magnetism, conductivity represents quantity of current flow and indicates fluid balance and heat loss. Understanding conductivity is an article topic on its own, as conductivity provides an understanding of fluid balance, osmotic pressures, and ability to gain or lose heat, which in turn affects smooth muscle, nerves, blood zeta potential and agglutination.

Again, understanding the symptom patterns associated with increased (eg, nervousness, numbness, tingling, loss of sphincter control, high blood pressure, increased cholesterol, etc) or decreased (eg, slowed mental/physical characteristics, difficulty with coordination, etc), conductivity values enable the practitioner to explain and predict symptoms as part of a given "picture." For practical considerations in this introduction, it should be noted that the ideal equation represents a 1:4.3 ratio between brix and conductivity. As an example, when monitoring a client who is able to maintain a brix-to-salt ratio of around 1:5, you will know that the client is consuming water systematically. You will also find that very few clients tolerate the highly promoted Himalayan and Sea salts in their diet, as their use correlates with increased conductivity and associated symptom patterns.

Regulating sugars, pH, and salts involves:

- placing the body in a rhythm with systematic drinking of a weight-dependent amount of distilled water
- determining needed forms of calcium based on the respective anionic or cationic calcium tendency
- assisting pH regulation with vitamins C or D, as needed
- observing brix patterns to identify food intolerances and dietary needs

Systematic drinking of distilled water may require an added diluted fruit juice, or alternating water with fresh-squeezed lemonade, for high lemon anionic activity and sugar regulation. Amounts and forms of calcium are dependent on pH values, age, and weight. On a physiologic level, the systematic drinking regulates pancreatic insulin release, which helps stabilize sugars, cravings, and oxygen availability, while also flushing the liver and kidneys to assist in excessive salt and waste elimination. As a patient's chemistry shifts, stabilizes, and moves towards the ideal, you will observe and be able to predict symptom patterns along with becoming a witness to the *vis medicatrix nature*, while also developing a deeper understanding of interrelationships of mind, body, diet, environment, and healing.

Closing Comments

Due to the conflicting nature of the RBTI concepts and modern science theories, as I introduce these Bio-Electric Chemistry techniques I can only challenge the reading practitioner to learn, test, measure, and observe, as opposed to criticizing and trying to fit these practices into a pre-learned "accepted" theory. Review the history of Dr Reams, and read the reported testimonies of the restorative nature that he and his followers witnessed through fasting, specific diets, and basic vitamin and mineral supplementation. Learn and challenge the basics of these techniques and you will observe a pure form of naturopathic restoration described in the historical writings of Benedict Lust, Henry Lindlahr, Harvey Kellogg, Constantine Hering, etc, and consistent with the philosophical teachings of Dr Jared Zeff.

> *We cannot solve our problems with the same thinking we used when we created them.*
> *(Albert Einstein)*

Bio-Electric Chemistry is a concept of analytical measurement and observation of cause and effect. Mind and body health patterns that occur without balance through diet, remineralization, chemistry efficiency, and self-awareness equate with what we consider disease. We can compartmentalize and make guesses as to cause and effect; however, to measure and observe is to support the creation of knowledge and wisdom, to build upon and change tomorrow.

Recommended Reading:

- Reams CA. *Choose Life or Death: Reams Biological Theory of Ionization*. Green Forest, AR: New Leaf Press; 1978.
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Figure available online at ndnr.com

Darrell S.C.S. Misak, ND, RPh, is a 2000 NCNM graduate, a licensed pharmacist, and a father of 5 healthy children. After receiving his BSc degree in Pharmacy in 1992, he gained 3 ½ years of university hospital pharmacy experience at Duke University Medical Center, and during his NCNM studies gained over 4 years of compounding pharmacy experience. Since moving to the Pittsburgh area, he has delivered regular lectures and hosts a bimonthly radio program, "A Natural Connection," where he teaches the concepts of bio-electric chemistry. Dr Misak owns and operates Pittsburgh Alternative Health, Inc, where his focus is on health analysis and how to support optimal energy formation that results in natural health restoration.

Physician, Heal Thyself

JIM MASSEY, ND

The Latin phrase, "cura te ipsum" (physician heal thyself), is often attributed to Hippocrates, the man considered to be the "Father of Medicine." "Physician, Heal Thyself" remains one of the basic tenets in naturopathic philosophy. This saying was inscribed in a stone at the Oracle of Delphi, as well as being found in the New Testament and attributed to Jesus Christ. In the Talmud, it is interpreted to mean "physician heal thine own lameness." However you interpret the poignant principle, it is rooted in the ancient wisdom that pronounces "Know Thyself."

So, how are we to interpret this poignant phrase that has triggered so much critical thinking about this noble quest? What are the means to actually heal oneself?

My intention here is to review, recognize, and present how we as physicians can better heal ourselves and use this knowledge to grow and evolve and better serve our patients. I will be approaching this subject from a psychological point of view, integrating the mental, emotional, and spiritual aspects.

Hippocrates also recognized the moral and spiritual aspects of healing, and spoke of taking personal responsibility (ownership) for both our attitude and our life. In naturopathic medicine, the doctor practices the art of treating the cause of a disease by concentrating on and addressing the mental, emotional, and physical components (body, mind, and spirit) of the patient. Hippocrates, with his unique wisdom, believed human beings could do well to heal themselves by paying attention to cultivating their moral and spiritual makeup. Taking personal responsibility requires stepping up and figuring out how to achieve one's own healing.

Mastering this art of healing is obviously easier said than done and comes with no easy cookbook recipe for success. Wouldn't it be nice if every physician was a realized being and had their life together before ever attempting to treat others? When physicians are open to doing their own healing, they become more empowered and capable of better helping their patients. Our main priority should be to first heal ourselves. This is a tall order, and I refer to this as our real work.

Spiritual Beings in a Human Body

How do we go about doing our own healing? As physicians, we know how to eat and what to eat, and we realize the importance of diet and exercise and the importance of what we think about, fixate upon, and put our energy into. Many of us realize the fact that we are spiritual beings living in a human body. We all receive various forms of education about spirituality throughout our lives, from personal experiences, family and societal mores, schools, churches, self-introspection, and reading. Some may not choose to address the issue at all because of some innate fear. We all have our own way.

Goethe and Faust are both credited with the quote, "Man errs as long as lasts his strife." How to eliminate strife? Difficult times are omnipresent, especially right now in today's world, and it comes with just being alive. Good times, bad times, abundance, scarcity – we all experience peaks and valleys. What makes some people prevail over hard times while others succumb to them? What we do with the circumstances of our lives reveals who are. The most important element is who we are and how we respond to the circumstances with which we are faced. It is our responsibility to create what we can with what we have. What we do with what is offered to us is our opportunity to reveal who we are and who we can become. The opportunity and the responsibility are ours.

So, how do we step into our power and grow more consciously? How does a physician, or anyone for that matter, go about healing him or herself? I've had the honor of teaching classes and workshops on the topic of *Physician Heal Thyself*, and I've learned there are many ways to nurture and truly heal oneself. The list seems to be endless and ever-growing. Additional new and fascinating ways of healing ourselves are added with every class.

10 Ways to Heal Yourself

I want to share the top 10 suggested ways of healing ourselves that most resonated with those of us attending these classes. Here they are.

Start Where You Are

We need to begin where we are at right now, and go forward from that point. Everyone is on their own special journey in life. We must be aware and have faith that we are exactly where we are supposed to be. There is no purpose served in beating ourselves up because we are not as "evolved" as we think we should be. We need to pay attention and be mindful to create the life that truly fulfills us and brings us heartfelt happiness. We all have our own journey in life, and how it unfolds

is up to us. This is our *real work.*

Live by Your Codes & Values

Change requires taking action. Before taking action, we would be best served by having established a set of codes, rules, and values to live by. Truth, compassion, gratitude, patience, integrity, honesty, peace, love, and forgiveness are just some of the core values many people share. These values you so cherish must become woven into your tapestry of how you live life. Not living by one's codes and values is deeply incongruent with one's basic essence and spirit. This is a primary cause of dis-ease within us. Most of us realize we need to walk our talk, be authentic, and live an honorable life. Live your truth. This simple realization allowed me to better understand the health-related importance of living one's truth. I also found that when people were not living in accordance with their values, all sorts of clinical conditions seemed to present themselves. This was a prime reason that my practice eventually evolved into primarily focusing on the psychological aspect after treating a patient's initial chief complaint. The term "psychological" includes the spirit, heart, and an honest awareness of one's own individual mindset. In order to experience well-being, we need to experience being well, and that begins with celebrating and feeding our spirit.

Direct Your Focus

We become what we think about and focus on. There was a very popular book in the 70s – *Mind as Healer, Mind as Slayer* – by Kenneth Pelletier. It presented the simple premise that our minds can either destroy us or set us free. The book pointed out that stress and life are very much determined by what and how we think. I believe we all realize this, but somehow we don't take it to heart and put this principle into our daily practice. An earlier 20th century author, Napoleon Hill, wrote the classic book, *Think and Grow Rich*, which enlightened millions of readers to the simple fact that what we put our thoughts into is what we ultimately create. For example, thinking about not ever having enough often produces that result. There was an apt quote from Richard Bach in his best-selling book, *Jonathan Livingston Seagull*: "Argue for your limitations, and sure enough you own them." If you think and believe you can't succeed, guess what? – you won't.

Make Peace with Your Past

One of the most difficult things to accomplish is making peace with one's past. How many of us and our patients are stuck in what happened to them in their childhood? Those painful past events often stay with us and keep us from enjoying the present. Tara Brach, author of the book, *Radical Acceptance*, writes, "We long to belong, and feel as if we don't deserve to." What past experience would allow someone to feel that they don't belong? We somehow have to learn effective ways of dealing with such gremlins and moving on from the grip they hold on us. Mother Teresa was quoted as saying, "The biggest disease today is not leprosy, malaria or tuberculosis, but rather the feeling of being unwanted." I believe strong and healthy communities can go a long way in both addressing and curing the feeling of not belonging.

Not living by one's codes and values is deeply incongruent with one's basic essence and spirit. This is a primary cause of dis-ease within us.

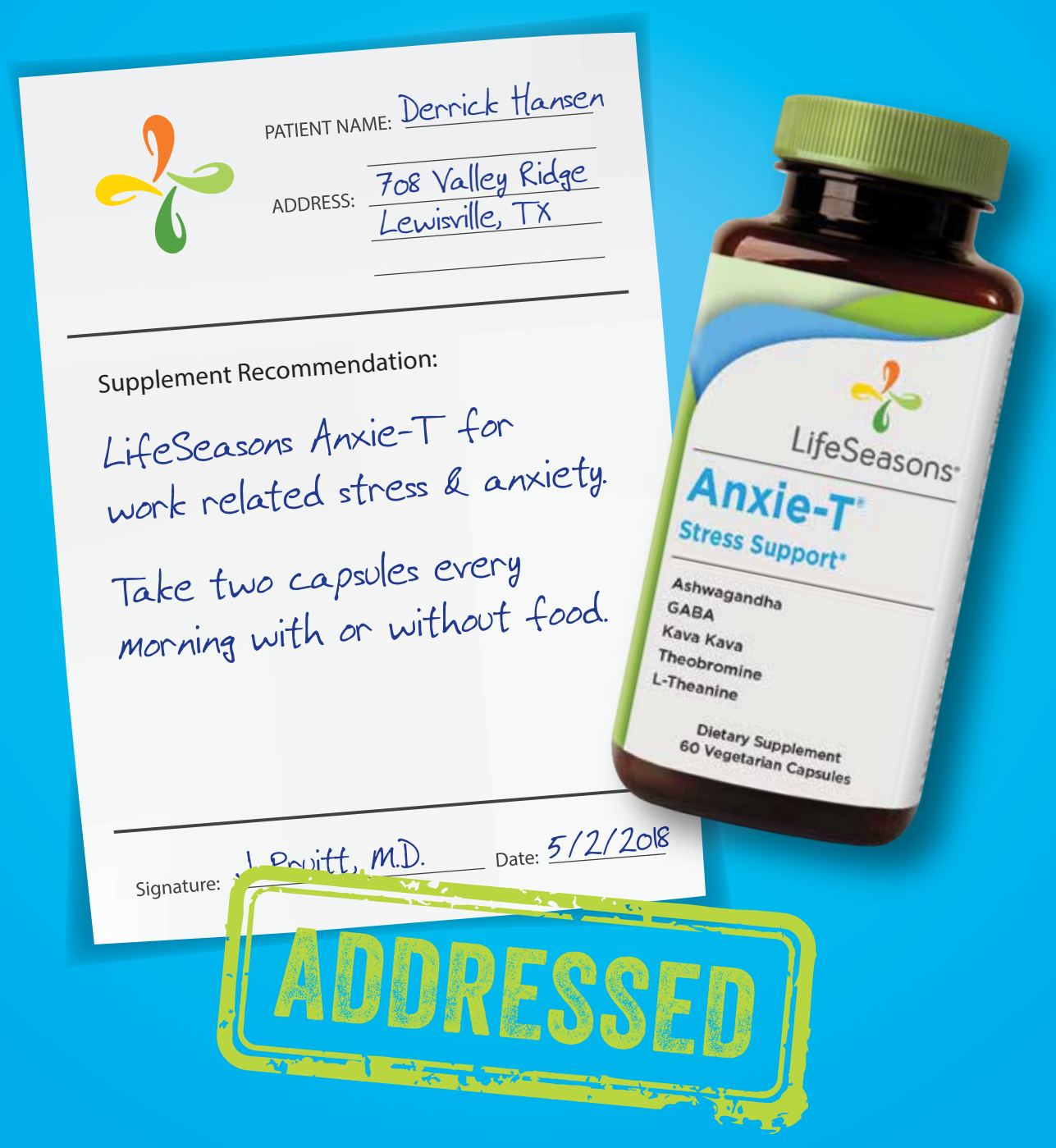
Avoid Expectations

If you change how you look at things, those things usually change. So, try another perspective in terms of how you look at situations and circumstances as well as how you perceive other people. This is basically a spinoff of Albert Einstein's definition of insanity, which is doing the same thing over and over again and somehow expecting a different result. As outside observers, we cannot know all the factors affecting other people's behavior. Remember to not judge people and have expectations about them or for them. Expectations set us up for being let down and disappointed. Keep in mind that assumptions are premeditated resentments.

Be Here Now

The only thing that's permanent is change. Therefore, however good or a bad a

Common patient concerns.



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situation is, rest assured – it will change. One would think we would have all realized this basic fact of life by now. As I mentioned earlier, there will be peaks and valleys throughout our lives. Breathe through your ups and downs, stay calm, do not overreact, and know that this moment will pass. Ram Das advises us to "be here now" and the importance of being in the present moment. Learn how to savor and appreciate the highs and learn from the lows. Life can be most unfair; there is so much injustice throughout the world today. It's here, it's real, and we do need to pay attention and acknowledge those harsh realities, but not dwell on them. Being fixated on them brings us down, overwhelms us, and makes us feel powerless; it can also keep us from being a part of the solutions that move the world forward.

Celebrate Your Aliveness

Times and situations can often drag us down, if we choose to give them that power. I find that people love to tell and repeat their story. All too often, this results in keeping their story alive, which may not serve them. That is, as long as people keep their story alive and active, they'll miss the opportunity to work through it and get to the other side that allows in new life experiences. On some level, many of us are aware that we have the power to create the life and the outcomes we want. Why is it that more people don't accept this reality? Life could and should be more of a mystery to enjoy than a problem to solve. How do you choose to frame your life? We would serve ourselves well to celebrate being alive. Remember, it's not what happens to us that counts, it's what we do with it.

Many of us are aware that we have the power to create the life and the outcomes we want. Why is it that more people don't accept this reality?

Embrace Each Moment

We're all doing time, whether we are in school, on vacation, riding a bike, or even in jail. One of the few ways that we are all created equal is that everyone is given 24 hours every day. How we choose to use these precious moments of time determines our lot in life. It is our God-given right to enjoy the passage of time. These 24 hours provided to us everyday represent an opportunity to use each hour consciously to bring joy into our life and others' lives.

Practice Meditation

Love is the greatest gift we can share. Unconditional love is everyone's desired destination. I know that when I'm there I'm truly home. Om is where the heart is, and meditation, yoga, Qi gong, and conscious breathing exercises are all paths to greater self-realization. We have all heard the saying "practice makes perfect," and although it may seem trite and somewhat boring, it holds a simple truth. What we consciously focus our energy on, usually comes to pass. For example, the practice of meditation has many levels of learning and experiencing. Some will say riding their bicycle, golfing, or a morning walk in the great outdoors is their meditation. Those experiences are all well and good; however, they all require some physical activity that makes it notably different from the distraction-free experience of just being still with oneself. Taking time to practice meditation allows us to clear the mind of all outside distractions, and brings an inner peace that nurtures our soul. In focusing our attention on the present moment during meditation, we can become one with ourselves and our unique spirit and essence.

Be the Change You Want to See

Our lives deserve a purpose and a plan that helps us evolve and heal ourselves. We have choices every day that affect the happiness and joy we bring into our lives. As Gandhi said, "Be the change you want to see." Enjoy the passage of time – it's our mission and birthright this time around. Carpe diem!

Jim Massey, ND, is a naturopathic physician licensed in Oregon. He graduated from NCNM in 1985. Dr Massey cofounded the North Carolina Association of Naturopathic Physicians in 1986. He was a board member of the AANP from 1994-1996, chairing the Public Affairs department. Dr Massey has taught clinical nutrition, homeopathy, and mind-body medicine. He and his wife, Karen, founded Mountain Peak Nutritionals in 1996, which specializes in "condition specific formulas®" for healthcare professionals. He cofounded the Naturopathic Psychological Collaborative in 2014 and continues to explore the contributions of spirit, consciousness, and awareness to vital health. He and Karen live in Portland, OR.

WNF
Naturopathic Education Globally

IVA LLOYD, ND, RPP

The most common question asked of naturopathic doctors – and the most common misconception about the global naturopathic profession – is about naturopathic educational standards. Most naturopathic doctors in North America assume that they have the best education, hands-down. Don't get me wrong – the naturopathic education offered in North America is great – but there are other naturopathic programs around the world that are also top-notch.

If we just count the naturopathic educational institutions that meet the World Health Organization's (WHO) Benchmarks for Naturopathy, we are looking at over 100 schools globally. The breakdown of schools is roughly as follows: 45 in Europe, 22 in South East Asia (mostly India), and then 10 in each of Latin America, North America, and Western Pacific regions. There are currently 2 schools in Africa and none in the Eastern Mediterranean.[1]

As expected, there is a strong correlation between the regulatory status of the naturopathic profession in a region and the educational standards that are offered. The World Naturopathic Federation (WNF) is supporting an ongoing research project examining the correlation between education and regulation.

2016 Global Survey of Naturopathic Educational Institutions

In February 2016, the WNF conducted a global survey of naturopathic educational institutions. The survey was a follow-up to the one conducted in 2015 that focused on naturopathic professional organizations. The survey was sent to 85 naturopathic institutions, from 49 different countries, that had a minimum standard of 1500 teaching hours, as set by the WHO. The WNF received 30 complete responses from 17 countries.[2]

The highlights of the survey were as follows:

- 50% of the naturopathic institutions that responded were opened between 1975 and 2000
- The European schools tend to have fewer students, whereas the schools in North America, Western Pacific, and Asia have the most
- 61% of the schools offer programs of 3000 hours or longer. The longer programs (>4000 hours) are primarily from North America, Western Pacific, and Asia.
- The trend for newly established schools outside of Europe is to start naturopathic programs that are at least 3000 hours in length. There was a positive correlation between the length of the program and the number of students.
- 70% indicated that the naturopathic history, principles, philosophies, and theories constitute a separate module in the curriculum
- 100% of the schools teach basic sciences; clinical sciences; naturopathic history, principles, philosophy and theories; and naturopathic disciplines (nutrition, herbal medicine, hydrotherapy, physical therapy, homeopathy, lifestyle counselling, etc)
- There is high agreement on the 6 naturopathic principles taught at the naturopathic institutions
- The following 10 naturopathic philosophies and theories are taught in over 70% of all naturopathic institutions: Vital Force, Integration of the Individual, Naturopathic Cures, Value of Fever, Therapeutic Order, Triad of Health, Unity of Disease, Hering's Law of Cure, Theory of Toxemia, and Humoral Theory. The first 3 listed are taught in 96% of all schools.
- All 30 respondents itemized the diagnostic methods taught in the naturopathic program. As expected, diagnostic methods essential to primary care and adequate diagnostic skills (ie, clinical assessment and diagnostic exams) are included in 88% and 86%, respectively, of all programs. Government regulations limited some core diagnostic methods, such as physical exams and laboratory testing. High consistency was shown for clinical assessment, physical exams, laboratory testing, biotypology and somatotypes, and traditional humoral diagnosis.
- Although the naturopathic profession is known for offering an eclectic array of treatment modalities, the following 7 naturopathic modalities are core to most naturopathic programs: Clinical Nutrition, Applied Nutrition, Botanical Medicine, Hydrotherapy, Homeopathy, Physical Therapies, and Lifestyle Counseling.
- The diversity in naturopathic treatments seen by region reflects both the ability of naturopathy to easily support the traditional medicines from a country and the length of training that is offered. For example, minor surgery is generally only included in the longer programs, such as those offered in North America. And the inclusion of Ayurvedic therapies is seen in countries that already utilize Ayurvedic treatments.

Establishment of Naturopathic Institution

Based on the details from the "2015 World Naturopathic Federation Report"[3] and books on the history of naturopathy, we believe that the first official naturopathic school was opened in 1901 by Benedict Lust, student of Father Kneipp, in New York. Some of the naturopathic schools that opened in the early 1900s are still in operation today. In the early 1920s, formal naturopathic schools, such as the one established in 1925 by José Castro Blanco in Spain, started opening in Europe. Other naturopathic schools opened around that time, including one in Munich, Germany, by Josef Angerer Schule, which still exists today. One of the students of Benedict Lust's NY naturopathic school was the French-Argentine ND Professor, Juan Estève Dulin. He was instrumental in bringing naturopathy to South America, France, and Spain. In 1919 Dulin established The "Argentine Naturist Association," which in 1934 changed to "Asociación Naturista de Buenos Aires." Due to the efforts of Prof Dulin, naturopathic schools have been established in Argentina, Uruguay, Brazil, France, and Spain – for example, the "Universidad Popular Naturista," the "Escuela Argentina de Naturopatía," and "Escuela Naturista Prof. Juan Estève Dulin."

Prior to 1950, most naturopathic schools were located in Europe. In North America, a number of naturopathic schools were established between 1901 and the 1930s; however, most of them were closed between the 1930s and 1950s for various reasons. Since the 1970s there has been a resurgence of the naturopathic profession worldwide and it continues to grow and expand into every region of the world. (See Figures 1 & 2)

As shown in Figure 2, a number of naturopathic schools have opened since 1951 in Europe, North America, and Western Pacific, and each of these regions continues to see growth in the number of naturopathic programs. Asia indicates growth in naturopathic programs in the period 1976-2000. Most of the growth in naturopathic programs in Latin America has been within the last 20 years.

Length of Naturopathic Program

To be an educational member of the WNF, a naturopathic school must meet the 1500-hour minimum education standards for a naturopathic program, as set by the WHO. Only 2 respondents indicated that their program was less than 1500 hours, though greater than 1200 hours.

One of the challenges of the naturopathic profession worldwide is the variability in the length of the naturopathic programs (Table 1). However, there is a trend for naturopathic programs to be closer to a minimum of 3000 hours. This increasing trend is expected to continue especially in new programs established in Europe.

Table 1. **Length of Naturopathic Program (Q8); n=28**

Answers (in Hours)	Responses (%)
Less than 1500 hours	7.4%
1501-1999 hours	18.5%
2000-2999 hours	14.8%
3000-3999 hours	33.3%
Over 4000 hours	25.9%

When looking at the length of the program based on region, we see that most of the variability is within Europe and Latin America. Figure 3 shows that the naturopathic programs in Asia are between 2000 and 3999 hours. Six of the 7 schools in North America offer a program that is over 4000 hours, and all programs in the Western Pacific are over 3000 hours. Since the survey was published, the WNF has become aware of naturopathic programs in India that are also over 4000 hours.

Type of Naturopathic Program

Seventy-six percent of the naturopathic institutions offer a full-time program. As shown in Table 2, a number of naturopathic institutions offer a part-time option as part of a full-time program.

Table 2. **Type of Naturopathic Program (Q9); n=29**

Answers	Responses
Full-time program	76%
Part-time program	52%
Online program	14%
In Detail	
Full-time only	12 schools / 41%
Full-time and part-time	6 schools / 21%
Full-time, part-time and online	2 schools / 7%
Full-time, online	2 schools / 7%
Part-time only	7 schools / 24%
Online only	0 schools

Figure 4 highlights the fact that part-time programs are only offered in Europe and Latin America. All world regions offer some degree of mixed programs – generally full-time programs with the option of taking part of the program part-time as well. The majority of North American programs are only full-time. The WNF recommends that naturopathic programs be primarily in-class instruction.

Curriculum Content

Of respondents, 100% indicated that their naturopathic program contained the following 5 elements: basic sciences; clinical sciences; naturopathic history, principles and philosophy; naturopathic disciplines; and a practical clinical component.

When analyzing the percentage of time spent in each aspect of the naturopathic program, it was found that an average of 31% of the curriculum involves teaching naturopathic disciplines and that 24.1% of the curriculum includes the practical clinical component.

Table 3 provides a glimpse of the average number of hours spent in each aspect of the naturopathic program, based on length of the overall program. The longer programs significantly increase the time spent on the basic sciences, clinical sciences, and the practical clinical component.

Overall, the time spent on naturopathic history, philosophy, and theories does not vary significantly based on the length of the program.

Naturopathic Principles

Similar to the results published in the "2015 World Naturopathic Federation Report,"[3] the respondents indicated an extremely high degree of consistency in the naturopathic principles: First, Do No Harm (*Primum non nocere*) (93%); Healing Power of Nature (*Vis medicatrix naturae*) (97%); Treat the Cause (*Tolle causam*) (93%); Treat the Whole Person (*Tolle totum*) (100%); Naturopathic Practitioners as Teachers (*Docere*) (86%); and Disease Prevention and Health Promotion (100%).

Naturopathic Philosophies & Theories

The philosophies and theories of a system of medicine influence every aspect of assessment, diagnosis, and treatment. They dictate what information is sought and how it is interpreted. They determine whether the emphasis of the patient-practitioner relationship is on addressing the factors that cause disease or on treating the symptoms and pathology. They

determine whether health and disease are viewed as logical or random, and whether a practitioner is trained to integrate all aspects of a patient or to address specific pathological conditions.

All respondents indicated a strong agreement with many of the naturopathic philosophies and theories taught in the naturopathic curriculum. As shown in Figure 5, the common theories and philosophies include: Vital Force (*Vis vitalis*) / Theory of Vitality, Integration of the Individual – spiritual, psychological, functional, structural (Mind, Body, Spirit), and Naturopathic Cures – detoxification, revitalization, stabilization, and regeneration (taught in 96% of the programs); Value of Fever (89%); Therapeutic Order (85%); Naturopathic Triad of Health and Unity of Disease (81%); Hering's Law of Cure and Theory of Toxemia (78%); Humoral Theory (74%); and Theory of Complex Systems and Emunctories / Emunctory Theory (67%).

Naturopathic Diagnostic Methods

All respondents indicated the diagnostic methods that were taught in their naturopathic program (see Figure 6). As expected, those diagnostic methods essential to primary care and adequate diagnostic skills (ie, clinical assessments and physical exams) were included in 88% and 86%, respectively, of all programs. Some core diagnostic methods, such as physical exams and laboratory testing, were reported to be limited in some regions due to government regulations. High consistency was shown in clinical assessment, ie, standard medical assessment including auscultation, palpation, percussion, observation (tongue, skin, nails, eyes), neurological exam, cardiovascular exam, etc (92%); physical exams (85%); laboratory testing (blood, urine, hair, sweat, saliva, stool, etc) (80%); iridology (72%); biotypology and somatotypes (62%); traditional humoral diagnosis (including urine and pulse) (59%); and traditional Chinese diagnosis (including tongue and pulse) (57%).

Other diagnostic methods that were included in some naturopathic programs included energetic diagnosis (eg, therapies such as bio-electronic, Vega, Mora, kinesiology muscle testing, radionics, and radiesthesia) (46%); gynecological/anorectal exams (39%); live blood cell analysis (38%); and Ayurvedic diagnosis (21%).

The survey also analyzed the diagnostic methods based on length of program. It was found that the more medical diagnostic methods – such as physical exams, clinical assessment, and laboratory testing – are generally associated with longer naturopathic programs. Other diagnostic methods – such as iridology, energetic assessment, and biotypology – are more likely to be associated with shorter naturopathic programs. Specific diagnostic methods, such as gynecological exams, live blood cell analysis, or traditional humoral theory, are more likely to be associated with specific regions than with program length.

Naturopathic Modalities

In the "2015 World Naturopathic Report,"[3] the following 11 modalities or treatments were reported as having a high degree of consistency and being part of the practice of naturopathy / naturopathic medicine in each country: hydrotherapy (93%); massage techniques (88%); botanical medicine (87%); physical medicine practices (85%); energetic therapies (85%); lifestyle counseling (80%); clinical nutrition (80%); TCM practices (79%); right to direct access to patients (77%); homeopathy (77%); and colonics (75%). The respondents in the 2015 World Naturopathic Report included naturopathic schools and naturopathic organizations (primarily national).

All respondents reported on the naturopathic modalities taught in their naturopathic program. As shown in Figure 8, there is a high degree of consistency among naturopathic modalities. The following is the list of the most common modalities and the percentage of naturopathic programs teaching them: clinical nutrition (100%); applied nutrition (97%); botanical medicine (93%); hydrotherapy (83%); massage and soft tissue techniques (79%); physical manipulation (72%); counseling and naturopathic psychotherapy (72%); homeopathy (66%); pharmacology (66%); and energetic therapies (48%).

Other modalities that are taught include: acupuncture (45%); TCM practices (45%); osteopathy and other manipulative techniques (45%); chelation therapy (38%); hormone prescribing (34%); humoral therapy (cupping, Baunscheidt, etc) (38%); intravenous therapies (31%); colonics (31%); minor surgery (28%); meso- or prolotherapy / neural therapy (17%); and Ayurvedic medicine (14%).

Further analysis revealed that hydrotherapy – which is typically considered part of the naturopathic system of medicine – was only taught in 1 of the 4 schools that responded from the Western Pacific; 2 schools in Europe omitted hydrotherapy and botanical medicine as modalities; homeopathy was also omitted from schools in Asia, 5 of the schools in Europe, and 2 of the schools in the Western Pacific. Humoral therapy – a central therapy for traditional naturopathy – is primarily taught as a naturopathic modality in schools in Europe. Seventy-four percent of the respondents considered

Table 3. **Hours Spent in Each Aspect of Curriculum, by Length of Program**

Length of Program (Hours, average)	Basic Sciences	Clinical Sciences	Naturopathic History	Naturopathic Disciplines	Practical Clinical
<1500 h	275	258	115	410	200
1500-1999 h	303	263	317	596	476
2000-2999 h	250	325	175	1100	300
3000-3999 h	594	720	287	1200	748
4000+ h	1099	765	190	1129	1340

humoral therapy more as a theory than a treatment modality.

Hormone prescribing, intravenous therapies, meso- or prolotherapy, and minor surgery were taught in schools in North America, 2 schools in Europe, and 1 in Asia. The schools that taught one of these modalities were likely to teach all of them. These results correlate with what we know of the scope of practice in these regions, and correlate with naturopathic programs with a higher number of program hours, especially in North America.

Overview of Naturopathic Education by World Region

The following is an overview by world region:

- *Africa*: The WNF is aware of 2 naturopathic institutions in Africa: the University of Western Cape in South Africa, which is a 4200-hour program that opened in 2002, and the Zambia Institute of Natural Medicine and Research, which was started by the WHO and AFRO, based on the 4200-hour curriculum of the Canadian College of Naturopathic Medicine in Canada.
- *Asia*: There are over 20 educational institutions in India. Many of the programs in India are 4 ½ years in length. Nepal offers a naturopathic educational program that is 3 ½ years long. In Asia, yoga is an integral part of the naturopathic programs.
- *Europe*: Europe is home to the oldest and greatest number of naturopathic educational institutions and the greatest variability in educational standards. That being said, there are programs in Europe that are over 3000 and 4000 hours in length and that are comparable in content to programs in North America.
- *Latin America*: The majority of naturopathic schools offer programs over 2000 hours and offer enrollment to 100-250 students. The school in Puerto Rico, Universidad del Turabo, currently has candidacy status with Council on Naturopathic Medical Education (CNME).
- *North America*: North America has the highest accreditation standard for naturopathic education. Seven of the programs are accredited by CNME, and all offer programs in excess of 4000 hours. The remaining 4 naturopathic schools exist in Quebec, Canada. Three of the 4 Quebec schools offer a naturopathic program that is at least 2000 hours in length; one of the schools – L'École d'Enseignement Supérieur de Naturopathie (EESNQ) – offers a program that is over 4000 hours and is currently working towards CNME accreditation.
- *Western Pacific*: The oldest school in Australia, the Southern School of Natural Therapies, in Melbourne, was established in 1961 and has offered a 4-year degree course for over 15 years. The majority of naturopathic educational institutions offer programs over 3000 hours, and all but one of the schools offer enrollment to about 100-249 students at a time. One school, Endeavor College of Natural Health, in Australia, has a total enrollment of over 400 students at a time.

Global Challenges Facing Naturopathic Educational Institutions

There is a lot of strength and wisdom in the naturopathic educational institutions globally, but there are also challenges. The following are some of the challenges and the steps being taking to overcome them:

- **Latin America:** The main challenge is the lack of naturopathic educational resources (books, journals, databases, etc) in Spanish. The WNF is working on strategies with many of the Latin American countries on fundraising in order to translate key resources.
- **Europe:** Many of the European naturopathic organizations have been working over the last few years to increase the minimal standards of education in that region and to have the European Union recognize naturopathy.
- **Research:** The need for naturopathic research has been identified as a key strategy for the WNF and many other established naturopathic organizations and educational institutions. The International Research Consortium of Naturopathic Academic Clinics was formed in 2017 by Endeavor College of Natural Health, Bastyr University, and the Canadian College of Naturopathic Medicine, with the aim of advancing naturopathic research internationally.
- **Continuing Education:** Many naturopathic organizations from around the world have requested broader access to continuing education. The WNF intends to work with our members to help facilitate this process.

Summary

The consistency found in the 2015 and 2016 WNF surveys allowed us to create the document "Defining the Global Naturopathic Profession,"[4] and the 2016 survey provided the foundation for the "WNF White Paper on Naturopathic History, Philosophy, Principles and Theories."[5]

Although the goal of the WNF is not to standardize naturopathic education globally, its aim is to assist in the strengthening of all naturopathic educational programs and to provide a forum for naturopathic educational institutions to share resources and to collaborate.

One goal of the WNF is to collaborate with the WHO and update the Benchmarks on Naturopathy. By doing so, we expect that the minimal educational standards will increase to at least 2500 hours.

If you would like more information on naturopathic education globally, we encourage you to read the 2016 Naturopathic Roots Report at http://worldnaturopathicfederation.org/wnf-publications/.[2]

Figures and references available online at ndnr.com

Resonance-Based Medicine

LOWELL CHODOSH, ND, LAC

We have many systems of natural medicine that use energy as their working model, whether as the vital force often spoken of in naturopathic and homeopathic vitalistic circles, or as Qi in oriental medicine. Both are meant to describe energy that not only sustains the body but also, more inclusively, sustains the mind and spirit. Perhaps a better term for this resonating vibrational energy is *prana*. A term with ancient origins, prana is described as "subtle life-forces or finer-than-atomic energies intelligently charged...."[1] I believe prana better serves to define this energy, especially in living systems, because it is described as intelligent and hence more likely to be the *vis medicatrix naturae*, or the healing power of nature, one of the primary tenets of naturopathic medicine.

It is this pranic energy that sustains us, gives form to the body, and is the first to change when there is dysfunction. A derangement of pranic energy anywhere in the system will imbalance the entire system. The body, however, has mechanisms to adapt itself. And in that adaptive capability lies the seed of an accumulative dysfunction; for as the body adapts, it ignores, and as it ignores, dysfunction accumulates. Not only can dysfunction manifest as various abnormal symptoms, but the body's energy matrix itself becomes thrown off or distorted, often to the extent that it no longer recognizes which symptoms are normal and which are abnormal. Hence, when the body remains unaware of its innate balanced character, a spiral of dysfunction develops and accumulates.

Resonance-Based Medicine and its associated technique of Bio-Energy Evaluation – a hands-on technique similar in theory to craniosacral therapy – are part of a new paradigm of medicine I've developed that allows me to fully utilize the vibrational energies in the body by helping me to realize and monitor the effectiveness of natural treatments.

Bio-Energy Evaluation

Bio-Energy Evaluation (BEE) is a versatile technique that can be used to monitor one's own energy as well as be taught to practitioners to guide them towards more effective treatment protocols. It is a skill that can be acquired; once found, BEE can be used to help the practitioner find the best and most effective supplement, homeopathic, acupuncture points, or herbal mixture. It can also be taught to anyone who chooses to attune oneself to the inner energetic pulses of the body; in so doing, it helps guide them to the most effective lifestyle, dietary, or mental changes necessary for a more balanced and healthful life.

BEE uses the body's cranial and body pulses, as well as the radial pulse. In essence, these various pulses are barometers of prana, easily accessible, and – in their own way, when skillfully read – can help the practitioner know the correct therapy to use. I have chosen the various body pulses for various reasons. They are easily accessible and easily taught and, in time, easily perceptible. This is a skill developed to some degree by practitioners of Chinese medicine using pulse diagnosis and by those practitioners familiar with craniosacral therapy. These already-utilized diagnostics can be expanded upon to encompass a much broader understanding of the body's energy and the most effective way to choose treatments.

All it requires is practice, belief in the method, and some guidance along that learning pathway. Until a true technological model of pranic energy evaluation can be achieved, the best-suited technology for utilizing the body's energy matrix to aid healing is the human brain and is presently the most accessible and reliable source of this energetic potentiality.

By sensorially connecting to the vibrational energy of the body and the energetic qualities of substances and therapeutics, I am able to determine the most compatible and efficacious treatment protocols. It is a method of choosing the correct therapies by working with the body's own energetic makeup.

Resonance-Based Medicine

Resonance-based medicine (RBM) is based on the principle that healing takes place when the energy of the body is balanced. A balanced energy is the smooth flow of energy through the body. This balanced state is a kind of homeostasis but includes this fundamental pranic energy that is the intelligence behind maintaining this equilibrium – a quality that not only is able to adapt but also to heal, directing the life force energy to correct abnormalities as well as sustain physiological systems.

It is by inducing that smooth energetic flow of energy that the body is able to self-correct those abnormal symptoms and distinguish adaptive changes from its innate balanced energetic matrix.

Resonance-based medicine is therefore based on the universal vibrational quality of matter. When properly used, RBM can change or reset the energy flow of a receptive person. The working principle behind RBM is to ascertain an energetic dysfunction before or after symptoms occur and to treat that dysfunction in the most effective way available by evaluating the body's energy and its response to treatment.

The Role of Natural Medicines

There are many ways to achieve this balanced state. Natural medicines and therapies are the most effective means because, when properly prescribed using the resonance model, they will not interfere with the energetic flow of the body or cause more derangement in the system.

Through natural therapies, the body can be reminded of that innate balanced, sustaining matrix of energy, and in so doing recognize that flow as normal and those symptoms that are outside of that parameter as abnormal. In this manner, the constantly moving energy of the

body, once balanced and aware of its innate pranic homeostasis, or praniostatic state, will recognize and eliminate any abnormal symptoms. In other words, if that smooth flow can be maintained by natural medicines or therapies, than the body will be able to recognize the trouble and heal.

The difficulty, and perhaps one of the criticisms, of natural medicines is that they often need to be given frequently; however, this makes perfect sense in the resonance model and only becomes a problem with the limitations of our conventional factory-medicine model. What I believe and have seen in my practice is that cure takes place when the body is able to respond to the correct balancing therapy in its own time. Once the body's innate healthy energetic flow is maintained long enough for the body to respond, it will begin to recognize inconsistencies and eliminate those symptoms outside of those parameters.

I have found that the most useful of naturopathic methodologies within this resonance based model is homeopathic medicines. They are able to reach the body at its most receptive level, therefore able to change the energetic flow most effectively. In fact, every substance, even allopathic medicines, have an energetic signature; however, homeopathic medicine has the advantage of more finely tuning its effect on the body because of potentization.

There are many natural therapies that can balance the body's energy without potentization, some more efficiently than others, but this can only really effectively take place when the body's energy is monitored and the therapy, like the homeopathics, are administered as necessary to maintain praniostasis.

It cannot be overemphasized that the way the body heals is in its own time, depending on the receptivity of the individual to the treatment as well as the proper dosing and repetition of the therapy, which allows the therapy to "stick," ie, hold long enough for the body to react to that balanced and smooth flow of energy. There also must be the appropriate waiting period once the therapy is assimilated so that the body can respond – something easily monitored using BEE.

Keys to Effectiveness

The key to the effectiveness of any modality, procedure, or medicine is introducing it at the right time, when the host is receptive, at the proper strength and dose, and repeated as necessary to remind the body of the imbalance and encourage it; this allows it the time to adopt an internal healing strategy to remove those symptoms that it now recognizes as aberrant. Healing starts with awareness, whether we are conscious of it or not. If we make the body aware of an imbalance through medicines, therapies, lifestyle changes, affirmations, and positive thinking, it can be guided towards balance and health. Once the therapy or medicine takes or recognizes the natural energetic balance as its own, then the body sees those symptoms of imbalance as something to be eliminated; only then can true healing and cure take place.

Another important concept of naturopathic and homeopathic medicine is its lack of suppression. The beauty of using natural therapies within the resonance-based paradigm is the ability to monitor the body's energy by applying only balancing therapies, and then waiting or changing as necessary as the body responds. In this way, the chance of suppressive treatments, which could further derange an already compromised system, is minimized.

A Revolution in Medicine

Practicing medicine is most often thought of as an intellectual exercise, but in reality it is a creative art. When you are able to measure or feel the body's energy, you are more capable of understanding the many possibilities of healing modalities and patients' very unique individualized treatment needs and schedules. This is the key to the true practice of medicine: measuring or feeling the body's energy and its response to various therapies, knowing when to wait or change your therapy, and adding appropriate RBM-guided therapies to empower the patient and coax the body to heal.

Part of being a naturopathic practitioner is knowing what is appropriate for each individual. Although we may be guided to some degree by lab tests, functional medicine assessments, and evidence-based therapeutics, we all strive to choose the most effective and long-lasting treatment for our patients. For efficiency and effectiveness in that pursuit, resonance-based medicine is the paradigm of choice. RBM is thus a working model for knowing when a system is out of balance and how to use various therapies to correct any imbalance.

Resonance-based medicine should be a growing and expanding science whose clinical relevance and effectiveness is demonstrated as more practitioners learn the skill to perceive the body's energy and observe and record the benefits of its clinical application. It is a technique that has the potential to be expanded upon as our experience with it increases and as our deeper, intuitive perceptions allow. Once there is a willingness to try a new paradigm and use it according to a different set of healing principles, there will be not only a revolution in medicine, health, and wellness, but also a much greater understanding of our own evolutionary potential in body, mind and spirit.

References available online at ndnr.com

Lowell Chodosh, ND, LAc, graduated in 1992 from the National College of Naturopathic Medicine (now the National University of Natural Medicine) and in 1996 from the Oregon College of Oriental Medicine, both in Portland, OR. Besides developing the resonance-based medicine paradigm, he has also created a hybrid massage therapy that includes acupuncture called Koruko. He gives workshops entitled "The Power of Prana," helping practitioners and laypersons learn to feel and use pranic energies in their practice and their lives. He is currently living and practicing in Astoria, OR. Visit his website at: www.bluelotushealthandwellness.com.

The Simple Life

JOSEPH KELLERSTEIN, DC, ND

Life is infinitely complex and ultimately unknowable… kind of like homoeopathy! There is a really useful rubric that Dr Jamie Oskin gives a great lecture on: *Mind; Ailments from Vexation*. What he carefully excludes from this talk is that Vexation (frustration) is the life of a homoeopath. No wonder he is such an expert!

The Patient

Alfred lives in a town in Northern Ontario – one of those small towns with an odd name you have never heard of. He is almost 50 years old, tall and strongly built. He works in construction.

Alfred gently sits down and begins talking softly in a very measured, almost controlled, way. I feel a bit uneasy.

Chief Complaint

"My problem is that I get these angry outbursts. People say it's an attitude. I say it's just a foolish thing. First, there is a frustration. I will develop this mean tone in my voice and blurt out something to my wife that starts with "I hate you, you XXXXX." Then I think, 'What did I just say?' I was unaware!"

I ask him if anything else is going on in his system when this occurs.

He replies, "There is a welling up of energy in my stomach. It moves upward until the episode happens. There is also a fogging of the mind. A kind of confusion…

"I really regret the outburst. It will only occur when I am with those close to me. It has been increasing – getting worse in recent months. It got to the point where I feared I might psychologically damage someone I love. I have moved out of the house."

Hip Joint

"I need a hip replacement," he adds. "So did my brother and father…

"The pain is worst when I walk on a level surface. Inclines are just fine."

Repertorization

Wow! I thought; this is a great day! I have 2 excellent symptoms for my TBR2 (*Bönninghausen Repertory*). (See Figure 1.)

But wait. No remedy has both symptoms!

So much for simplicity. But I bemoan the thought of ignoring this gorgeous symptom: *walking on a level surface aggravates*. So spontaneous. So distinguishing.

What if instead of using the *Vexation* rubric, I use *Irritability*? I can fudge a result. I like fudge (peanut butter). (See Figure 2.)

Although a bit patched together, this looks pretty good.

A Glance at the Materia Medica

So, lets check the materia medica for the mental symptoms associated with Ranunculus.

Figure 1. **Initial Repertorization**

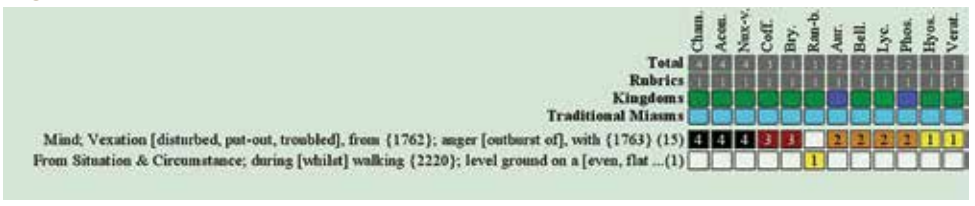


Figure 2. **Second Repertorization**

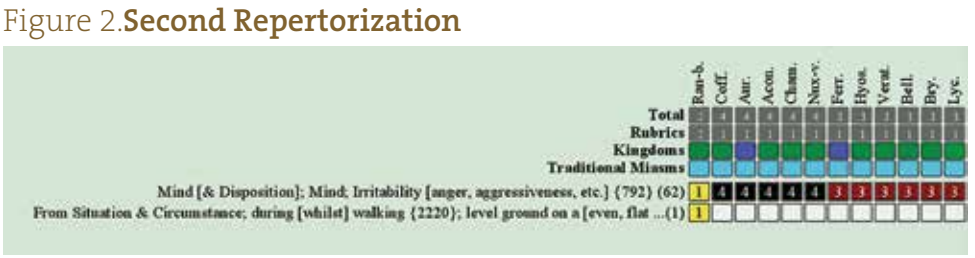
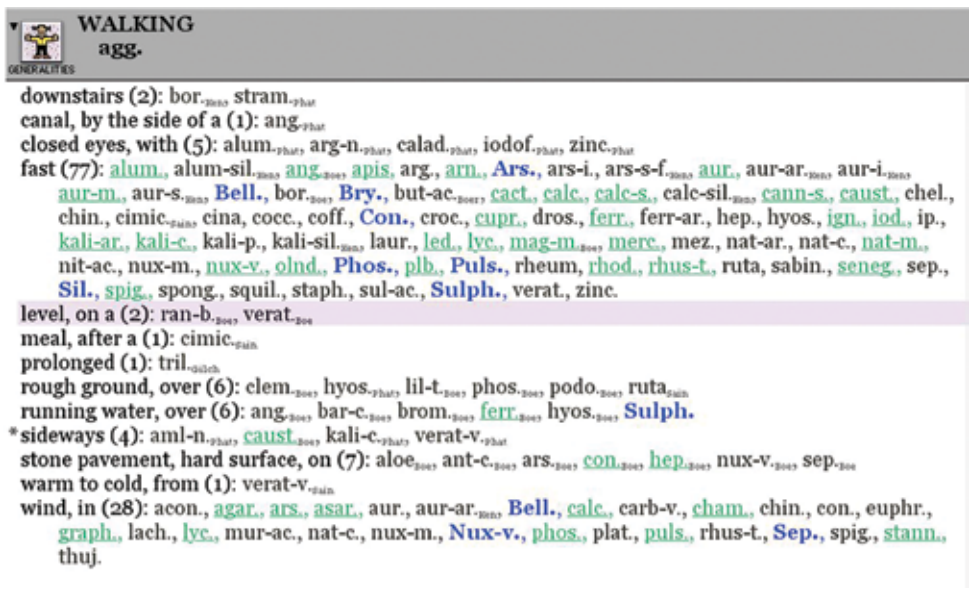


Figure 3. **Complete Repertory 4.5**



From *Allen's Encyclopedia*:

Vexed and inclining to be angry; quarrels and scolds when the slightest cause is offered (after two hours).

Ill-humoured, and disposed to quarrel and scold the first forenoon; in the evening he is desponding, apprehensive, sensitive, discontented; on the second day he again inclines to be provoked by the innocent jests of his friends, etc.; this continues for several days, and recurs frequently during the action of Ranunc.

Then, only because I am somewhat masochistic, I check Roger van Zandvoort's *Complete Repertory 4.5* and see the same rubric (aggravated by walking on a level surface) (Figure 3). Ranunculus is listed, but Veratrum is as well! Veratrum figures nicely in the initial more accurate rubric of Vexation and outbursts of anger.

Here we are told the source is Boericke. Good, but not rock solid. Let's look more closely at Veratrum.

Hahnemann says this about the remedy:

Pain in the sacrum when walking on a level, not when sitting (in the morning).

This seems quite clear, and the sacrum is pretty close to the hip.

So, what about the mind symptoms? Hahnemann lists the following for Veratrum:

***Cursing** and making a noise all night, and complains of being stupid, with headache and flow of saliva.*

Along with persistent fury, great heat of the body.

He does not talk unless excited to do so, then he scolds.

He gets very cross, every trifle excites him (after 1 hours).

He searches for faults in others (and taunts them with them).

Why did Boenninghausen not include this symptom for Veratrum? Perhaps he felt it was not a characteristic. Does that make it less useable?

Remedy

All in all, after reading the materia medica of Hahnemann, I feel Veratrum to be a better choice, based on the symptoms listed above.

Plan: Veratrum 30C once daily (1 pellet)

First Follow-up, 3 Weeks Later

The patient returned 3 weeks later and reported, "Life is much easier. The world seems brighter." He'd had no more episodes (which had been frequent). He reported no change in his hip. He was scheduled for a hip replacement in approximately 1 month.

Was I right? Time will tell. I will follow this over the coming months.

Thank you, Sam!

Joseph Kellerstein, DC, ND, graduated as a chiropractor in 1980 and as an ND in 1984. He graduated with a specialty in homeopathy from the Canadian Academy for Homeopathy, and subsequently lectured there for 2 years. He also lectured in homeopathy for several years at CCNM; for 8 years at the Toronto School of Homeopathic Medicine; and for 2 years at the British Institute for Homeopathy. Dr Kellerstein's mission is the exploration of natural medicine in a holistic context, especially homeopathy and facilitating the experience of healing in patients.

"I feared I might psychologically damage someone I love. I have moved out of the house."

Medical Resources for NDs

A review of current publications for the naturopathic industry

NODE SMITH, ND

Mitochondria and the Future of Medicine: The Key to Understanding Disease, Chronic Illness, Aging, and Life Itself

In a new book, *Mitochondria and the Future of Medicine: The Key to Understanding Disease, Chronic Illness, Aging, and Life Itself*, Lee Know, ND, pursues a much needed delve into the role of mitochondria in health and disease. The exploration is mapped out by Know in expert fashion, beginning with a foundational overview of mitochondrial physiology and cellular biology, continuing on with an account of mitochondrial dysfunction and their role in disease, and completing the book with a discussion of nutritional factors that promote mitochondrial function. The book is both easy to read and incredibly informative. The target audience is clearly healthcare professionals, though patients with a background knowledge of cellular biology and human physiology will also certainly benefit from reading it.

Dr Know clearly makes the case for supporting healthy mitochondrial function in an accessible 186 pages. The content is well researched and an extensive reference section is included at the end of the book; however, in-text references are lacking. Also, physicians who have a fairly good grasp of cellular biology and general mitochondrial function may skip the entire first chapter, "The Force." It's a great overview of cellular biology; however, each paragraph seems to include an attempt at humor which may be distracting for some readers.

In the second chapter, "The Dark Side of the Force" (Know compares mitochondria to the *mitochlorians* of *Star Wars* – a great analogy), the book settles into a nice flow of content and is difficult to put down. The basic functions of the mitochondria and how they impact multiple organ systems are fully elaborated, and multiple disease states are explored. The manner in which oxygen deprivation and ischemia impact ATP production, which likely underlies a pervasive chronic fatigue picture that is commonly seen clinically, is an excellent and astute association. Also, the consideration of mitochondria's role in cardiovascular disease states and neurodegenerative diseases is a huge takeaway.

Perhaps the most overarching concept presented by Know is that mitochondrial health is perhaps *the* foundational component of the aging process. Though Know is clearly not writing for a specifically "anti-aging audience," many of the principles of this growing area of medicine are clearly elucidated. A beneficial byproduct of this clarity may be that practitioners (and readers, in general) can more easily sift through the "hype" around anti-aging products and supplements. The function of the mitochondria is of primary concern throughout the book, and this connection is not lost when addressing specific nutrients or lifestyle factors. Someone would not read this book and conclude that supplement X is the panacea for youth, but *would* obtain numerous tools for increasing the robustness of mitochondrial vitality.

The final chapter, "Nurturing the Force," is an excellent resource for anyone interested in clinically supporting mitochondrial health. Dr Know walks through all of the nutrients that contribute to healthy mitochondrial functioning, which is actually a very accessible handful. In this chapter he goes on the assumption that the reader has read the rest of the book, and he does a great job of concisely presenting each nutrient and its impact, and without a ton of research studies (there are some) that can make chapters like this seem to drag on forever. Its understood that the supporting research is contained elsewhere in the book.

I would recommend this book to any and all healthcare practitioners who are interested in uncovering foundational causes of disease. It would also be a worthwhile investment of time and money for any medical student currently seeing patients. It's certainly a "high yield" read. I would also recommend this book to any athlete that is serious about their health and athletic performance, as so much of the material in the book is immediately applicable to this population of individuals. In fact, the primary function of mitochondria – to create energy – makes athletes a natural audience.

Just the FACTS

Title:	Mitochondria and the Future of Medicine: The Key to Understanding Disease, Chronic Illness, Aging, and Life Itself
Author:	Lee Know, ND
Publisher:	Chelsea Green Publishing
Available from:	All major book sellers
Pages:	243
Style:	Trade Paperback
Copyright:	2018
MSRP:	$24.95

Shut Your Mouth & Save Your Life

What Catlin Taught Early Naturopaths About Breathing

SUSSANNA CZERANKO, ND, BBE

In civilized communities, better sheltered, less exposed, and with the aid of the ablest professional skill, the sanitary condition of mankind, with its variety, its complication, and fatality of diseases, its aches and pains, and mental and physical deformities presents a lamentable and mournful list, which plainly indicates the existence of some extraordinary latent cause, not as yet sufficiently appreciated, and which it is the sole object of this little work to expose.

George Catlin, 1870, p.4

Naw-kaw, Chief of the Winnebagos, in Wisconsin, … our women never die in childbirth, and they do not allow doctors to attend them on such occasions.

Chief Naw-kaw, 1870, p.15

The [First Nations] infant, like the offspring of the animal, breathing the natural and wholesome air, generally from instinct, closes its mouth during its sleep.

George Catlin, 1870, p.19

The miracle of childbirth is joyful, but also much bruised by unpleasant and sometimes tragic events and practices. Women have tragically died in childbirth at many points in human history, and high infant mortality has been part of the human condition for eons, most particularly before hygienic practices were understood and adopted. Due to slipshod codes for water, sewage, and waste at the end of the 19th century, women did not always have access to healthy drinking water, and sanitary disposal of sewage was often lacking. Even fashionable dress such as the corset had the effect of crippling the natural birthing process and sometimes even making healthy birthing impossible. Moreover, although the unrelenting medicalizing of childbirth in that era brought with it wonderful safeguards, it also led eventually to the highest maternal mortality rate in the developed world. Many women became increasingly alienated from their own bodies as the traditions of midwifery, found in multiple cultures around the globe, were curtailed in an increasingly allopathic landscape. In any case, here in North America, given the loud and proud pronouncements about healthy birthing because of all the advances made in medical protocol and practice, one would think that these tragedies of the past were long behind us. The intriguing observations of an early 19th century writer and artist, George Catlin, pointed out, well over a century and a half ago, how lifestyle, including breathing practices, had a significant impact on these birth and child mortality statistics.

To be sure, in many ways we have come far in women's health, supported not only by a deeper understanding of the complexities of birth, but also by assurances of the steady advance of public health standards, an abundance of medical doctors, hospitals in every city and county, and a pharmaceutical industry committed to treating every ailment known to humankind. Here in America there are those who laud the remarkable translational research enterprise and point to hugely effective emergency and acute care. However, it is here that we have also evolved the most expensive healthcare or disease monitoring system in the entire world. How, then, in such a monetized and hi-tech, hi-pharma world, could we possibly benefit from the past regarding pregnancy and childbirth? Let's review some current, worrying trends related to birthing and infant mortality.

Inexcusable Statistics

A 2015 *Lancet*-published study, for example, reported the 2013 US maternal death rate at 18.5 deaths per 100 000 live births. In the following year, another *Lancet* study cited a dramatic rise in American women's risk of maternal mortality, increasing to 26.4 deaths per 100 000 live births. (Kassebaum et al, 2016, p.1784) These numbers establish American women as the most susceptible group among all developed countries to die in childbirth. Journalist Susan Perry writes, "American women are dying during pregnancy and childbirth at twice the rate they were 30 years ago." (Perry, 2015) Shedding even more light on the surprising statistics revealing the high mortality rate in the birthing room, *Scientific American* journalist, Dina Fine Maron, showed that racial discrepancies in America's birthing rooms were a significant factor in the data as well. Maron reports, "Researchers have shown that black women are not inherently more likely to have underlying pregnancy complications [such as preeclampsia, eclampsia, obstetric hemorrhage, placental abruption, and placenta previa]. Yet, black women were two to three times more likely to die than white women with the same complication." (Maron, 2015) While preeclampsia accounts for 50 to 70 (per 100 000) women dying each year in the United States, in the United Kingdom there were only 2 deaths (per 100 000) from preeclampsia between 2012 and 2014. (Exstrum, 2018) The birth safety disparity is alarming between the US and the UK, despite the population variance (330 million in US; 65 million in UK).

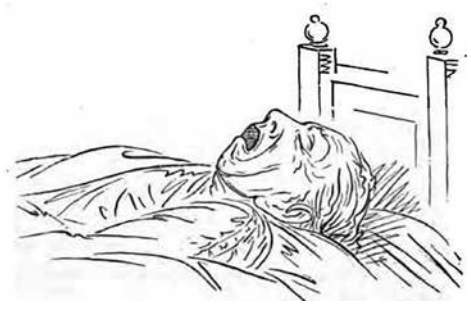
In fact, American women face 8 times the incidence of maternal mortality than all other developed countries. Not only does "the United States have the highest maternal mortality rate [MMR] in the developed world, it is the only country where the rate of deaths from childbirth is increasing." (Exstrum, 2018) The MMR is based upon the number of maternal deaths for every 100 000 live births. These alarming statistics are cause for concern because American women who are privileged with the best medical system are experiencing a higher risk of dying during childbirth than those women receiving what has been described as marginal healthcare, giving birth in Iran [MMR of 20.8], for example, or China [MMR, 17.7]. (Krassebaum et al, 2016)

The unarguable truth is that pregnancy and childbirth are not diseases but rather natural biological processes that are intricately and intimately part of human existence. How is it that we have not mitigated the risks and vulnerabilities in such a universal and common process as childbirth? In this regard, it is very instructive, when considering this non-rhetorical question, to harken back to Catlin's recondite book that has faded with history but is so worthwhile to revisit: *Shut your Mouth and Save your Life* (1860).*

Shut Your Mouth and Save Your Life

An odd and even humorous title, Catlin's work is a remarkable document. George Catlin [1796-1872] is well known for his early 19th century colossal work in which he produced a massive narrative about Native American populations, hugely enhanced by hundreds of paintings and portraits of those communities. His canon of work is now housed in the Smithsonian Museum. His book has emerged over time as a definitive early study about the dangers of mouth breathing, and it offers proper breathing habits, especially during sleep (Figure 1). But his book reveals far more that is urgently needed if only we heed the advice documented over 160 years ago by this remarkable adventurer-author-artist. Just who was Catlin, and did the early Naturopaths know about him? Indeed they did.

Figure 1. **Mouth Breathing During Sleep**



Catlin began as a lawyer and later became an artist and an anthropologist of sorts. Sometime later he became concerned about correcting the biases and prejudices rampant about the indigenous cultures in North America. He was an artist with the yearning commitment and diligence of an ethnographer covering the expanse of the entire North and South American continent in his quest to gather data about of the customs and habits of the First Nations. He visited over 2 million people in 150 tribes, who were at that point relatively untouched by the diseases and influences of the white man. He recorded on canvas their portraits and their vibrant way of life. What began as a mission to dispel the misconceptions that whites harbored against native populations, ended as a transformative revelation and a book based upon his observations and findings. He wanted facts and data that he saw with his own eyes, to convince his fellow countrymen that these indigenous cultures deserved to be honored and protected and even emulated, particularly about health. Sadly, his vision would not be realized.

However, his book, *Shut Your Mouth and Save Your Life,* would be reprinted many times. Significantly, it was noticed by the early Naturopaths as they examined the confounding etiologies of disease. The function of the nose is certainly to breathe air, which it is admirably designed to do. The nose warms, humidifies, and purifies the air that we breathe. Theodore Hoppe, a Naturopath in the early days, wrote an article on the importance of nasal breathing in the November 1903 issue of *The Naturopath and Herald of Health*: "As guardian of health the nose … performs invaluable services in preventing diseases of the lungs, as it frees the inhaled air from impurities. … All breathing should, therefore, be through the nose, and none whatever should be done through the mouth." (Hoppe, 1903, p.334) (Figure 2)

Figure 2. **Nasal Breathing During Sleep**

The early Naturopaths condoned and promulgated the importance of nasal breathing; it was Catlin's book, as it turns out, that revealed the full breadth of benefits that he found during his journey across North and South America. Some of his revelations are still astonishing.

Culture Arrogance and Prejudice

What Catlin pointed out to the early Naturopaths through his work was that despite the seeming sophistication and technological superiority of European culture, indigenous peoples had much to teach us. The ethnocentric views of the white settlers, who unrelentingly populated the American landscape, also included tragic misappropriation of disadvantaged cultures. The common belief was that civilized people not only lived in comfort, but also lived longer and were less burdened by life's hardships. In contrast, the indigenous people were thought to be uncivilized, primitive, and to live miserably short lives. In setting the record straight, Catlin writes:

I have visited these semi-civilized degradations of Savage life in every degree of latitude in North America, and to a great extent also in Central and South America. … I agree with those writers who have contended in general terms, that premature mortality is proportionally greater amongst the Native Races than in Civilized communities; but as I have also extended my visits and my inquiries into the tribes in the same latitudes, living in their primitive state, and practicing their native modes, I offer myself as a living witness, that whilst in that condition, the Native Races in North and South America are a healthier people and less subject to premature mortality (save from the

accidents of war and the chase, and also from smallpox and other pestilential diseases introduced amongst them) than any civilized race in existence. (Catlin, 1870, p.7)

Catlin shocked his contemporaries, and certainly also gets our attention in the modern era, with such observations. He makes the point that living in the 19th century, with all the presumptuous perks and benefits accrued to a "civilized culture," also entailed huge costs to community, health, and the environment, when compared to the footprint in those categories of the "savages" roaming the American continent. London, England, was viewed as the center of European civilization in the 19th century. Europeans, and especially the British, had built world empires and championed the industrial revolution. The sun never set on the British Empire, it was said, so expansive around the globe were the colonies of Queen Victoria in that era.

Catlin uses the mortality statistics documents of the "Bills of Mortality" in London (from the office of the Registrar General) to illustrate the high death rate of the British urban population: "In London and other large towns in England and cities of the continent, on average, one half of the human race dies before they reach the age of five years, and one half of the remainder dies before they reach the age of 25, thus leaving but one in four to share the chances of lasting from the age of 25 to old age." (Catlin, 1870, p.4) In 1850, living in this epicenter of civilization, the average citizen had a 25% probability of living past 25 years of age.

As an ethnographer, Catlin had set out to obtain reliable information about the tribes that existed in the Americas. He wanted to juxtapose what he knew about Europe (and specifically, England) with the vagaries and vicissitudes of life and health in the wilds of America. He writes, "Amongst a people who preserve no Records and gather no statistics, it has been impossible to obtain exact accounts of their annual deaths, or strict proportionate estimates of deaths before and between certain ages; but from verbal estimates given me by the Chiefs and Medical Men in the various tribes, … there has been no doubt I have been able to obtain information on these points which may safely be relied on." (Catlin, 1870, p.7)

Catlin observed some 2 million tribes people. He noted that among these people infant mortality was also rare, and that if children died, the death was often associated with accidents – for example, drownings, or falling off a horse. As a case in point, when visiting the "Tribe of 2,000" on the upper Missouri who were reportedly "living entirely in their primitive state, [Catlin] leaned from the Chiefs that the death of a child under the age of 10 years was a very unusual occurrence." (Catlin, 1870, p.10) He also writes, "Amongst two million of these wild people whom I have visited, I never saw or heard of a *hunch back,* though my inquiries were made in every Tribe; nor did I ever see an *Idiot or Lunatic* amongst them, though I heard of some three or four, during my travels and perhaps of as many *deaf and dumb*." (Catlin, 1870, p.12) Not all of the tribes were so blessed to be immune from high child mortality rates, however. Once the Tribes were contaminated with whiskey and alcohol, the children began to die or be born "weakly."

Humans, Catlin noted, were the only animals that sleep with their mouths open.

"Cler-mont, the Chief of the Osages, replied to [Catlin's] questions: "Before my people began to use *fire water,* it was a very unusual thing for any of our women to lose their children; but I am sorry to say that we lose a great many of them now." (Catlin, 1870, p.14) The white man's gifts of alcohol ignited doom and misery for the recipients.

Death during childbirth was almost completely unheard of in Indian villages where the traditional ways had not been disrupted. "Sleepy Eyes, a celebrated chief of a Band of Sioux … living between the headwaters of the Mississippi and Missouri Rivers, … [revealed to Catlin] that in his Band of 1,500 he could not learn from the women that they had lost any of their children except some two or three who had died from accidents." (Catlin, 1870, p.9)

Compared with European civilization at that time, fear of dying during childbirth was a real possibility faced by women. Maternal deaths in the 18th century were either caused by puerperal fever or sepsis or resulted from an incidental illness such as phthisis, typhoid, or pneumonia during pregnancy or after delivery. (Loudon, 1986, p.1) Irvine Loudon cites the maternal mortality in England and Wales between 1847 and 1850 to be 5.8 deaths per 1000 births, as compared to the contemporary statistic of 2015 maternal mortality rates of 0.009 per 1000 births. (Loudon, 1986; Kassebaum et al, 2016, p.1785)

Catlin's scrupulous observations documented uncontestable patterns. While civilized populations experienced many premature deaths among women and children, and suffered mental and physical deformities, Catlin reported on "the superb health of children and lack of evidence of early death among children of natives living in their traditional ways." (Henderson, 2009) Not only did native children not die during early childhood, but their physical attributes were also astonishingly healthy. By way of contrast, the literature shows that the children of "civilized" cultures during the time of Catlin's writing exhibited deformities and changes in facial bone structures.

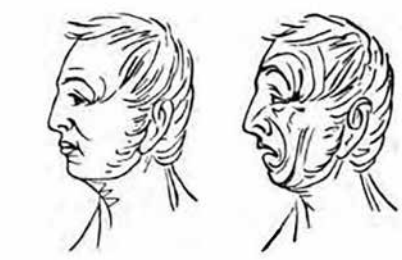
Weston Price, a century later, would write profusely on these same changes as traditional cultures adopted processed foods such as sugar and refined foods. Nancy Henderson, writing for the Weston Price Foundation, notes the uncannily parallel life-work of these 2 remarkable men. She writes, "As a pioneering anthropologist, Catlin recorded his observations of the physical characteristics of the Native Americans, which are remarkably similar to Dr. Price's observation 100 years later in his classic book, *Nutrition and Physical Degeneration*." (Henderson, 2009) An interesting side note is that Catlin was struck by the life-long perfection of teeth formation among all ages that he visited, along with the lack of any need of dentistry.

The Perils of Mouth Breathing

As artist, Catlin left behind drawings of what he saw among these people whom he grew to know and love. Studying his astonishing array of illustrations and paintings, one cannot fail to notice the differences between the indigenous people and their fellow humans in European centers of civilization. Later, we would witness the same startling contrasts in the photographs produced by Dr Price of indigenous populations and of their European counterparts. People in civilized cultures had distinct facial deformities consisting of retracted chins, narrow and elongated faces, crooked teeth, and a displeasing countenance.

Based upon his observations, what Catlin witnessed was that the indigenous people breathed with their noses and kept their mouths closed, except for eating and talking. This habit of keeping the lips closed began with the infant in the cradle. Catlin notes: "I have seen an Indian woman in the wilderness, lowering her infant from the breast, and pressing its lips together as it falls asleep, and fixing its cradle in the open air." (Catlin, 1870, p.18) This and similar habits of mothers with their children engendered a lifetime habit of keeping the mouth closed and breathing with the nose. In comparison, the civilized whites, when sleeping with the mouths open, changed the facial structure, causing a retraction of the chin and "derangement and deformity of the teeth, and the disfigurement of the mouth and the whole face." (Catlin, 1870, p.47) Catlin, as artist, illustrated these detrimental changes in his book (Figure 3). Humans, he noted, were the only animals that sleep with their mouths open.

Figure 3. **Facial Deformity from Mouth Breathing**



Mouth breathing chronically has been associated with a host of consequences, as documented by Dr Alan Ruth as the following (Ruth, 2015):

- Introduction of unfiltered, poorly humidified air into the lungs
- Upper chest breathing
- Chronic over-breathing
- Greater incidence of snoring and sleep apnea
- Bad breath, dental decay, gum disease
- Dysfunction of the temporomandibular joint
- Narrowing of the dental arch, jaw and palate
- Crowded and crooked teeth
- Open bite, malocclusion
- Greater potential for relapse of orthodontic corrections
- Dysfunctions of the muscles around the jaw and lips
- Loss of lip tone, with the lips becoming flaccid
- Noisy eating, speech and swallowing problems
- Trauma to soft tissues in the airways
- Enlarged tonsils and adenoids

When we apply these tabulations to a single person, we can handily correlate the same conclusion as Catlin, as witnessed by his drawings of chronic mouth-breathers. Catlin easily concluded that nasal breathing had many benefits. Since his writings, there are over 30 different benefits attributed to nasal breathing. (Ruth, 2016)

Nasal breathing related to pregnancy and childbirth can be understood by the roles of oxygen and carbon dioxide. For oxygen to be available to the tissues, carbon dioxide levels must be adequate. With chronic mouth breathing, there is a disproportionate loss of carbon dioxide which results in a reduction of oxygenation to the tissues. Nasal breathing increases oxygen levels but also the retention of carbon dioxide needed to facilitate oxygenation. By maintaining oxygenation, healthy nasal breathing helps to prevent hypoxia. During hypoxic episodes, one experiences muscle spasms, metabolic acidosis, and increased cellular stress. Nasal breathing during childbirth prevents huge swings in oxygen available to the tissues.

Hypoxia during childbirth can cause fetal stress and complicate the birth process. Nasal breathing helps to normalize the pH of the body and reduce any muscular stress that results from the lack of oxygenation. Although, this brief explanation may not adequately address the physiological basis of Catlin's observations, there is strong evidence that nasal breathing was one of the chief factors in why the indigenous mothers did not experience harm.

"Catlin's humanitarian drive compelled him to devote the last 12 years of his life until his death in 1872, to seeing that *Shut Your Mouth, Save Your Life* was continually revised and republished." (Henderson, 2009) Catlin's book continues to draw attention from those interested in understanding the value of breathing correctly to attain the best health. The book's title was demonstrative, but his conclusions that nasal breathing can have a tremendous impact on our health is valuable advice a century and a half later.

References available online at ndnr.com

*Note: George Catlin's book, *The Breath of Life or Mal-Respiration, and its Effects upon the Enjoyments and Life of Man*, first published in 1861 by John Wiley in New York, was re-published in 1862 by Truebner in London with the title, *Shut Your Mouth and Save Your Life.*

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David & Goliath

Putting Naturopathic Medical Education to the Test

DAVID J. SCHLEICH, PHD

The Philistines assembled their army at Sokoh in Judah. On the other side of the valley of Elah, the Israelites took up their position. The Philistines proffered Goliath, formidable in his bronze helmet and armor, and otherwise armed to the teeth with the latest weapons. The Israelites eventually came up with David, a shepherd. He chose 5 stones and a sling – unorthodox weapons for such a battle. The latter prevailed, but not without controversy before, afterward, and during. Such is the lot of natural medicine providers facing down the monolith of allopathic medicine, the pharmaceutical industry, and decades of regulatory imbalance. Not dissimilar, then, is the confrontation in our time between the orthodox biomedicine industry and the expanding community of heterodox providers, especially naturopathic physicians, whose tools and skills differ from the goliath of pharma and regulatory entitlement.

In any case, people in both camps are increasingly upset with biomedicine's assumptions of hegemony. We in the naturopathic medicine sector undulate through the skirmishes, dreading the bigger showdowns when they manifest, because the odds are in favor of those who control the turnstiles of healthcare services. Nevertheless, there are many reasons for all this bilateral consternation. We also have to contend with our own habits of deference and temerity. Even so, the confrontations with the biomedicine industry continue to escalate, especially given the alarming data about chronic disease, costs, and market segmentation.

Pellegrino & Bioethics

The orthodox medical establishment has "ignored and thus tolerated the promotion of junk food, industries producing dangerous by-products, hazardous work practices, urban planning that reduces incentives and opportunities for exercise, and many other unhealthy aspects of everyday life, not to mention the massive level of iatrogenic disease." (Martin, 2004, p.716) The work of Edmund D. Pellegrino can reassure us in the face of these philosophically and ethically odd behaviors (biomedicine professionals, after all, are supposed to be as committed to healing as we are), not to mention the willful marginalizing of the naturopathic profession, its values, and its successes.

Pellegrino has been a scholar of bioethics and the philosophy of medicine for several decades. He writes about familiar topics whose intended audiences are his own academic colleagues and the status quo allopathic world. Even so, his ideas and themes ricochet through our eclectic conversations about naturopathic medicine too. As a case in point, Pellegrino's original work on the healing relationship is a key component in his larger goal of placing humanism into the standard allopathic medical curriculum. In this regard, Pellegrino also writes about the "patient's good." Essentially, his lifetime scholarship is about "virtue-based normative ethics for health care." His abundant writings and the journal he founded, *The Journal of Medicine and Philosophy*, are a rich resource for reflective natural medicine professionals.

What is valuable for those of us in naturopathic medicine, particularly the educational and professional preparation portion, is to take note that what has happened to the biomedicine profession has also affected the accredited professions in natural medicine. At one extreme we may even be concerned that, in Pellegrino's words, "the profession of medicine [has] [already] transformed from a guild to a trade" (p.5). The symptoms of this transformation are echoed in what the early naturopaths and contemporary naturopathic physicians consider to be true of the dominant, orthodox biomedicine profession and the industry which has grown up around it. Among many others, Pellegrino identifies 7 particular challenges to the biomedicine profession (Pellegrino, 2008, p.6). They are familiar territory for us too: 1) overspecialization and over-professionalization; 2) insensitivity to personal and sociocultural values; 3) too narrow a construal of the doctor's role; 4) too much "curing" rather than "caring"; 5) not enough emphasis on prevention, patient participation, and patient education; 6) insensitivity to the poor and socially disadvantaged; and 7) overmedicalization of everyday life.

Virtue as a Professional

Despite these blemishes to sustainable, ethical professional formation, Pellegrino feels that the doctor – allopathic, naturopathic, TCM, or Ayurvedic, to name the main groups – nevertheless has a continuing obligation to relationship, and only in relating can there be what he calls "the possibility for virtue as a professional." For him, the professional healer simply has to "maintain … autonomy over political and socio-economic pressures." We may wonder to what extent the natural medicine professions are cognizant of Pellegrino's list, at the same time as we wonder about

mainstream allopathic medicine and its subsidiary professions. We may worry that our beliefs and preoccupations (always catalysts for what we teach our students), via the framework of curricular materials we keep re-engineering, tinkering with, and delivering, are inevitably propelling the profession in the same direction.

On balance, I think not. One marker of our differing path is that the philosophers in the naturopathic medicine profession do not hesitate in a landscape where evidence-based medicine is a mantra, and where presenting our therapies, modalities, and research outcomes in scientific packages are important strategies for acceptance, to challenge at times the validity and utility of the science behind medicine. These same colleagues continue to present a counter to the day-to-day practice of research and clinical work defined by scientific inquiry. Their voices still live in many of the students who found their way to our programs, seeking to heal people and a planet hungry for holism without drugs and invasive protocols.

In defense of this perspective, one could have a look at Peter Medawar's argument in "Is the scientific paper a fraud?" (1993) or at the still-famous 1979 Herbert Spencer lectures (Heath, 1981), to be reminded that philosophy and science are perhaps no more compatible with regard to medicine these days than they were a century ago. In fact, some claim that as we build the profession, we must not let the philosophical basis of contemporary naturopathic practice become shredded by a compelling need to move from the status of a heterodox medical system to an orthodox one, as occurred, say, for the osteopaths. The biomedicine lobbyists in state legislatures formally assault naturopathic doctors as clinically heretical because we hang on to values and modalities that they find unacceptable, and they couch their claims in the jargon of science.

Dissent in Medicine

What some say is "dissent and heresy in medicine" (Martin, 2004, p.713) is really about the domination of the marginalized by the orthodox players who don't want to let their privilege and power slip. They can't imagine cooperation in the landscape of primary care. Even when the scientific method is utilized to announce an important finding in defense of some aspect of our medicine, those conclusions are invariably dismissed as unscientific and heretical. An example is Benveniste's remarkable conclusion that very dilute solutions "can have biological activity" (Davenas et al, 1988), in support of the field of homeopathy; such conclusions are flung into the land of heresy by orthodox biomedicine authorities, many of whom cannot imagine a reality or framework different than their own.

Some of our colleagues are exasperated by the unrelenting opposition to licensing by MD and DO lobby teams in state legislatures, not understanding why well-educated healthcare professional bodies cannot tolerate, in their own philosophies and political entitlements, multiple truths about the potential of different modalities and paradigms of health promotion, even when a particular therapy is shown to be effective. Martin suggests, about such a "market of modalities," that patients are less inclined these days to hold some *a priori* assumption that "any single modality provides a universal answer." (Martin, 2004, p.714) What is happening, Dollemore insists, is that the increasing role of markets in health and medicine "means that modalities compete with each other in a market in which claims to exclusive truth are less persuasive than in the past, with consumers' demands for 'choice' fostering a tolerance for diverse truths." (Dollemore, 1997, p.37)

What we need instead is an assumption of a "plurality of truths" (Martin, 2004, p.715) in which "researchers and practitioners would be happy to help each other develop greater insights on a range of perspectives." (Martin, 2004, p.715) Alas, in the real world of biomedicine, research and practice are characterized by rivalries and power plays (Boffey, 1975; Dickson, 1984; Greenberg, 1967). In such a world, we diminish ourselves by adopting strategies designed simply to defeat biomedicine politically and to gain inherent advantage and control.

Despite our best intentions and tactics, it will take more than, say, publishing outstanding research within the same epistemological sector that Baer calls the "dominative, orthodox medical system" (Baer, 2001, p.43), to make a dent and carve out a safe place. Perhaps, as Martin suggests, we would be more successful by "competing for more market share" (Martin, 2004, p.716), and in lieu of "trying to compete on epistemological grounds, namely tackling orthodoxy on its own terms, to examine instead each of the methods by which orthodoxy maintains its position." (Martin, p.716) We have been doing some or a lot of this, for decades, state by state, research article by research article, and agency by agency (eg, regional accreditation for our standalone schools, loan forgiveness, media and public forum presence, corporate funding for research).

Alas, some scholars remind us that by cooperating with the dominant orthodox medical establishment in order to gain their recognition and their neutrality is, in the end, just a widespread myth. (Collins & Pinch, 1998; Feyerabend, 1975; Mitroff, 1974).

Our best strategy is likely to seek, build, and call to the attention of beleaguered consumers of health our very real clinical and healing successes. Results touch lives by referral, reputation, and reach. Our training must include not only the best didactic and clinical education possible, but also consciously avoid those top 7 challenges along the path of professional formation that Pellegrino points out as diluters of professional integrity and effectiveness in the world.

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