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NATUROPATHIC DOCTOR NEWS & REVIEW
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Tolle Causam

Adverse Childhood Experiences

A Hidden Cause of Depression & Chronic Disease

JANELLE LOUIS, ND

Because the very core of our foundational principles teaches us to identify and address the underlying causes of our patients' health concerns, as naturopathic doctors we have the unique ability to help many people effectively address their depressed moods without or with minimal use of psychotropic medication, even in cases where conventional therapies have failed. Yet if we treat mental health concerns for any extended period of time, we are destined to come across at least 1 patient with whom we have not achieved the results seen with

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Tolle Causam

A Perfect Storm

Case Study of a 20-Year-Old with a Psychotic Episode

JOYCE KNIEFF, ND, EAMP, RH(AGH)
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As healthcare professionals, one of the most prized skills, developed as a result of our profound education and practice, is that of differential diagnosis. While some cases are straightforward, more often than not a patient may present with a complex presentation that warrants a thorough investigation. This is especially the case when dealing with mental/emotional symptoms. The myriad diagnostic criteria and symptom presentations of psychiatric illnesses aside, mental/emotional symptoms are often the canary in the coal mine for issues going on in other bodily systems. Mental/emotional symptoms, as well as cognitive symptoms, are as commonly a result of serious endocrine problems as they are of standalone psychiatric illness, making it especially important that a presenting patient be evaluated with care for several different systems.

The Patient

Take, for instance, one particular 20-year-old male who had just finished his freshman year at college. We'll call him Adam. He came into the office with his mother as a result of a psychotic episode that started 5 weeks prior. Adam's symptoms included grandiose ideas, hallucinations, increased energy and confidence, poor appetite, and decreased need for sleep (he would only be able to get 2-4 hours per night). He became quite loquacious with urgent and pressured speech, and he frequently suffered from mood swings – of which irritability and anger were major players.

Adam ended up spending 9 days in a local hospital and then 2 weeks at a local psychiatric hospital. He had since returned to live with his parents and had chosen to go off most of his medications. His symptoms diminished from their original intensity, but he still very much suffered from persistent insomnia, grandiose ideas, loquacity, racing thoughts, and extreme irritability. His mother wanted another professional opinion on his diagnosis, as well as on other possible routes of treatment, especially since Adam refused to see a psychiatrist due to his negative experiences at the psychiatric hospital.

After further intake, it became clear that Adam's symptoms had been building gradually over the previous 3 months and had intensified during the 5 weeks prior to the point at which medical attention was urgently needed. This episode started in the college fraternity house, which he shared with 5 other men. He described this living situation as "chaotic," on top of the stressors he was already experiencing in school. Starting

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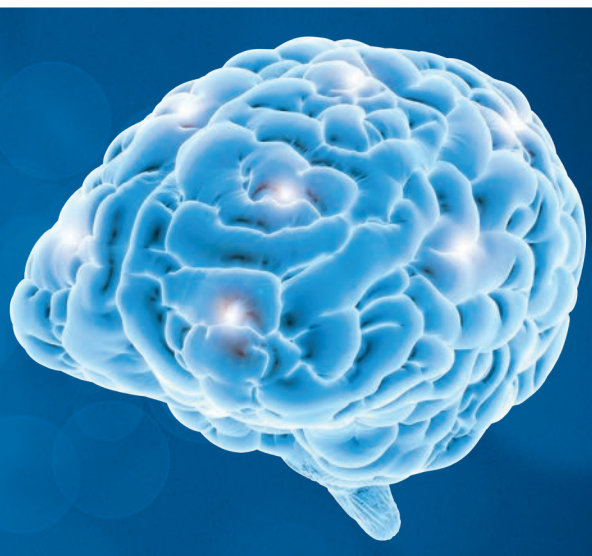

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previous patients, despite addressing all of the usual culprits, based on objective testing and presenting symptoms.

These cases should force us to go back to the basics – back to our Therapeutic Order. And, if we're true to the foundational principles of our profession, we'll likely end up right back at square one: looking for additional obstacles to our patients' healing. In my quest to answer this question – *what is preventing my patient from getting well?* – I've come to the realization that the impact of adverse childhood experiences (ACEs) on health is either too little known or too widely ignored, as even after years and years of research, this important health risk is frequently overlooked. Because of their effect on the hypothalamic-pituitary-adrenal (HPA) axis, ACEs in fact serve as significant causative and/or contributory factors in the pathogenesis of many psychiatric concerns including depression. Moreover, because ACEs can affect virtually every bodily system, it is our duty to educate ourselves about this important concept, assess our patients for these risk factors, and address any dysregulation that is present.

The Basics of ACEs

The most common definitions of ACEs typically include any psychosocial stressor that leads to chronic activation of the stress response during early life, which technically stretches from the prenatal period to 17 years of age. The most researched ACEs include parental divorce or separation; witnessing violent treatment of the mother or other caregiver; household member incarceration or addiction; household member depression or other mental illness; physical, emotional, or sexual abuse; and physical or emotional neglect. Nevertheless, ongoing research and my own clinical experience demonstrate that any factor that leads to excessive activation of the stress response during childhood, such as experiencing the loss of a parent or sibling, growing up in foster care, being chronically bullied, or experiencing chronic childhood illness, can have similar effects on the HPA axis and on chronic disease risk.[1-4]

When a person experiences chronic stress during childhood, the stress response is activated. As a review, normal activation of the stress response involves the hypothalamus secreting corticotropin-releasing hormone (CRH). In response, the pituitary gland releases adrenocorticotropic hormone (ACTH), and ACTH binds to receptors on the adrenal cortex, stimulating the release of cortisol and other glucocorticoids. This is a very simplified rendition of the normal process of HPA axis activation.

HPA Hyperactivation or Hypoactivation?

In many individuals who have experienced ACEs, however, the HPA axis does not function as it should. Excessive activation of the stress response during crucial developmental periods results in a sort of rewiring of the brain.[3] HPA axis dysregulation ensues, which can take the form of either hyperreactivity or hyporeactivity. Changes in glucocorticoid signaling and in glucocorticoid receptor expression result in alterations to the normal functioning of the stress response.[5]

Although we have observed ACE-induced HPA axis dysregulation as either hyperactivation or hypoactivation of the stress response, HPA axis hyperactivity – which we observe objectively as elevated salivary or plasma cortisol levels and clinically as stress maladaptation and increased proclivity toward psychiatric concerns such as anxiety and depression – tends to be the most common finding.

Individuals who develop HPA axis hyporeactivity, as evidenced by reduced morning cortisol and flattened diurnal slope,[6,7] tend to be those who have experienced significant trauma and carry diagnoses of posttraumatic stress disorder (PTSD). These individuals tend to also have elevated CRH levels. Research suggests that elevated CRH and low diurnal cortisol levels (HPA axis hyporeactivity) – as seen in many PTSD patients – may be due to an adaptive downregulation of pituitary CRH receptors

Ongoing research and my own clinical experience demonstrate that any factor leading to excessive activation of the stress response during childhood can have similar effects on the HPA axis and on chronic disease risk.

as a result of CRH hypersecretion.[3] In other words, as a compensatory response to the high CRH levels, the body attempts to modulate the stress response by decreasing CRH receptors at the pituitary, which results in less ACTH secretion and lower cortisol levels.

In contrast to patients with PTSD, depressed individuals who have experienced ACEs tend to have elevated cortisol awakening responses (CAR). This elevated CAR appears to persist even with a remittance of major depressive disorder,[8] suggesting that the elevated CAR is likely a biological predisposition towards or vulnerability for depression that probably results from ACE-induced HPA axis dysregulation rather than from the depression itself. In other words, ACEs lead to HPA axis dysregulation, which serves as a significant physiological risk factor for depression and other mental health concerns.

HPA Axis Dysregulation & Immune Dysfunction

Hyperactivity of the stress response in early childhood has significant effects on the immune system as well. When we are exposed to an acute stressor, HPA axis activation leads to an upregulation of the innate immune system[9] and an increase in inflammation.[10] Under normal circumstances, the stressor resolves and cortisol binds to glucocorticoid receptors on immune cells in order to downregulate the initial inflammatory response. Higher levels of circulating cortisol and rapid increases in the rate at which cortisol levels rise in the body both trigger negative feedback loops that result in cortisol stimulating glucocorticoid receptors at the levels of the hypothalamus and the pituitary gland. This negative feedback promotes decreases in circulating CRH and ACTH, which in turn results in a decrease in circulating cortisol. Thus, cortisol plays a crucial role in downregulating the immune response and the termination of the stress response.

In many individuals who have experienced adversity during childhood, something slightly different occurs. When the stressor persists for days, months, or years, more and more cortisol is secreted, leading to alternative immune system responses. This can include a downregulation of aspects of both the innate and adaptive immune systems,[9] as well as a disinhibition of the inflammatory reflex, mediated by the vagus nerve.[11] This disinhibition of the inflammatory reflex has been shown to result in higher baseline inflammation levels in individuals who have experienced ACEs, for up to 20 years after initial exposure to the stressor.[10] Even when researchers controlled for stress levels in adulthood, these elevated inflammatory markers in ACE survivors persisted compared to controls, suggesting that adversity during childhood results in HPA axis changes that foster longstanding alterations in immune system function, regardless of how much stress individuals endure in adulthood.

It's important to note that depression is considered by some researchers to be an inflammatory disorder based on the fact that anti-inflammatory pharmaceutical and nutraceutical therapies have resulted in varying degrees of symptom improvement,[12] while others reject this idea, citing conflicting results. The inconsistency between research findings may actually be due to variations in study participants' experiences of childhood trauma. For example, a small study looked at a group of patients diagnosed with major depressive disorder and separated them into 2 groups – those who had experienced at least 1 ACE and those who did not experience trauma during childhood.[13] Researchers found elevated inflammatory markers in the group that had experienced ACEs relative to the group that had not, suggesting that the apparent inconsistencies in previous studies may be due to there being a subset of depression that is characterized by increased inflammation and is most prevalent in individuals who were affected by adversity during childhood.

Addressing Depression in ACE Survivors

Assessing and addressing depression in patients who have experienced ACEs should involve searching for physiological concerns that may be causing or contributing to depressed mood, including suboptimal thyroid function, reproductive hormone dysregulation, vitamin or other nutrient deficiency, poor lifestyle choices such as dietary imbalances and a lack of exercise, occult infection and/or gastrointestinal dysbiosis, genetic predispositions, poor glycemic control, and all of the other factors that frequently contribute to or masquerade as mood disorders.

We should also assess for adversity during childhood and address HPA axis dysregulation when present. Methods that I use in my practice for addressing HPA axis dysregulation in ACE survivors include the following:

- **Adequate sleep.** Because the circadian rhythm is responsible for the diurnal secretion of cortisol,[14] factors that negatively impact circadian rhythm, such as disrupted or otherwise inadequate sleep, also affect the HPA axis. I recommend that my patients with depression and a history of ACEs aim for 7-9 hours of sleep per night and, as much as is possible, to avoid napping during the day. For my patients with comorbid insomnia, I make botanical recommendations as appropriate, including hypnotics like *Passiflora incarnata* (passion flower) and *Valeriana officinalis* (valerian), and anxiolytic herbs like *Eschscholzia californica* (California poppy), to help them achieve their sleep goals.
- **Dietary recommendations.** I've found an elimination & challenge diet to be extremely helpful in addressing HPA axis dysfunction with my patients who have experienced ACEs. My patients

Exercise improves mood and stress resilience and decreases inflammatory biomarkers like CRP.

have reported both improved mood and a decrease in symptoms associated with their various other chronic conditions, including improved energy, metabolic improvements, and improvements in joint pain and swelling in those with autoimmune conditions. As a part of my protocol, I have my patients follow an anti-inflammatory, nutrient-dense, well-balanced, and completely plant-based diet for 4 weeks before reintroducing foods in a calculated manner in order to identify any problematic foods.

- **Physical activity.** Physical exercise is extremely important among ACE survivors with depression, as it has been shown to improve mood and stress resilience[15] and decrease inflammatory biomarkers like C-reactive protein (CRP).[16]
- **Anti-inflammatory therapy.** I also utilize anti-inflammatory herbal therapies with my patients whose objective test results indicate elevations in acute-phase reactants such as CRP. I have achieved favorable results using herbs like *Salix alba* (white willow), *Boswellia* spp (frankincense), *Curcuma longa* (turmeric), and *Pelargonium sidoides* (umckaloabo).
- **Adaptogenic herbal therapy.** The research strongly supports the efficacy of adaptogenic herbs in modulating cortisol levels and improving psychiatric concerns such as depression.[17-20] I use adaptogenic herbs to help modulate my patients' HPA axes, and have seen phenomenal results using *Withania somnifera* (ashwagandha), *Rhodiola rosea* (rhodiola), *Bacopa monnieri* (brahmi), *Glycyrrhiza glabra* (licorice), and *Cordyceps sinensis* (cordyceps), depending on my patients' comorbid conditions.
- **Probiotic supplementation.** Supplementation with targeted strains of probiotic bacteria, such as *Lactobacillus rhamnosus*, *Lactobacillus helveticus*, *Lactobacillus casei*, *Bifidobacterium bifidum*, and *Bifidobacterium longum*, has also been shown to have favorable effects on the HPA axis, decrease inflammation levels, and improve mood,[21-24] all of which are highly relevant in cases of depression that are complicated by a traumatic past. I typically start my patients on a dose ranging from 30 to 100 billion CFU, depending on the degree of dysbiosis present and the degree of HPA axis dysregulation in a given patient.
- **Therapy referrals and therapy-based activities.** Finally, because depression is extremely difficult to address when caused by deep-rooted, unresolved trauma, I refer my patients for cognitive behavioral therapy (CBT) and/or acceptance and commitment therapy (ACT), or I give them therapy-based activities to do by themselves at home, to help them process their past experiences in a healthy manner.

Looking Beyond Depression

In conclusion, not only do ACEs increase our patients' risk for depression and other psychiatric concerns; they also significantly increase their risks for chronic diseases and their complications, including autoimmune disease,[10] reproductive concerns,[25-26] type 2 diabetes,[27] cardiovascular disease,[28] pulmonary concerns,[29] and many other conditions.[30-32] Unprocessed trauma and grief frequently serve as a barrier to healing and should be addressed; however, even after the trauma is attended to, ACE-induced HPA axis dysregulation can persist and so should also be add ressed. As naturopathic doctors, it is our duty to familiarize ourselves with the effects of ACEs so that we can best serve the patients who entrust us with their care.

References 15-32 available online at ndnr.com

Janelle Louis, ND, is a licensed naturopathic doctor and the author of the best-selling book, *Optimize Your Body, Heal Your Mind*. Dr Louis specializes in helping women who have experienced adversity during childhood overcome their risks for psychiatric and autoimmune conditions so they can break the cycle and live their healthiest and best lives. She does so through online health programs at the Mental Health Advocate Spot™ [https://www.mhaspot.com] and through her private practice, Focus Integrative Healthcare™ [https://www.focusih.com], in Overland Park, KS. You can find her on Facebook [https://www.facebook.com/drjanellelouis/] and on YouTube [https://www.youtube.com/channel/UC0mral062MqQ4b4oybGnV2A].

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3 months before his office visit, Adam also developed a habit of very heavy and continuous cannabis use as well as moderate alcohol use (both of which he claimed to have stopped using 5 weeks earlier). His mother felt that the cannabis aggravated his symptoms; however, Adam disagreed with this sentiment, stating that the cannabis helped him cope with the stress he was experiencing.

Symptoms & Evaluation

At this point in time, it is fair to consider a number of psychiatric diagnoses based on the features of Adam's psychotic episode. In addition to schizophrenia, schizoaffective disorder, and delusional disorder, bipolar I and II, as well as marijuana-induced psychosis, can be added to the differential. However, as stated previously, it is entirely possible that Adam's symptoms could be due to a sinister organic cause.

A review of systems found that, in addition to his current symptoms, Adam also had a lingering cough with brown sputum production following a fever and sore throat that began 5 weeks prior. He had trouble taking a deep breath, especially while lying down. He had experienced frequent sore throats within the past year, and currently suffered from both increased daytime sweating and night sweats, extreme thirst and frequent urination, as well as hypertension, tachycardia, cold hands and feet, dizziness, and chest pain when he smoked. His appetite was poor, and he had a host of gastrointestinal symptoms, including nausea, alternating constipation and diarrhea, abdominal pain, gas, indigestion, bad breath, and belching. His medication history, at various points, included a course of amoxicillin at the hospital, lorazepam, olanzapine, haloperidol, quetiapine, and lithium. He recently also began taking levothyroxine and liothyronine, as a result of labs done in the psychiatric hospital.

A number of these symptoms are concerning and possibly indicative of dysfunction in other systems of the body. Given that Adam developed an upper respiratory tract infection around the time his psychotic episode began, a cerebral spinal infection should be ruled out. Causes of immune system dysfunction that might explain the frequent infections and night sweating must also be considered. For example, delirium manifesting as "fluctuating cognitive, perceptual and behavioral disturbances, altered level of consciousness, inattention, sleep-wake cycle disturbance, and delusions" are common in HIV-positive children and young adults,[1] especially those exposed to polypharmacy, substance abuse/withdrawal, underlying CNS disease, and thyroid disease. Although cancer is not commonly known to cause serious psychiatric symptoms, some types of hormone or neurotransmitter-producing carcinoid cancers unquestionably have the potential to induce psychosis,[2] as well as cause symptoms such as tachycardia, hypertension, dizziness, and others.

The extreme thirst and frequent urination, as well as some of the gastrointestinal symptoms, might indicate serious endocrine dysfunction. For instance, in diabetes, while delirium and psychosis have often been reported in relation to hypoglycemic states, there have been cases where hyperglycemia correlated with psychotic episodes.[3] Furthermore, given Adam's medication history of lithium use, it is not unreasonable to consider nephrogenic diabetes insipidus as a secondary development. Although there is less evidence that nephrogenic diabetes insipidus can cause psychiatric symptoms, it is not unheard of that central diabetes insipidus can present with confusion, psychosis, seizure, and coma.[4]

Presently, the selection of a working diagnosis becomes extremely difficult without lab work, because while many of these symptoms can manifest due to organic causes, they are also common with extreme psychological agitation. The co-occurrence and chronological development of psychiatric symptoms and organic disease also become difficult to tease apart in a case like Adam's. While it is entirely possible that an organic disease preceded Adam's episode, there have also been cases where a new diagnosis of type 2 diabetes followed within days to weeks of a psychotic episode.[5,6]

Physical Exam & Lab Testing

Adam had a whole host of laboratory testing during his hospital stays, which included positives such as elevated white blood cells (specifically neutrophils, lymphocytes, and monocytes), positive urine cannabinoids, elevated AST, elevated serum ammonia, mild elevation of TSH (with normal T3 and T4), and elevated serum dopamine and norepinephrine. Pertinent negatives included a normal comprehensive metabolic panel, cerebral spinal fluid negative for WBCs, cryptococcal antigen, HSV-1 and -2, coccidioides antibodies, and Epstein-Barr virus. An echocardiogram, which was performed due to his cardiac symptoms, also produced normal results.

Physical exam in the office was mostly noncontributory, but yielded positives of elevated blood pressure at 138/80 mm Hg, elevated heart rate at 126 bpm, and increased bowel sounds and tympany in all 4 abdominal quadrants. The mental status exam was significant, with Adam demonstrating inappropriate judgment, insight, and thought content (eg, grandiose ideas regarding business ventures, belief that the hospital caused his psychotic episode, and poor awareness around his current illness). His participation in the interview was poor, his demeanor was apathetic, but he spoke with an increased pace and volume, and his eye contact was mostly directed at the floor.

Given the objective data, many of the organic diseases that were considered

dropped lower down on the list of probable diagnoses. While Adam's elevated serum dopamine and norepinephrine initially raised concerns about an adrenal tumor, it turned out that his levels were elevated less than twice the upper limit of the reference range – levels that are more indicative of physiological stimuli, drugs, or improper specimen collection than of adrenal tumor. Adam's elevated serum ammonia and AST may also be cause for worry about possible hepatic encephalopathy[7]; however, given that his AST was only mildly elevated and that he had no past history of liver disease, the likelihood of that diagnosis was decreased.

The Search for a Diagnosis

Which leaves us at the point of teasing apart the most likely psychiatric diagnoses. Psychiatric differential diagnoses are often complicated and require a mixture of experience and the matching-up of the patient's symptoms to criteria listed in the DSM. It is recommended that you have an ally that has a specialty in the psychiatric field, such as a psychiatrist or a psychiatric nurse practitioner, not only regarding the case presentation and diagnosis itself, but also for any potential pharmaceutical management that may be outside the scope of naturopathic medicine.

A diagnosis of schizophrenia or other schizophreniform disorder was withheld from Adam's case, because the criteria for this diagnosis required at least 6 months of delusions, hallucinations, and other symptoms. In the case of schizophreniform disorder, the criteria also includes a decline of cognitive functioning.[8] While Adam no doubt experienced delusions and hallucinations, his cognitive functioning was intact. Ultimately, the most likely working diagnoses for this case were bipolar I disorder or cannabis-induced psychotic disorder. Let us examine these 2 diagnoses a bit more closely.

The hallmark of cannabis-induced psychotic disorder is prominent hallucinations or delusions. Either the symptoms develop within a month of or during substance intoxication or withdrawal, or the substance use is etiologically related to the disturbance. Cannabis-induced psychotic disorder is less likely if symptoms preceded the onset of substance abuse, symptoms persist for over a month past cessation, or symptoms are substantially in excess of what would be expected for that substance.[8] In Adam's case, while he does have prominent delusions, these delusions had continued in excess of what would be expected of cannabis, even 5 weeks after he reported cessation of the substance. Of course, there is also the question of whether or not he had actually stopped using cannabis, seeing as how his mother's presence in the office with him might have made him less likely to admit to actual continuous use of the substance. As such, this may be a diagnosis to keep in mind, even if it is unlikely to be the current working diagnosis.

The diagnosis of bipolar I or II requires at least 1 manic or mixed manic/depressive episode in which the symptoms cause social/occupational distress or impairment, and symptoms are not better accounted for by schizoaffective disorder and are not superimposed upon schizophrenia, schizophreniform disorder, delusional disorder, or psychotic disorder.[8] The main difference between a diagnosis of bipolar I and bipolar II is whether or not there is, respectively, a manic episode or hypomanic episode. The difference between a manic episode and a hypomanic episode is mainly length. A manic episode is defined by at least 1 week of a persistently elevated, expansive, or irritable mood, along with at least 3 manifestations of the following: inflated self-esteem or grandiosity, decreased need for sleep, increased talkativeness, flight of ideas or racing thoughts, distractibility, increased goal-directed activity or psychomotor agitation, or increase in risky behaviors. Although a hypomanic episode can manifest as these same symptoms, it only lasts for 4 days.[8] In Adam's case, there was no doubt that the episode he experienced could be classified as a manic episode.

Conclusion

Ultimately, Adam's most likely diagnosis was bipolar I. As noted throughout this case study, the many facets involved in Adam's case complicates diagnosis. However, bipolar, itself, is also a diagnosis that can be predisposed by, or co-occur with many other symptoms. According to the Diathesis-Stress hypothesis,[9] predispositions for illness (diatheses) can be triggered by external stressors. Potential predispositions in bipolar disorder can include genetic predispositions, decreased detoxification capacity/increased oxidative stress, dysregulated HPA axis, or other endocrine disorders or autoimmune disorders. Triggering stressors can include infection, allergies, drugs, environmental toxins, lifestyle stress, gastrointestinal disorders that cause nutrient malabsorption, bacterial dysbiosis, and/or poor diet.

For Adam, his stressful school life, chaotic living situation, substance abuse, recurrent infections, and potential thyroid dysfunction may all be factors that ultimately triggered his episode. The silver lining, however, is that all of these aspects can be targeted as areas to correct, to improve mental and physical health as well as prevent future manic episodes.

References available online at ndnr.com

Joyce Knieff, ND, EAMP, RH(AGH), is a naturopathic doctor, East Asian Medicine practitioner, and registered herbalist with the American Herbalist Guild. Dr Knieff specializes in the management of autoimmune conditions, chronic pain, and mental health conditions in her practice. She is a graduate of Bastyr University and heavily utilizes herbalism, acupuncture, biofeedback, and nature-cure as modalities of treatment. She believes in careful diagnosis and treating the cause of conditions, but also believes that palliation to relieve suffering in the moment is equally important. She is currently based in Seattle, WA, and can be reached at drknieff@intunehealingarts.com.

Jennifer Kaltunas, ND, EAMP, specializes in finding alternative solutions for mental health conditions among adults, adolescents, and children, including anxiety, depression, bipolar disorder, and schizophrenia. Dr Kaltunas is a graduate of Bastyr and has received additional training from the Integrative Medicine for Mental Health organization. She runs a busy naturopathic and acupuncture practice, In Tune Healing Arts, in North Seattle. Her goal is to provide people with mental health disorders a more comprehensive and collaborative approach that incorporates the principles of positive psychology, orthomolecular psychiatry, and mind/body medicine.

Message from the President

Southwest College of Naturopathic Medicine

PAUL MITTMAN, ND, EDD

Last fall SCNM adopted 5 new core values: We Achieve Excellence; We Love; We Are Resilient; We Do the Right Thing; and, We Shape the Future. I will frame this college update with the value, "We Shape the Future."

Part of my job as President & CEO is to find opportunities that position SCNM to address pressing health issues, either through existing naturopathic therapies or by adopting emerging treatments. The following 2 initiatives illustrate how SCNM is shaping health and healthcare's future, and that of our students and graduates.

Neil Riordan Center for Regenerative Medicine

In 2013 the opioid epidemic barely registered in the public discourse; however, it was clear to us that 1) conventional treatment of chronic pain relies too heavily on opioids, and, 2) naturopathic physicians possess a toolbox of safe and effective treatments to help patients suffering from chronic pain. Some of these modalities, such as osseous and soft-tissue manipulation, date back to the inception of the naturopathic profession. Others, particularly regenerative injection therapies, emerged relatively recently. When we designed the Community Commons, a 48 000-square-foot LEED Platinum facility, we allocated a large clinical space to offer patients an interdisciplinary, non-opioid approach to treating chronic pain.

Last November that clinic became the Neil Riordan Center for Regenerative Medicine. Dr Riordan's research is known worldwide, with over 70 peer-reviewed publications in the field of Mesenchymal Stem Cell research. Thanks to Dr Riordan's generosity and support, SCNM will become a leader in Stem Cell Therapy, a 21st century expression of the *vis medicatrix naturae* – the healing power of nature.

The Neil Riordan Center is staffed by naturopathic physicians who practice pain management, an acupuncturist, an anesthesiologist pain interventionalist, an orthopedic surgeon with a PhD in Sports Medicine, residents, a PhD-registered dietician, and a naturopathic physician with a focus on homeopathy and mindfulness. This beautiful center is fully equipped with a fluoroscopy suite (as well as diagnostic ultrasound) to guide injections. The team spent a year working in a chronic pain collaborative hosted by the Samueli Institute to develop an integrative, patient-centered model grounded in naturopathic principles and the Therapeutic Order.

On February 21-22, 2020, the Neil Riordan Center for Regenerative Medicine will host its first Annual International Stem Cell Conference. In addition to Dr Riordan, speakers will include Arnold Caplan, PhD, the scientist who coined the term "mesenchymal stem cell." Our goal is to advance naturopathic medicine to the forefront of patient care and research in this exciting field. SCNM created an Honors Track in Regenerative Medicine to provide medical students the opportunity to develop these advanced skills.

Research

Ric Scalzo, founder and former CEO of Gaia Herbs, made a transformational philanthropic gift that will create a botanical research institute at SCNM. Our longstanding relationship with Ric includes ongoing research collaboration that started with an NIH grant in 2001, a summer elective at Gaia's farm in North Carolina for 3rd-year SCNM students, and a love of and fascination for the coevolution of plants, people, microbes, and the environment.

SCNM's research activities over the past decade have explored the healing potential of plants, particularly those with antimicrobial and immune-modulating properties. SCNM faculty and students have regularly presented at annual AANP Conventions and, more recently, at the International Conference on the Science of Botanicals, the premiere international gathering of plant scientists.

The botanical research institute will advance 21st century botanical medicine through scientific exploration grounded in clinical herbalism's rich tradition. The institute will perform analytical testing, cellular and molecular biology assays, and metabolomic testing, complemented by pilot clinical trials. This work, in collaboration with other academic institutions and leading companies in the natural products industry, will develop new products and improve existing formulations, isolate and identify novel plant compounds for development as pharmaceuticals, and develop FDA-approved Botanical Drug Products.

The architectural design phase is underway, and we expect renovations to begin in July 2019. The institute will open in early 2020. I look forward to sharing an update on these exciting innovations as SCNM Shapes the Future (with Love).

Anxiety

Homeopathy, Herbs, & Hydrotherapy

DEBORAH FRANCES, RN, ND
CHRIS CHLEBOWSKI, DC, ND

The following cases illustrate the amazing power of *Vis Medicatrix Naturae* operating through the medicine of nature and the innate vitality of each patient; however, they do not necessarily, in this short discussion, address underlying causes contributing to the epidemic increase of mental health problems in all ages. Those causes are multi-faceted, but the unprecedented sea of toxins in our present-day environment is definitely playing a significant role. It behooves us as naturopathic doctors to address issues of toxicity, not only in our patient care, but also in our personal lives and – as much as we are able – in the greater community as well. Our philosophy, *Tolle Totum*, *Tolle Causam*, and *Docere*, demand nothing less.

A Case of Intrusive Thoughts

Dr Chlebowski

A mild-mannered 42-year-old white male complained of chronic insomnia with dark, disturbing thoughts that arose uninvited as he tried to fall asleep at night. These thoughts included seeing his children dead in a river or seeing himself doing terrible things to them, though he loved them dearly. The patient was abused as a child and could remember having to choke himself to fall asleep. He was one of the most lovely people I have ever met in practice, and did not seem to have the temperament to hurt a flea.

He suffered from ongoing anxiety that he described as debilitating. He was taking buspirone and quetiapine, but these medications were not effective for either the insomnia or the anxiety.

He was given a flower essence of White Chestnut, which is specific for intrusive, unwelcome thoughts that seem impossible to control. A few drops taken 3 to 4 times daily for a few weeks completely resolved the intrusive thoughts, and they had not returned. The patient was overjoyed at the removal of this disturbing symptom, and he was subsequently able to discontinue both of his medications.

Some months later, the patient returned to clinic with fears for his health and safety. Thoughts centered around doomsday concerns about the illuminati implementing plans for the destruction of mankind. Using the Cycles and Segments methodology developed by Paul Herscu and Amy Rothenberg, his case was repertorized and he was given a dose of Arsenicum album 200C. One dose completely resolved the problem. He remains a patient to this day and has not seen a return of either symptom.

A Case of Impulsivity

Dr Chlebowski

An 18-year-old white female with Asperger's syndrome reported difficulty with intrusive thoughts since the age of 4. Entering her mind uninvited were thoughts of stabbing people; racist thoughts; violent, sexual thoughts; sexual

Table 1. **Herbal Formula for Anxiety**

Herb	Amount (drams)
Passiflora incarnata	1
Valeriana officinalis	1
Pedicularis spp	1
Scutellaria lateriflora	1
Avena sativa	1
Piper methysticum	1
Eschscholzia californica	1
Crataegus spp	0.5
Cimicifuga (Actaea) racemosa	0.5
Oplopanax horridus	30 gtt
Kali phosphoricum 6X	1 pellet
Rescue Remedy Flower Essence	2 gtt
Several tsp of the formula can be placed into a mason jar and covered with boiling water to evaporate the alcohol and create a tea, which should then be sipped all day. Some patients, already overwhelmed by nervous anxiety, will find this too much and should do the tincture.	

(8 drams per 1 oz)

thoughts involving her and her family; and pictures of mutilated bodies.

From early on she would have the impulse to do violent or disruptive actions, such as jump from a second-story window or commit suicide whenever she was angry or overwhelmed. She sought out her mother to hold her down at these times, even though she claimed to hate her mother.

She also struggled with a fear of knives and an understandable fear of losing control of her impulses. She also loved sweets.

The patient was given Argentum nitricum 200C in 2 doses a few months apart, after which the intrusive impulses left and she became confident enough to move out on her own. She was also able to decrease and eventually discontinue sertraline. The Argentum nitricum was prescribed based on the totality of symptoms, and was arrived at by using the Cycles and Segments methodology.

Impulsivity and lack of control are key symptoms of Argentum nitricum. These patients are also highly anxious, sympathetic, and impressionable. The remedy has a strong affinity for the central nervous system (CNS) and has been used in neurological conditions including vertigo, sciatica, multiple sclerosis, ataxia and epilepsy.[1] The typical Argentum nitricum patient is usually very fast-paced, silly, and quite funny, as well as very warm-blooded.

A Case of Impending Mania

Dr Frances

A 34-year-old woman reported to clinic with a medical history of hospitalization at age 20 for an acute manic episode. She was on no meds and had been symptom-free without medication since this one isolated episode.

Now, with the acute stress of ending a relationship had that become abusive, she felt her nervous system revving and was fearful of going into another manic episode. She was intensely restless and anxious, and all of her symptoms were worse at night, at which time she felt as if she had suddenly acquired super-powers and could take on the world. She was coherent enough to realize these ideas were symptoms of an impending mania, and was frightened at the prospect of ending up back in the hospital.

Though she did manage to get 1 or 2 hours of sleep, she felt like she was flying out of her body most of the night. Rage at her boyfriend was amplified at night, and she would argue with him vehemently in her head. She described feeling frighteningly isolated, even though she had friends nearby. This sense of intense isolation led to a longing to be with her family several hundred miles away.

This patient was health-minded, with good lifestyle and nutritional habits. She had recently stopped all stimulants, consisting of small amounts of occasional sugar and a cup of coffee 2 to 3 times per week.

I began by prescribing a formula of nervine herbs (see Table 1) with instructions to take 1 tsp every hour. The degree of agitation in her sensitive, overwrought nervous system and the impending psychosis demanded high, frequent dosing of the appropriate herbs. By combining several herbs in each formula, I am able to dose these patients aggressively without fear of toxicity from any 1 herb. A 6X potency of the cell salt Kali phosphoricum, specific for the nervous system, and the Bach flower essence formula Rescue Remedy, were added into the tincture bottle to enhance the action of the herbs.

While the rationale for prescribing calming nervines will be obvious to the naturopathic practitioner, some brief notes on a few of the herbs is warranted:

- *Crataegus* spp, was chosen for its ability to calm the Heart Shen, which then helps to calm the CNS. *Crataegus* is also helpful for negotiating grief.
- Frequent, small doses of *Oplopanax horridus* help alleviate anxiety by strengthening psychic boundaries and imparting a sense of empowerment to the patient
- *Cimicifuga* (*Actaea*) *racemosa* is indicated whenever emotional symptoms arise

from physical or emotional abuse. There can be a wild feeling in the brain with agitation and mania, or conversely, deep, dark depression. Small, frequent doses work well to avoid the dull frontal headache that can occur with larger doses.

The patient returned to the office a few days later, to allow me to get the symptoms of her original episode, in the hopes that these details would create a clearer picture for prescribing a remedy. I had remained in daily phone contact in the meantime, to be sure her symptoms were not progressing; fortunately, they were not. The herbs were buying me the time I needed to research the case.

"I'm still too hyper" with the herbs, she reported in the office on follow-up. "But, I'm sleeping 3 to 4 hours per night, instead of only 1 or 2, and I feel less agitated overall."

Amy Kelcher, then a student at NCNM (now NUNM), happened to be preceptoring with me that day. As the patient reiterated her symptoms, Amy was struck by the degree of isolation and loneliness the patient felt. She suggested homeopathic Camphora, which she had just seen prescribed in the student clinic for another patient expressing a similar intensity of isolation.

Vermeulen describes the isolation of Camphora as a sense of "being left out in the cold," so isolated it is "as if the external world no longer exists."[2] There is a feeling of omnipotence and at night a sense of being "drawn into the air in spite of himself."[3] Morrison says Camphora patients can be quarrelsome with rage and "a mania to dispute," and there is sleeplessness from intense anxiety.[4] Camphora has an affinity for the CNS and is a remedy to consider for manic states or vacillation between mania and depression.[2]

One dose of Camphora 200C completely cleared the impending mania, bringing her emotional symptoms of rage and isolation into a more manageable state, consistent with her process. The herbal formula was continued every 4 hours at doses of ½ to 1 teaspoon every 4 to 6 hours.

A Case of Anxiety and Toxins

Dr Frances

An otherwise healthy 26-year-old college student living on an organic farm developed sudden unexplainable panic and anxiety. One dose of Arsenicum album 200C quickly brought relief. A week later she discovered the land across the road had been heavily sprayed in preparation for planting grapes. The time of spraying correlated precisely with the timing of the onset of her symptoms.

How many of our patients complaining of mental/emotional symptoms are actually feeling the effects of an environment overrun with toxins? While the etiology in this last case was obvious, it is not always so easy to make the connection.

When addressing etiologic issues of toxicity, bitter liver-stimulating herbs, such as *Chelidonium majus*, *Chionanthus virginicus*, and even *Taraxacum officinalis*, should be avoided or used with caution in cases where the nervous system is overwrought, as these herbs may exacerbate symptoms of anxiety, insomnia, and agitation.

Hepatoprotective nervines and adaptogens, such as *Hypericum perforatum*, *Schisandra chinensis*, *Uncaria tomentosa*, *Ocinum sanctum*, and *Glycyrrhiza glabra*, may be the best place to start. *Cynara scolymus*, *Curcuma longa*, and *Silybum marianum* seem to act more gently in supporting the liver. *Taraxacum officinalis* is also often well tolerated as a tea.

A Case Utilizing Hydrotherapy

Dr Frances

A female patient in an outpatient psychiatric ward was being held in restraints due to the severity of her agitation and rage. Because she was pregnant, she could not be sedated with the usual array of pharmaceuticals. When the patient finally vomited all over herself in her agitation and fight to be free, the nurse who had been demanding her release all along put her foot down.

"That's it," she exclaimed. "Get her out of those restraints and turn her over to me. I'll take full responsibility."

Once in the bathtub, the patient chose to make the water temperature totally neutral, and her state of agitation cleared quickly. Neither the nurse nor the patient had ever heard of what naturopathic physicians know as the "neutral bath," used for its ability to calm the nervous system.

Conclusion

Naturopathic medicine has so much to offer the many patients struggling with mental/emotional symptoms. How often we wish we had a naturopathic sanitarium, set in the healing environment of nature to help those patients needing inpatient care for their mental health conditions. Perhaps someday…

Deborah Frances, RN, ND, practiced homeopathy and nutrition as a registered nurse before graduating from NCNM (now NUNM) in 1993. She practiced in rural Oregon for several years before returning to Portland to teach at NCNM. Dr Frances has been a popular lecturer at conferences around the country and has taught as adjunct faculty at both NCNM and Bastyr. She has taught classes on herbal medicine, acute prescribing for NDs, dream work, and shamanic healing. She is strongly influenced by the traditional teachings of her Lakota ancestry. Dr Frances is the author of *Practical Wisdom in Natural Healing*, available at drdeborahfrances.wordpress.com.

Chris Chlebowski, DC, ND, is a homeopath, chiropractor, and naturopathic physician. Dr Chlebowski graduated from Western States Chiropractic College in 2007 and from NCNM in 2011. He and his family live and work in Ashland, OR, where he owns and operates an integrative clinic focused on the treatment of difficult, chronic disease. Although his work is always built on a firm foundation of homeopathy, botanical medicine, and nutrition, he also utilizes hyperbaric oxygen, IV therapies, and many other modalities.

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Homeopathy
Correcting the Record

PAUL THERIAULT, BSC, ND, VNMI

I was most displeased this morning to have read a recent opinion piece against the teaching of homeopathy in naturopathic medical schools, by Nelson, Perchaluk, Logan, and Katzman.[1] While I support open dialogue about all aspects of the profession, such dialogue must be based on factual information. Such inaccuracy as this article presents demands a response.

Article Rebuttals

Misunderstood Theory

Firstly, the authors possess a misunderstanding of the history and theoretical basis of homeopathy that is truly remarkable for naturopathic doctors, theoretically educated in the subject. They state that homeopathy "is a Westernized theoretic approach first proposed by Samuel Hahnemann (1755-1843); he and his followers maintained that ultradiluted substances (the sort which could cause specific symptoms if administered to a healthy individual) may correct the physiologic imbalance of an unwell individual." Homeopathy, however, is not based on the use of ultradiluted substances, as the authors assert. Rather, homeopathy is the application of the law of similars, as best articulated by Samuel Hahnemann, though not discovered by him. The law of similars is equally applied when one uses a tincture or an ultramolecular preparation. Many of the key uses of herbs from the empirical literature were explored in this manner, giving rise to many longstanding and key botanical treatments still used within naturopathic medicine. *Juniperus communis*, for example, is used extensively in crude tincture for issues such as urinary tract infections with discharge[2] and a number of indications almost identical (if less precise) than its homeopathic usage. Other longstanding herbs have also been utilized successfully based on homeopathic indications and often-unacknowledged homeopathic provings.[3] Examples include *Aconitum napellus*,[4] *Atropa belladonna*,[5] and even modern drugs such as nitroglycerine.

Nitroglycerine, due to its own extensive use in modern allopathy, deserves special mention as a medicine. Glonoinum, as nitroglycerine is named in the homeopathic materia medica, was first brought to the attention of medicine by Constantine Hering, one of the great homeopaths of the 19th century and one of Hahnemann's most notable pupils. The initial results of the nitroglycerin proving were published in 1851 (translated to English in 1874), and symptoms produced by administration of the substance were incorporated in the materia medica and remain there to this day.[6] As demonstrated in the wonderful historical analysis of Fye,[7] this substance was later passed on to Field and Murrell, who, both influenced by homeopathic physicians, experienced an inadvertent proving by touching some of the substance. As a result nitroglycerin was introduced to allopathic medicine and gradually displaced the older drug of choice, amyl nitrate. To this day, this substance remains a mainstay of allopathic cardiology and is an extremely widespread application of the law of similars in crude doses.

Misunderstood History

The authors also allege that the law of similars was the product of Hahnemann's experiments with ultradilute substances. This assertion is incorrect. The law of similars itself is a therapeutic principle that is present within the most ancient textual sources available. The Ebers Papyrus[8] of 1500 BCE offers several prescriptions that directly relate to the law of similars, such as treating blindness with pig eyes, or headaches with fish heads.[9]

The most notable example of the

law of similars, however, is found in the *Hippocratic Corpus*[10]:

> *The pains (complaints) will be removed by means of their opposite, each according to its own characteristics. Thus, heat corresponds to a hot constitution that has been made ill by the cold, and so on for the others. Another way of removing pain is the following: a disease develops by means of its like and is cured by means of the use of its like. Thus, what causes urinary tenesmus in health cures it in disease. Cough is caused and cured by means of the same agent, as in the case of urinary tenesmus. Another method: the fever causing the development of inflammation will be caused and cured by the same agent. At other times, it will be cured by the opposite of its cause.*[10]

This text clearly points to the awareness of a law of similars, one among several therapeutic options at the disposal of physicians of the time. The concept is also mentioned in a number of other works of note, such as those of Paracelsus,[9] as well as many other authors within the empirical tradition of medicine, as described by Coulter.[11,12] An entire book on the study of the simile in medicine was published in 1936, by Boyd.[13]

Again, the law of similars is not an invention of Hahnemann; it is a practical observation that precedes him by at least 3000 years and was explicitly mentioned roughly 2000 years before in the *Hippocratic Corpus*. Hahnemann's great innovation was the idea of the proving, the idea of administering medicines (initially in crude form) to the healthy as a means of determining, in advance, their medicinal properties.

Prior to Hahnemann, the only system of discovery of therapeutics was either based on theory, such as the systems of Cullen and Brown, or via trial and error. Hahnemann's discovery, for the first time in medicine, opened up the possibility of using prior research on substances, and was based on a firm theoretical basis of application – one which, as we can observe in the case of nitroglycerine above, is still applied successfully today, if unconsciously. Hahnemann's publishing of this principle in 1796[14] was a major milestone in medical research, and one that, to this day, has not been replicated or replaced by those outside of homeopathy.

Using this method, Hahnemann noticed that patients displayed a peculiar sensitivity to well-selected drugs. As such, they required far smaller doses than the immense ones commonly used in medical practice at the time. Hahnemann began reducing those doses of the drugs he used, according to the law of similars, and achieved far better and less toxic results (especially when using such common drugs of the time as mercury and belladonna). This phenomenon was described as early as 1801 in his essay "On the Power of Small Doses of Medicine in General and Belladonna in Particular."[15] Over the next several decades, Hahnemann observed increasing medicinal powers of remedies, increasing their strength with increasing degrees of trituration, dilution, and succussion.[16]

In short, the principles of dilution and succussion were a subsequent discovery of Hahnemann, predicated on the sensitivity of his patients to well-selected medicines. Clearly, the law of similars does not grow out of the experiments of Hahnemann, as incorrectly stated by Nelson at al.

Further historical inaccuracies can be identified later in Nelson et al's article when the authors assert that Hahnemann disparaged providers who sought environmental causes of illness. In the seventh aphorism of the *Organon*,[17] Hahnemann explicitly mentions cases of diseases in which there are occasioning or maintaining causes to be removed, providing examples, in his Footnote 7, of environmental influences, mechanical injuries, and poisonings. Nelson et al also assert that Hahnemann also disputed that any approach other than homeopathic was ever curative. This too is plainly contradicted by a close reading of the *Organon*. Aphorisms 286-291 of the sixth edition plainly describe the efficacy of measures such as magnetism, mesmerism, and of therapeutic baths (ie, early hydrotherapy), which was gaining popularity throughout Europe at the time but had not reached the peak of fame it would attain under Father Sebastian Kneipp after Hahnemann's death in 1843. It is also asserted that the father of modern naturopathy, Dr Benedict Lust, did not incorporate homeopathy into his practice. This is correct; however, it is remiss to mention this while failing to mention that homeopathy was incorporated into the practices of other figures critical to the development of naturopathic medicine, such as Henry Lindlahr,[18] John Bastyr[19] and Otis G. Carroll.

Homeopathy Has Not Been Disproven

Nelson et al also assert that homeopathy has been disproven, both in terms of chemistry and clinical trials. This is not correct, and would be evident to anyone with even a cursory knowledge of the research on the subject.

Potentized testing of ultramolecular preparations has been performed since at least the 19th century and has consistently delivered positive results. I have documented these results in a blog post on my own website.[20] The latest review paper on the subject, by Endler et al,[21] provides an excellent synopsis of this research, which includes 128 in-vitro laboratory studies of ultramolecular preparations, of which 98 were replications. Of these replications, 70.4% obtained a similar result as that reported in the

original publication, 20.4% obtained an inconclusive result, and 9.2% an opposite result. At the date of publication (2015), 5 models have been independently replicated. Perhaps the most notable of these is the upgraded basophil model.

The original basophil model, developed by Benviniste and published in *Nature* in 1988,[22] was an experiment purportedly demonstrating that basophils could be made to degranulate with a homeopathic preparation of IgE. According to the late Dr Peter Fisher, this model, due to being based on normal cells, was replicable about 30% of the time. However, in recent years a newer model[23] was developed that was based on pre-sensitizing basophils – ie, exposing them to homeopathic preparations of histamine – and afterward measuring the proportion of cells that degranulated. Dr Peter Fisher reported this method to be about 60% replicable. Indeed, this model was replicated in 3 independent labs in 2009, and in several more since, 1 being featured in this article.[24]

Homeopathy is Backed by Quality Studies

Nelson et al also assert that homeopathy has no good-quality, well-designed studies demonstrating results superior to placebo. The main source they quote for this is the recent report on homeopathy by the National Health and Medical Research Council (NHMRC).[25] This report, while widely touted in the media for its findings, presents a number of oddities, which were compiled by the Homeopathy Research Institute (HRI).[26]

1. NHMRC completed 2 reports: one in 2012, and a publicly released one in 2015.
2. The existence of the first report was concealed from the public, only to be discovered through Freedom of Information (FOI) requests.
3. NHMRC rejected the first report despite it being conducted by the author of NHMRC's own research guidelines.
4. FOI requests confirmed that Fred Mendelsohn, a member of the NHMRC's oversight committee, confirmed the first report to be of high quality.
5. NHMRC publicly reported that its 2015 assessment was based on "over 1800 studies"; in fact, it was based on only 176 studies.
6. NHMRC used a criterion – which has never been validated, nor used before or since – of requiring a threshold of 150 participants in a study before considering it; of note, this figure is slightly above the number of 144 in one NHMRC trial of high methodological quality on childhood diarrhea.
7. The completely unique rule for this review resulted in 171 of the 176 studies being discarded, leaving 5 negative studies to form the basis of their conclusion.
8. Members of the NHMRC committee have misrepresented themselves in terms of reporting conflicts of interest to the committee, in that Peter Brooks (NHMRC Chair) was a member of an anti-homeopathy lobby group but failed to disclose this.
9. The committee included not a single expert on homeopathy in its review, resulting in a number of misrepresentations and misunderstandings of homeopathic practice in the report, despite NHMRC guidelines requiring the presence of such an expert.*

Because of these oddities, the HRI initiated a complaint to the relevant government ombudsman, which was found to be of sufficient merit to warrant a taxpayer-funded investigation.[27] HRI continues to update the public as to the progress of this investigation, which remains ongoing.†

Aside from relying on the questionable NHMRC report, Nelson et al claim that homeopathy is plagued by low-quality studies and offers no convincing argument for benefit beyond placebo. They cite several meta-analyses. One of these meta-analyses focuses on a single homeopathic indication (Oscillococcinum for prevention and treatment of influenza[28]), and another focuses on a specific set of conditions (acute respiratory tract infections in children[29]), as opposed to focusing on homeopathy as a whole. A third is the infamous Shang meta-analysis,[30] which, like NHMRC's report, was released to wide and uncritical media dissemination. This meta-analysis, however, also contained a number of irregularities, which have been detailed by HRI as follows:

1. Despite advertising itself as being based on a comparison on 110 comparable trials of homeopathy and allopathic medicine, Shang's analysis was based on 8 homeopathy trials and 6 allopathic trials.
2. If the analysis had been conducted on all 21 higher-quality trials, the meta-analysis would have found the opposite result.
3. If 1 out of the 8 studies was eliminated from the analysis, Shang would have found the opposite result.
4. The 8 tested trials were all conducted using non-individualized homeopathy.
5. Amazingly, the originally published study did not state which trials it used for comparison. After much question and media furor, Shang did eventually release this information, but only 4 months later, after the media had lost interest and after an effective response had become possible.

Although Nelson et al included some reviews on specific conditions, they omitted a recent systematic review on depression that revealed some limited positive evidence from 2 placebo-controlled, randomized clinical trials (RCTs) and an excellent risk:benefit ratio.[31]

The remaining 2 meta-analyses are part of a long-term series performed by Robert Mathie, beginning in 2014. This series consists of several meta-analyses of several portions of the homeopathic research literature. Specific analyses were conducted on RCTs of individualized homeopathy,[32] RCTs on non-individualized homeopathy,[33] and on non-placebo-controlled trials.[34] Nelson et al cite the second and third meta-analyses – both of which could not reject the null hypothesis – yet fail to discuss Mathie's first meta-analysis of individualized controlled RCTs – which yielded a positive result and which became more positive with higher qualities of evidence. The evidence, while certainly not unambiguously positive due to the higher-than-optimal level of bias in trials, points quite clearly to homeopathy having a greater-than-placebo level of efficacy. This is Mathie's earliest and most famous meta-analysis. That Nelson et al would have awareness of the 2 negative meta-analyses while neglecting to even mention the 1 positive one, by chance, stretches credulity – even more so in their inclusion of several negative meta-analyses outside of this main series by Mathie without the inclusion of a recent positive one on depression. In other words, Nelson et al are omitting specific trials to support their opinion.

Conclusions

The latter portions of the article by Nelson et al detail the research on the placebo effect in medicine, and include the authors' beliefs about the plausibility of homeopathy and the ethics of prescribing homeopathy when one believes it to be no more than a placebo.

As we can see, this opinion piece is founded on a misrepresentation of openly available data. The extent of this misrepresentation suggests a deliberate attempt to mislead readers about the true state of research in homeopathy and to create an unfavorable opinion about this therapy within the profession.

Nelson et al, in their presentation of research literature, have uncritically accepted literature that is itself problematic and under government investigation. This could be regarded as simply a result of a superficial understanding of the research into homeopathy; however, their quoting of the 2 negative meta-analyses by Mathie, while omitting and not even mentioning the positive one – as well as completely ignoring a recent positive meta-analysis on homeopathy in depression while quoting several negative meta-analyses on specific conditions – does suggest a level of intent. Such an oversight cannot be due to chance, superficial knowledge, or mere incompetence; it can only be due to deliberate intention to deceive.

Homeopathy does have a basis in evidence, and is entirely sensible and understandable in light of the historical development of medicine in the western world. Criticism of the teaching of homeopathy in naturopathic colleges is certainly warranted. The basic principles of homeopathy are often poorly taught, particularly in schools where homeopathy was marginalized to the extent permitted by CNME guidelines, and many students often graduate without the ability to apply homeopathy to clinical practice. Indoctrinating students into believing – against the available laboratory and clinical evidence – that homeopathy is nothing but a placebo, and encouraging them to look "critically" at Hahnemann's life and homeopathy's history (as Nelson et al failed to do) is not the solution to this problem. Graduate training for physicians, such as that available from the recently reformed Homeopathic Academy of Naturopathic Physicians‡ and Naturopathic Medicine Institute§ is the solution, since it produces physicians skilled in the use of homeopathy, both in and of itself and in the context of whole-person naturopathic care.

The current homeopathic education of naturopathic physicians, when done well and not marginalized, either formally or informally, does provide an excellent platform from which those that desire this advanced graduate training can obtain it. The precedents for this approach within the profession are many, with skills such as prolotherapy, a number of

The extent of this misrepresentation suggests a deliberate attempt to mislead readers about the true state of research in homeopathy and to create an unfavorable opinion about this therapy within the profession.

advanced injection procedures, many IV procedures, ozone therapies, and several others that require advanced training after graduation, when they are within the scope of practice of a given jurisdiction. In British Columbia, where prescribing rights have increased, a graduate pharmacy course was developed by the British Columbia Naturopathic Association (BCNA), along with an exam, to allow for the controlled act of prescribing restricted substances from the naturopathic formulary, as determined by the College of Naturopathic Physicians of British Columbia. This same program, with some small alterations, was adopted by Ontario when they received prescription rights, and will likely form the basis of receiving these rights in Saskatchewan and Alberta, as well as any other prescribing jurisdictions in Canada, when such rights are granted according to the scope of practice of naturopathic doctors. The more basic pharmaceutical training received by NDs in naturopathic college is inadequate for prescribing many controlled substances safely. However, it does provide an excellent platform for post-graduate learning for those naturopathic doctors who wish to use pharmaceuticals within their practice.

I am not suggesting that homeopathy be treated as a restricted act, limited to naturopathic doctors with additional training and certifications. The extraordinarily safe profile of homeopathy should not prevent naturopathic doctors without detailed expertise in homeopathy from prescribing. But the precedents for graduate education and special training within the profession are clearly set. It is disingenuous of Nelson at al to point to the inability of naturopathic graduates to attain deep levels of expertise in a complex discipline like homeopathy while failing to appreciate this precedent. Graduate training is the key to the future of naturopathic medicine, but without a basic foundation in homeopathy, that graduate training would be considerably more difficult.

I am in favor of open discussion of all aspects of the profession. But such discussion must be founded on an accurate understanding, both of history and of the research available in the contemporary era. Deception and inaccuracy, such as is present in Nelson et al's article, does an immense disservice to the profession and its ongoing discussions over education and its future. The authors of this article should be called to account for this deception, and the article should be retracted and rewritten on a factually correct basis.

I am in favor of open discussion of all aspects of the profession. But such discussion must be founded on an accurate understanding of history and available research.

*A presentation on this report by Rachel Roberts of the Homeopathic Research Institute can be found at: https://www.youtube.com/watch?v=dWKHFsRJhWk&t=63s

† The latest update from HRI's Rachel Roberts can be found at: https://www.youtube.com/watch?v=oTNwT53qaGc

‡ Please see: https://hanp.net

§ Please see: https://www.naturopathicmedicineinstitute.org/

References 14-34 available online at ndnr.com

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Medical Resources for NDs

A review of current publications for the naturopathic industry

DARIENNE SLATER, NMD

Overcoming Overwhelm: Dismantle Your Stress from the Inside Out

Dr Samantha Brody, a naturopathic physician, has used her 20 years of clinical experience to complete a clear and concise 4-step guide to overcoming and minimizing stress in life. In her book, *Overcoming Overwhelm*, she provides real solutions for preventing stress – an effective alternative to the temporary tactic used most often: stress management.

This book is a great resource for patients looking to find ways to work through stressful lifestyles, as well as for naturopathic physicians looking for tools to help patients in practice.

Dr Brody has done an incredible job, in 18 chapters and 4 sections, of simplifying and creating an engaging workbook for anyone looking to eliminate stress and overwhelm from his or her life.

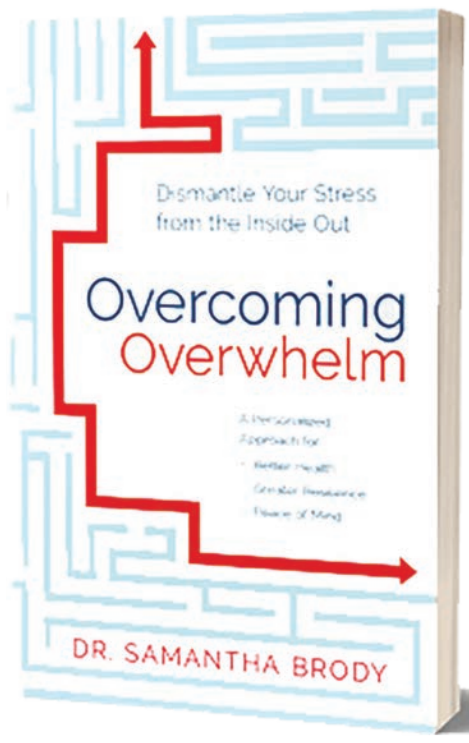
In Step 1, "Find Your True North," the reader is challenged to identify her individual values and compare them with how she wants to feel each day. Readers are tasked with breaking out pen and paper and beginning to identify who they are and what changes they need to make in order to honor their values. This is a powerful exercise for the reader, and one that too few have the guidance to complete on their own. The use of relevant personal and patient examples also helps foster trust and understanding in the reader.

In Step 2, "Establish Your Foundation," the reader is tasked with pinpointing factors that get in the way of making changes, as well as individual change-making strengths and weaknesses. This is where the individualistic naturopathic approach shines through. Dr Brody assists the reader in understanding his or her own style of creating change in life, as well as his or her own obstacles to cure. Since health is a major source of stress for most people, as well as a high-priority item, Dr Brody adds very helpful tips and resources to this section.

In Step 3, "Take Your Overwhelm Inventory," the reader is encouraged to look at each area of her life and discover the stress and responsibilities in each category, to create an overall picture of her total stress load. Dr Brody uses an efficient and complete guide for the reader that leaves "no stone unturned" when it comes to taking a holistic view of life. The guide takes a deep dive, promoting a very comprehensive assessment of various areas of life, such as physical and social environment and, within them, concerns such as relationships, addictions, and technology.

In Step 4, "Craft Your Personal Plan," the reader takes all of the compiled information from the first 3 steps and creates a plan to categorize, prioritize, and sometimes eliminate, stressors based on defined goals and values. Readers walk away with an action plan for preventing stress as soon as – if not before – they put down the book. In addition, Dr Brody accomplishes this with total understanding, non-judgment, and with an approach that is not forceful.

Overall, this is a great book that offers a clearly effective technique for reducing and preventing stress in modern life. Practitioners will find this book to contain valuable resources for patients as well as for themselves.



Just the **FACTS**

Title:	*Overcoming Overwhelm*
Author:	Samantha Brody, ND
Publisher:	Sounds True
Available from:	All major bookstores
Pages:	227
Style:	Paperback; Kindle
Copyright:	2019
MSRP:	$12.16 / $9.99

Battling the "Blahs"

Supporting Mood, Energy, & Sleep with Natural Therapies

ERICA ZELFAND, ND

Within the context of our fast-paced society and the high levels of chronic stress it confers, fatigue, malaise, anxiety, depression, and poor sleep are commonplace. These proverbial birds of a feather flock together, making it difficult for us as clinicians to isolate – let alone treat – just one.

Thankfully, our system of medicine neither expects us to fixate upon a single variable nor accommodate our sometimes-myopic attempts to treat patients through a single active constituent, pathway, or mechanism of action. On the contrary, many of the natural therapies targeted at energy production and nervous system support confer a wide range of biological activity.

Vitamin D3

Vitamin D receptors have been identified in at least 36 different tissues of the human body, including numerous regions of the brain.[1,2] Many mechanisms for vitamin D's influence on mood have been proposed, including its role in the synthesis of the neurotransmitters serotonin (thus affecting mood, memory, and learning) and dopamine (thus supporting motivation, thinking, and concentration).[3-6] The vitamin-hormone has also been shown to affect circadian rhythms,[7] thereby influencing melatonin and cortisol levels,[8-10] as well as the thyroid and adrenal glands.[11]

It is perhaps unsurprising that supplementing with vitamin D3 (the active form of the nutrient) has been shown to help specifically with depression and, more generally, with psychiatric health.[12,13]

Amino Acids

GABA

An appropriate balance of neuronal excitation and inhibition is necessary for sleep, mood, memory, and cognition. The see-saw relationship of the excitatory neurotransmitter glutamate and the calming amino acid gamma-aminobutyric acid (GABA) thus plays an important role in brain health.[14] Lower GABA concentrations have been associated with poor sleep quality,[15] depression, and anxiety,[16-18] whereas GABA supplementation has been shown to induce relaxation, mitigate anxiety,[19] and reduce the fear response.[20]

Pharmaceutical insomnia medications (like zolpidem and eszopiclone) and prescription anxiolytics induce sedation by means of GABA agonism.[21-24] Yet GABA has also been shown to increase the alpha brain-wave patterns associated with relaxation states, such as those seen in mindfulness meditation.[25,26]

L-Theanine

Derived from green tea, L-theanine has also demonstrated efficacy in balancing excessively excitatory states, supporting relaxation, increasing alpha-wave activity,[27] and blocking the activation of glutamate receptors.[27,28] The amino acid has also been shown to significantly increase the levels of serotonin, dopamine, and GABA in the brain.[29,30]

In clinical trials, L-theanine has demonstrated calming effects in situations of acute stress, reducing the anxiety-related parameters of heart rate and blood pressure[31,32] and improving the immune response.[33] Animal and cellular studies show L-theanine supports the nervous system by protecting against catecholamine toxicity and enhancing glutathione production and recycling[34,35] – 2 mechanisms that may contribute to the improved cognitive function seen with L-theanine supplementation in elderly persons.[36] L-theanine has also been shown to objectively reduce salivary α-amylase levels (a marker of sympathetic nervous system activity) during academic challenge.[37]

Adaptogens

When it comes to mood support, adaptogenic herbs work largely vis-à-vis the hypothalamic-pituitary-adrenal (HPA) axis.[38] Although we tend to think of this pathway as primarily mitigating adrenal production of cortisol, the adaptogens also affect cytokine signaling, catecholamine production, and the oxidative stress response – factors that also have significant effects on mood.[39]

Rhodiola

The impact of *Rhodiola rosea* (rhodiola) on depression likely comes from its effects on neurotransmitters – serotonin, in particular.[40-43] Caution should therefore be used in those taking medications that affect serotonin and its receptor activity.[43]

Numerous clinical trials have demonstrated rhodiola's positive impact on mental health,[44] and its effects in combating both stress-related fatigue and chronic fatigue are well known.[45,46] A dose of 200 mg of rhodiola taken twice daily was shown to significantly reduce self-reported anxiety, stress, anger, confusion, and depression compared to placebo after 2 weeks' supplementation in mildly anxious individuals.[47] Similar findings were observed in a pilot study of those with generalized anxiety disorder, where 340 mg of rhodiola taken daily for 10 weeks yielded significant decreases in mean Hamilton Anxiety Rating Scale scores.[48]

Rhodiola has also shown promise in the context of mild-to-moderate depression,

outperforming placebo and offering a considerably gentler side-effect profile compared to the SSRI sertraline – which was, admittedly, slightly more effective than rhodiola in the trial.[49]

Holy Basil

Widely used and well tolerated per a survey of 24 independent clinical studies including over 1000 participants,[50] the Ayurvedic herb *Ocimum sanctum* (holy basil) serves as a perfect example of how ancient remedies can help with modern ailments.

Also known as tulsi, the herb largely supports energy and mood through balancing the feedback systems of the HPA axis.[51] Holy basil has also been shown to normalize the levels of neurotransmitters and their degrading enzymes,[52] as well as to prevent corticosterone elevations in situations of stress.[53]

In animal models, holy basil has been shown to ease the symptoms of both depression and anxiety[54,55] with effects comparable to pharmaceutical antidepressants.[56] In humans studies, holy basil reduced symptoms associated with generalized anxiety disorder.[57] In a 6-week randomized, double-blind, placebo-controlled (RDBPC) study, holy basil not only significantly improved general stress scores, but also helped with sexual problems, sleep trouble, forgetfulness, and energy.[58] It is likely for these reasons that holy basil is sometimes called "liquid yoga."[59]

Ashwagandha

A discussion of adaptogenic herbs would perhaps be incomplete without mention of *Withania somnifera* (ashwagandha), which has been shown to support both brain and body in times of stress. In a RDBPC trial of adults experiencing chronic stress, supplementation with ashwagandha significantly reduced perceived stress levels, decreased food cravings, and improved subjective happiness scores while also reducing objective markers like cortisol levels and weight.[60]

Ashwagandha has been shown in animal models to not only buffer the negative effects of sleep deprivation on cognitive function,[61] but also to mitigate the associated inflammation, anxiety, and cellular injury and death.[62] As energizing as the plant can be, however, the Latin name *somnifera* reflects ashwagandha's ability to enhance sleep quality,[63] largely due to its effects on the neurotransmitter GABA.[64]

Giving Thanks

Numerous studies have demonstrated the positive effects of keeping gratitude journals. Journaling 3 times weekly about positive experiences from the past day allows the brain to relive those positive experience and access gratitude.[65-67]

In a recent study, participants were asked to keep a gratitude journal *and* to once a week *express* their appreciation of another person to that person directly through a face-to-face conversation, note of thanks, e-mail, or social media post. These participants reported more balanced mood and fewer depressive symptoms than those who kept a gratitude log alone. These findings suggest that creating connection from a place of gratitude may combat depression more effectively than simply reflecting upon it silently.[68]

Conclusion

The systems of the body do no operate in a vacuum independent of the other functions happening within the organism. Like the body, naturopathic approaches to healing also defy linear efforts to isolate, reduce, or deconstruct healing, instead nourishing physiology through a myriad of pathways and a variety of constituents. Beyond the healthcare industry's myopic preoccupation with serotonin receptor activity – or its focus on any single neurochemical pathway or endocrine "axis," for that matter – is an approach to healing that is as multi-faceted, elegant, complex, and spirited as our patients.

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According to Kuhne

SUSSANNA CZERANKO, ND, BBE

Natural inclination drew me to science; severe sickness and sad experiences with orthodox physicians led me to the Nature Cure.
Louis Kuhne, 1901, p.13

We must never forget that everything we put into the stomach has to be digested.
Louis Kuhne, 1901, p.20

Those foods which are most easily digestible are exactly those which are best suited to nourish the body. Over nutrition, also, is least liable to occur where the food is easily digested.
Louis Kuhne, 1918, p.44

Louis Kuhne (1835-1901) (Figure 1) stands rightfully tall on the naturopathic landscape because he indeed contributed hugely to its philosophical and knowledge base. Kuhne's understanding of healing came first-hand from his personal suffering with stomach cancer and lung complaints. When he was 20 years old, he experienced severe violent pains in the lungs and head. (Kuhne, 1901, p.2) Witnessing the death of his father from stomach cancer and seeing his chronically ill mother repeatedly mistreated by physicians were strong catalysts that directed his life. He exhausted medical doctors' abilities to alleviate his suffering and then turned to natural medicine, which helped him. But not quite enough, as it turns out.

Unable to alleviate his health problems using conventionally available methods, his love and observations of Nature guided him to find enduring solutions. After suffering for nearly a quarter of a century, his experimentations on himself led him to a discovery that culminated in his writing 2 important books: *The New Science of Healing* (1891), and *Science of Facial Expression* (1895), which would guide generations of Naturopaths around the world in the 20th century. By the seventh German edition in 1894, *The New Science of Healing* (Figure 2) had been published in 25 languages. So popular was the work of Kuhne that his teachings went viral globally. By 1899, his book had reached its 50th edition and was seminal in uncovering "Nature's definite and immutable laws." (Kuhne, 1899 Preface, v)

Unity of Disease, Unity of Cure

Kuhne discovered that there were many manifestations of disease but only 1 cause for all of them. In treating disease, Kuhne also determined that, just as there was only 1 cause of disease, there was 1 cure for disease. Called the "unity of disease" and "unity of cure," this seemingly oversimplified concept of disease and cure had at its core immensely valuable tenets that actually worked clinically. The last chapter in *The New Science of Healing* comprises 133 cases providing proof that Kuhne's theories had merit.

Figure 1. **Louis Kuhne, 1835-1901**

It is important to note that Henry Lindlahr constructed his Nature Cure philosophy and his theories principally by borrowing from the work of Kuhne and expanding them into his own. Lindlahr's use of many of the same terms used by Kuhne resurrected a strong foundation

for Nature Cure, and for naturopathic medicine. The accessibility and approach of Lindlahr's books had an immense impact on the traditional roots of early naturopathic principles and philosophy in America.

What is Disease?

Kuhne began with 1 very pertinent question in his search for creating health: *what is disease?* In order to understand how to heal, one first needs to know what it is that needs to heal. In his view, disease was "the presence of foreign matter in the system." (Kuhne, 1901, p.18) The notion of foreign or morbid matter – an antiquated term from the 19th century – merits review and restatement so that we can better appreciate Kuhne's theories in our own time.

Environmental pollutants, food additives, volatile organic compounds (VOCs), solvents, and the myriad 100 000 chemical compounds that inundate modern times were unheard of when Kuhne was formulating his understanding of "morbid or foreign matter." He understood foreign matter as substances introduced into the body that had no place or use. More appropriate terms to convey the meaning of morbid or foreign matter are endotoxins and exotoxins. When materials foreign to the body's natural propensity for dense nutrients and balance accumulate within the body, they become morbid over time and because of poor diet and lifestyle habits. We can turn to observations of people, or even of ourselves, to sharpen our understanding of the process meant by Kuhne's notion of morbid matter.

As we drill down into this understanding, we may want to begin by acknowledging that our love of food can lead us into a lifestyle of irresistible cravings rather than one where appetite is dictated by hunger. In this connection, the 2 portals for foreign matter to enter the body are either by the nose and lungs, or by the mouth into the stomach. The lungs are not as corruptible as the stomach. According to Kuhne's definition, morbid or foreign matter is cumulative. To illustrate, if a person smokes for the first time, the lungs will rebel, and coughing will ensue in an attempt to clear the lungs. However, Kuhne notes, "As soon as we fail to promptly obey the senses of smell and taste, they grow more lax in the fulfilment [sic] of their duty, and gradually allow harmful matter to pass unchallenged into the body." (Kuhne, 1901, p.19) It is in their accumulation, poor processing, and in the body's eventual tolerance of them that morbid matter gains ascendancy over health.

The stomach, as mentioned earlier, is naturally resilient to a bad diet or overeating. Kuhne is quite articulate, though, about how we slip into bad habits of diet that contribute to the potential morbid matter which invades and stays in our bodies. In his words,

> *The injurious effects of a wrong diet are slower and less striking. The boundary between natural food and deadly poison is very wide. The step from the natural to the unnatural is often so small as to be at first scarcely perceptible. But as we know that foreign matter only forms as the result of wrong food, that is, can only arise in the body as the result of bad digestion, it must be our task to avoid such wrong foods and such bad digestion. (Kuhne, 1918, p.42)*

Alternatively, consciously choosing foods that are easily digested increases the amount of vitality or vital force. Easily digested foods, such as those in their natural state, like fresh fruits and vegetables, require less time to travel through the digestive tract and generate more vital energy. In this process, they do not tax the body's systems in the way that inflammatory and otherwise inappropriate foods can and do.

How easy it is to get used to foods with no nutritional value. In contemporary society the path of foreign and morbid matter is still there, and even more perniciously, given current values in eating and food production. In Kuhne's era, the problems of food were associated with overeating and the consumption of alcohol, condiments, and spices. Unripe fruit was chosen by Kuhne as the best example of food easily digested. In some, diarrhea resulted from eating unripe fruit, but this outcome illustrated how the body rids itself of an overload of food.

Denatured Food

Kuhne advocated a vegetarian diet, and long before raw plant food was considered healthy, he also considered cooked foods as less than optimal. In fact, he went so far as to say, "all foods which we have to change by cooking, smoking, spicing, salting, pickling, and putting in vinegar, lose in digestibility, and as regards vitality, are far inferior to food in its natural condition." (Kuhne, 1918, p.44)

Foods made into fluids, such as soups, were more difficult to digest because the need for chewing was bypassed. Soup ingredients in their natural state would be solid and require mastication. In an age when smoothies and juices are inhaled and at the same time are considered health food, is it a wonder that constipation persists?

Another category of foods which Kuhne considered to be injurious to the health included "foods which in their natural form create disgust and nausea … however good they may taste when cooked." (Kuhne, 1918, p.44) The flesh of animals fell under this category. "No one would ever think of biting into a living ox,

Figure 2. **Kuhne Book Ad, 1917**

or eating raw sheep's flesh. Our instinct and natural feeling may be misled by seasoning and dressing." (Kuhne, 1918, p.44) Kuhne held strictly to the idea that "food precisely in the form Nature gives it to us, is always the best for the digestion." (Kuhne, 1918, p.46)

The importance of fiber in the diet was not overlooked by Kuhne. White flour was another example of denatured food. Grains stripped of their bran and made into bread was a concern for constipation.

Digestion as Fermentation

In order to convert food into the building blocks that constitute a living body, foods undergo a process of fermentation that is normal. The body assimilates as much as it needs and excretes what is not needed via the intestines, kidneys, and skin.

Kuhne often took examples from Nature to explain his concepts of health and disease. He writes, "Sometimes, we observe how animals completely digest, in a very short time, such apparently indigestible things as tendons and bones. If we examine the excrements of such animals, we find absolutely no undigested pieces of bone." (Kuhne, 1918, p.47) In humans, he explained, the contrary occurs: food often remains a whole week or more in the bowels and gives rise to abnormal conditions of fermentation. The body is then required to expel these injurious byproducts of inadequate digestion through the various excretory organs.

When foods are altered by cooking, preservatives, or chemicals, a longer time is needed for the body to digest these foods by fermentation. The time spent in the digestive tract is longer, causing an increase of internal heat, and darker and drier stools. (Kuhne, 1918, p.47) Longer transit time in the bowels leads to an abnormal progression of fermentation which finds no exit, hence depositing in the skin and blood. Kuhne called this state "encumbrance with foreign matter."

Overeating

Today, problems of obesity trump many of the other health problems we encounter as doctors. An abundance of food, especially the calorie-rich and nutrient-deprived sorts, is eagerly consumed, and our obsession with quantity over quality compounds the problems caused by overeating. Kuhne would have described our eating habits as unnatural.

What is the right amount of food for a person with "a diseased stomach" was another question asked by Kuhne. He writes, "One apple the debilitated stomach can digest; two would be too much. All excess is poison for the body." Some healthy people claim to have a perfectly iron-clad digestion, capable of eating anything. Kuhne is quick to remind them and us that any amount of food beyond what is needed by the body is excess and "poison for the body and if not excreted goes to form foreign matter in the body." (Kuhne, 1901, p.20) The way to keep the body in a state of health was to practice moderation in eating.

Foreign Matter

Foreign matter is a simple term that expresses precisely what it is. Foreign matter, in Kuhne's view, simply did not belong in the body, and the emunctories should remove it through the skin, lungs, kidneys, and bowels. Kuhne counted unhealthy food among foreign matter. He taught that if morbid or foreign matter accumulates so that it is not eliminated, the body then must find a place to store it. Because we are unable to use the harmful waste deposited in the body, our circulation and digestion become adversely affected.

The timeline for foreign matter to accumulate and do damage is slow and insidious. Symptoms are silent in the beginning. "Only after a considerable period does [the patient] become conscious of a disagreeable change in his condition. He no longer has the same appetite and he is incapable of the same amount of work." (Kuhne, 1901, p.21)

Kuhne is credited with making the observation that the early Naturopaths adopted and considered exactly right. "Disease begins in the stomach," Kuhne declared. He also noted, "The foreign substances are chiefly deposited in the abdomen and finally spread through the whole body." (Kuhne, 1901, p.22)

Removal of Foreign Matter

Fermentation to Fever

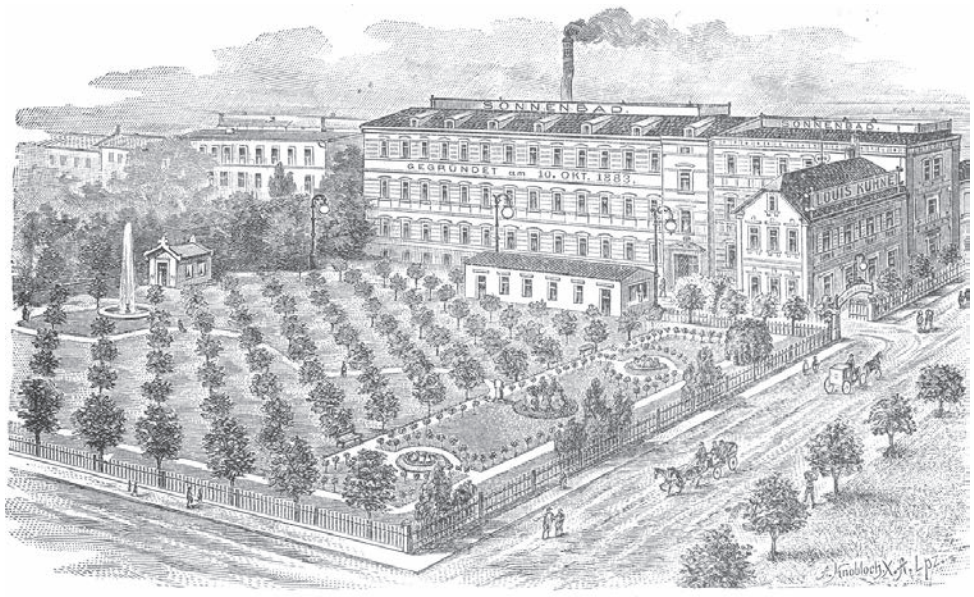
Kuhne referred to the microflora of the gut as microscopic fungi. He also created a theory of inflammation as beginning in the digestive tract with the accumulation of morbid matter, fermenting and creating heat that would be expressed as a fever. "Fever is fermentation going on in the system [body]." (Kuhne, 1901, p.24) The relationship between fever and the active process of disease was intertwined. He states, "There is no disease without fever and no fever without disease." (Kuhne, 1902, p.10) Kuhne rationalized that this fermentation process needed a vent through which to leave the body. Fever unabated in the body with no outlet would ultimately lead to death.

The primary purpose of Kuhne's therapeutic treatments was the removal of foreign matter. "To merely drive the morbid matter from one part of the body to another, to confine it, and allow it to dry up: all this is no cure but simply suppression of symptoms." (Kuhne, 1902, p.99) When foreign matter is present, fermentation arises and fevers result. "If … morbid matter has in a suitable manner been removed from the body, the disease itself disappears." (Kuhne, 1901, p.18)

Steam Baths

Perspiration is the body's answer to a compromising fever. Perspiration was how Kuhne began his protocol for diseases in an attempt to remove foreign matter/disease from the body. "The steam bath is the most

Figure 3. **Kuhne Clinic, 1901**



Kuhne's armamentarium consisted essentially of dietetic counseling, the steam bath, and the friction hip bath.

reliable means there is of restoring the skin to regular action." (Kuhne, 1901, p.100) Lying on a specially constructed table allowing the passage of steam to reach the parts of the body that were exposed, patients would lie down naked and supine, and be covered by a wool blanket. Pots of boiling water were placed underneath the table. Kuhne had devised burners to produce a continuous production of steam. Today, with modern appliances, the steam bath is easily carried out. After 10 to 15 minutes, the patient would turn over to steam the chest and abdomen.

Perspiration is the primary goal. "The instant the sweat breaks out, the fermenting masses gain a vent, and the tension of the skin and febrile heat both abate." (Kuhne, 1901, p.31) If the patient does not perspire while supine, then when turned over, perspiration should come very easily. "Persons who do not perspire readily, should keep the head covered [under the wool blanket]; this will not be found to be so disagreeable as may at first be imagined." (Kuhne, 1901, p.103) Patients following Kuhne's protocol perspired for 15 to 30 minutes. Areas of the body that were more riddled with toxicity or morbid matter tended to perspire with difficulty.

"Weak persons, such as seriously ill, more especially nervous patients, should never take steam baths." (Kuhne, 1901, p.103) Sun baths are preferred for weak patients, as well as friction sitz baths and hip baths. (Kuhne, 1901, p.103)

Hip Baths

Closing the skin pores and cooling the body after a steam bath were done by taking a friction hip bath using water in the range of 68° to 81°F/20° to 27°C. Before or after the sitz bath, the whole body was very quickly washed to remove perspiration and to cool the body. (Kuhne, 1901, p.104) Another purpose of hip or sitz baths was to mobilize the foreign matter from areas of the body, principally the abdomen, that remain undisturbed. After the hip baths and washing of the body, measures to ensure that the body was warm again included either exercise for strong-abled patients, or bed rest for weak and sick patients. (Kuhne, 1901, p.104)

Conclusion

Kuhne advocated a healthy vegetarian diet as the basis of his *new science of healing*. He argued that "unnatural food can never be thoroughly digested, and if consumed daily," leads to an accumulation of endotoxins and what he called foreign matter, and consequently to a diseased state. (Kuhne, 1902, p.27) Kuhne transformed his factory, which he operated successfully for 24 years, into an extremely large clinic (Figure 3) to treat conditions that originated in this process of accumulated foreign and morbid matter.

Some examples of diseases that he encountered include cancer, tuberculosis, diphtheria, scarlet fever, rheumatism, migraines, obstinate constipation, paralysis, epilepsy, whooping cough, etc, etc. His armamentarium consisted essentially of dietetic counseling, the steam bath, and the friction hip bath. Using these therapies, his ability to help patients remains a triumph, and in so many ways unparalleled to this day.

Sussanna Czeranko ND, BBE, a naturopathic physician licensed in Oregon, has been practicing since 1994. She incorporates nature-cure approaches such as balneotherapy, hydrotherapy, and breathing therapy into her practice. Dr Czeranko is a faculty member and works as the Rare Books Curator at NUNM. She has completed the 11th book in a 12-volume series, *The Hevert Collection*, based upon Benedict Lust's original journals. She is also the founder of the Breathing Academy, which trains NDs in the breathing therapy, Buteyko. She is a founding board member of the International Congress of Naturopathic Medicine. Dr Czeranko has established a traditional naturopathic clinic, *Manitou Waters*, in Manitou Beach, Saskatchewan, which is scheduled to open in August 2019.

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Listen, Tell, Learn, Heal

Narrative Medicine Now

DAVID J. SCHLEICH, PHD

For more than a century, naturopathic medicine has been building a caregiver profession predicated on relationship and characterized by careful communication. There are the communication pathways, of course, related to charting, summaries, test analyses, and the like. There are also patient stories.

Not wanting to be purveyors of what Foucault called the "medical gaze" (treating the body and not the person), naturopathic doctors have long held the space where stories from the biopsychosocial dimensions of the patient's life are valued and their expression welcomed. At the same time, in the literature of professional formation, we have often seen concerns pointed out in studies of orthodox medicine outcomes and practice which can be described as the fragmentation of the clinical experience, the impersonal nature of bureaucratic decision-making processes about healthcare choices, and the loss of individuality in the patient encounter. Essentially, these types of issues are all about not only the autonomy and uniqueness of the patient, but also about relationship and time spent. In such a terrain, the potential for a costly divide between the doctor and the patient crops up more often than providers would want. Naturopathic doctors – long the placeholder profession for biopsychosocial, patient-centered medicine – have championed empathic engagement since Lust and others systematized its modalities and approach back at the beginning of the 20th century.

The governance and reimbursement structures of mainstream medicine accumulated to a point where an ACA (Affordable Care Act) was needed to build better therapeutic alliances between the doctor and the patient and to weed out the rotters who were taking too much from a heavily commodified system of diagnosis and care. As issues of affordability and access ricochet all around and through the patient's experience of illness and the approach to treatment itself, doctors are often straightjacketed by reimbursement and protocol systems which are accompanied by contentious notions such as preexisting conditions and calamitous health events. In the middle of all this fuss and rattle, the patient's story can't easily come into focus and stay crisp. Only when there is such clarity, as Rita Charon, MD, PhD (a PhD in English who also became an MD), puts it, "… can the physician hear—and then attempt to face, if not to answer fully—the patient's narrative questions: 'What is wrong with me?' 'Why did this happen to me?' and 'What will become of me?'" (Charon, 2001)

In the mainstream health system, there is often urgent financial reckoning occurring throughout the transaction, especially given the strictures and cascade of insurers and providers. The very human story of the patient's illness risks being diluted along the way. Naturopathic care, though, has historically been successful in overcoming this worrying interface because of its long history of patient-centered care, where stories of illness not only nourish empathy, but embody the difference between treating disease and treating the patient; eschewing, thus, the "medical gaze."

The Origins of Narrative Medicine

A decade ago, Columbia University got busy improving allopathic clinical practice by providing training focused on renewed attention to patients in the form of attentive listening, coupled with what the designers of its "narrative medicine" program called "creative contact, singular accuracy, and personal fidelity." Other elements that are presented for adoption by allopathic students in the curriculum of that longstanding Columbia University program include familiar naturopathic skills, such as "empathic interviewing, reflective practice, narrative ethics, self-awareness and intersubjective contact." (Columbia University, 2018). The champion of that initiative was Dr Rita Charon.

Dr Charon introduced the notion of narrative medicine back at the beginning of the new century. She explained at the time that it was, essentially, "a model for humane and effective medical practice." She writes,

> *Adopting methods such as close reading of literature and reflective writing allows narrative medicine to examine and illuminate 4 of medicine's central narrative situations: physician and patient, physician and self, physician and colleagues, and physicians and society.*
>
> *(Charon, 2001, p.1897)*

In 2009, Columbia University partnered with the revered Canossiano Institute in Venice to teach medical doctors and nurses and other biomedicine professionals how to "nourish empathic doctor-patient relationships," to "replace isolation with affiliation," and to establish "patient-centered and life-framed practices." Sound familiar? Naturopathic doctors, deeply rooted in humanistic health care, have been predicating their clinical programs on just such a personalized approach for a very long time. That particular Columbia–Canossiano workshop attracted US and European medical credits. Presenters were from Columbia, the University of Toronto, George Washington University, Technion in Haifa, and the University of Milan. Its value was recognized immediately and has persisted. Not surprisingly, the biomedicine profession did not invite presenters from what in those days were labeled as the "CAM professions."

These days Columbia has continued its pioneering Master of Science degree in narrative medicine. Their program includes narrative writing, reading, literary and philosophical analysis, coupled with practicums which include practitioners and patients. As Charon suggests, the whole idea is to "draw on the study of art and literature to enhance students' listening and observation skills and to expand their view of patients to encompass more than just medical histories." (Krisberg, 2017)

A few years later the University of Iowa sponsored a conference in the same vein, called "The Examined Life." Participants assembled to explore "links between the science of medicine and the art of writing." The elements explored have been central to naturopathic care for decades (ie, human interaction, information and education, the presence of loved ones/friends and social support in the healing journey, spirituality and inner resources, the importance of human touch, the nutritional and nurturing aspects of food, and an ambience that is often personal and inspiring). Additionally, workshops focused on thoughtful listening, nurturing talking, and meaningful time spent with the patient. Some elements of this narrative road to empathy have migrated into messaging as part of the "integrative" and "functional" medicine sectors in contemporary allopathic medicine. There are critics of this humane face on medicine who worry that narrative medicine is an aspect of assimilation at work.

Narrative Medicine as Co-optation

In that regard, some contend that narrative medicine is more evidence of an accelerating co-opting of the essence of the natural medicine professions, or at least of the more human face of a more holistic medicine. Narrative medicine, whatever its patina, is emerging more and more in the front lines of the biomedicine landscape. Because the alternative (what naturopathic doctors do) is chunking into turf and market share, MDs are increasingly encountering well-informed patients who want more than 7-minute prescriptions, emotional distance, and more tests.

The biomedicine terrain has been described by those excluded from its orthodoxy as compressed, characterized by quantified time allocations per patient, embarrassed by the uninsured, scourged by the tangle of rules for the insured, dominated by HMOs, and contained by reductionist medical reasoning which "blindly follows statistical likelihoods, regardless of variations such as age, sex, ethnicity, or individual psychologies." (Charon, 2006) Dr Charon, the principle architect of "narrative medicine," has articulated over many years a strategic communications approach for the biomedicine profession that seeks to warm up that landscape. She teaches that clinicians need to "develop a sturdy and clinically useful affiliation with the one who suffers." In such a universe, the MD is a "witness" and not a "judge," a "companion" and not an "interrogator." Were Dr Charon to have had an interprofessional framework for her original research and development, I'm certain she would have found naturopathic physicians to be keen, accomplished, long-time practitioners of such empathy.

> MDs are increasingly encountering well informed patients who want more than 7-minute prescriptions, emotional distance, and more tests.

Charon adds that "narrative medicine had its start in … patient-centered care and medical humanities" (2006). In an allopathic universe, doctor time is expensive (time spent must be quantifiable); insurance, pharmaceutical companies, and health networks – despite presenting themselves in the community as non-profits – are caught in a profit equation; biomedicine students learn quickly that emotional attachment can hurt; and medical training for the longest time objectified the patient enough that Patch Adams got famous satirizing the alienation.

The idea is, in her words, that by really listening to the patient (ie, more than a few moments), the doctor can "receive in full complexity what the patient conveys in words, silences, gestures, positions, and physical findings." (Charon, 2008) Charon further suggests that doctors who possess "narrative competence" are able to "bridge the divides of their relation to mortality, the contexts of illness, beliefs about disease causality, and emotions of shame, blame, and fear." (2006)

This isn't just some lingering byproduct of, say, Angelica Thieriot's earlier Planetree Alliance approach, transformational as that

Naturopathic doctors know narrative medicine. They have always understood what they're doing as a relationship.

remarkable nonprofit's 100-plus-hospital-strong organization from Derby, CT, had been in the fuss and rattle of the hospital business in America back in the day. Rather, the advent and spread of narrative medicine education signals awareness of the consequences of decades of treating patients impersonally and a century of understanding their presentations through the limited reductionist lens.

Frankly, naturopathic doctors know narrative medicine. They have always understood what they're doing as a relationship. In the initial intake and well beyond, naturopathic doctors relate to their patients as individuals, as persons, rather than being obliged by paradigm to gather in detail in a rush to diagnosis, assign a test battery or zip through charts of data and findings, refine a prognosis, or interpret and further diagnose variations. The health insurance companies don't much like the relational approach of the ND because the time it takes is hard to run a tab on in terms of immediately quantifiable and prescriptive outcomes. Charon puts it this way: ". . . practitioners, be they health care professionals to begin with or not, must be prepared to offer the self as a therapeutic instrument." (2008, p.215)

The narrative medicine model brings to mind Tiffany Field's "therapeutic touch" (established 30 years ago at the University of Miami School of Medicine) or Wayne Dyer's notion from a few decades back that intention is a "force in the universe" to which everyone and everything is connected. Biomedicine communicators, in any case, can learn handily from naturopathic doctors because of the expansion of integrative and interprofessional arrangements these days. The fellows in the AIHM (Academy of Integrative Health & Medicine) program, for example, see reflected in action in the clinics of natural medicine providers, standards of patient-centered care which the naturopathic medical education community presents seriously in its curricula and which routinely characterize how naturopathic doctors relate to their patients.

Rita Charon's work has been widely recognized. She has received honors from numerous groups, such as the Association of Medical Colleges, the American College of Physicians, the Society for Health and Human Values, and the Society of General Internal Medicine. Just after the 2009 Columbia workshop referenced earlier, a related June 2011 workshop at the university filled right away and had a waiting list. As interest continued to spread, the University of London's School of Advanced Study Institute of English Studies held there a conference, also in 2011. The theme, of all things, was the use of "comics in medical and public education and their role in health communication and scholarship." Back then, there was much momentum about and around narrative medicine, and it continues.

Important to note, from the point of view of curriculum design, is that Columbia's "Narrative Medicine master's program" recruited in the humanities and social sciences, organizing their curriculum to "educate a leadership corps of health professionals" who understand the "intimate, interpersonal experiences of the clinical encounter." (Charon, 2001) They have attracted professionals from numerous clinical fields to learn more about becoming "narratively competent clinicians." They are building "a different kind of caregiver," not unfamiliar to the naturopathic community.

The "narrative medicine" initiative also took root a decade ago at the New York-Presbyterian Hospital/Columbia, where resident, Dr Abigail Ford, said, "Narrative medicine changed my entire approach to medicine. As a doctor you are really a co-author of patients' experiences and need to hear their story and take it on." (Chen, 2008). Other residency programs, such as at Vanderbilt University's Department of Surgery, soon followed a similar path. And, there are many more such examples which persist into the closing years of this decade. At the University of Nevada School of Medicine, for example, medical students can benefit from narrative medicine as a concentration or as an elective in fourth year. Temple University launched a narrative medicine program in 2016. At the Warren Alpert Medical School (Brown University), students can take a narrative medicine course too. Even the legendary Kripalu Center for Yoga and Health is presenting this very year a conference entitled "Narrative Medicine: A Cutting-Edge Approach to Healthcare," featuring Natalie Goldberg, among others. Seminar breakout groups abound now on such topics as: Psychoanalysis and Narrative Medicine; The Therapy of Writing: An Analysis of Medical Prose in JAMA; and A Perspective on the Role of Stories as a Mechanism of Meta-Healing.

Healing the Gap

Essentially, "narrative medicine" adds back into the transaction between caregiver and patient the relational, respectful dimensions which biomedicine bleached out of the assembly line of the health business, prior to and after Flexner. It is a curriculum and communication technique that constitutes what Cooke et al mean when they describe the need for a "synthesis of the cognitive and moral aspects of professional work" (2010, p.ix). Cooke and her colleagues, in that important Carnegie Foundation centennial treatise, *Educating Physicians: A Call for Reform of Medical School and Residency* [published one century after Flexner], take great care to delineate the "poor connections between formal knowledge and experiential learning and inadequate attention to patient populations, healthcare delivery, and effectiveness" (p.3). Cooke saw this need as manifesting not only in thorough reports of disease symptoms at the expense of listening for and hearing about the patient's life and feelings, but also in the steep shift in careers of procedural specialties rather than primary care.

The debate strengthens these days about how belief cannot just be biology in medicine and in people's lives. As Fosse (2002) puts it: "How can macroscale phenomena like thoughts and feelings be shown to exert downward causal influence over microscale phenomena like biological processes?" (Fosse, 2002, p.8). Narrative medicine is the tip of an iceberg in this sea of transformation about what constitutes "health" and what the physician's role in it must be.

Narrative medicine needs to welcome a broader discourse and critical reflection about the structural inequities in the American healthcare system. Narrative medicine is part of a growing awareness that health professionals need to incorporate patients' life stories – including their unique underlying value system – into medical treatment options that fit each individual. Narrative ethics refers to how a doctor listens for, and hears, more than a report of disease symptoms. Narrative medicine, reflectively practiced, encourages shared, ethical decision-making regarding the patient's care, particularly at the end of life. It balances treatment options between the belief systems and life of the patient, and the technological possibilities advocated by the doctor. Ideally, whatever the treatment goals, narrative medicine's own narrative is that those goals should be in harmony with the way the patient has lived his or her life through the beginning and middle and end. Narrative medicine is a special tool serving to achieve that.

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HPA-Axis Optimization

Addressing the 4 Stages of HPA Dysregulation

Dr. Joseph Cheng, ND

The term "adrenal fatigue" describes the adrenal glands' response to chronic stress following 3 stages: alarm, resistance, and exhaustion. It was based on Dr. Hans Selye's theory of General Adaptation Syndrome (GAS) in the 1950's.

However, "adrenal fatigue" was poorly accepted by the medical community because it over-simplifies the intricate pathways communicating multiple organ systems outside the adrenals, particularly the hypothalams-pituitary-adrenal (HPA)-axis.

The involvement of the HPA-axis explains why chronic stress causes a myriad of problems in the nervous system, such as mood and autonomic disorders, as well as chronic fatigue syndrome.

HPA-Axis Regulation

Normally, our cortisol levels rise and fall throughout the day, following a circadian rhythm. The diurnal cortisol levels are relatively high to help maintain alertness and cognitive function while the nocturnal levels are low to promote relaxation and sleep.

The HPA-axis is activated upon receiving stress signals.The paraventricular nucleus (PVN) of hypothalamus would first secrete corticotropin releasing factor (CRF) and arginine vasopressin (AVP), which in turn would stimulate the anterior pituitary to secrete adrenocorticotropic hormone (ACTH). ACTH then binds to the adrenal cortex to promote the release of cortisol to help the body cope with stress.

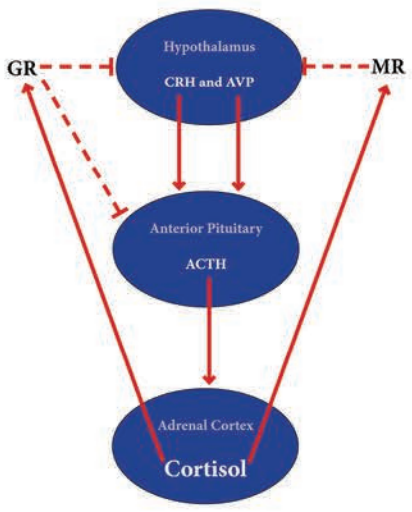

Figure 1. Auto-Modulation of the HPA-Axis

To protect against prolonged activity of the adrenals, the secretions of CRF, AVP, and ACTH are precisely controlled by cortisol via the binding of two types of receptors — mineralocorticoid (MR) and glucocorticoid (GR) receptors. Cortisol has higher binding affinity for the mineralocorticoid receptors (MRs) than the glucocorticoid receptors (GRs). This difference in affinity allows the MRs to closely maintain the circulating cortisol levels relatively low for normal daily activity. Only when the cortisol concentration is high in response to stress does it bind to the GRs to keep the HPA-axis from becoming too overactive. (Figure 1)

This delicate negative feedback mechanism maintains the secretion of ACTH and cortisol within a relatively narrow bandwidth. However, when it fails to function properly, **the HPA-axis becomes dysregulated and progresses through, not 3, but 4 stages.**

HPA-Axis Dysregulation

Stage 1 - Over-Stimulation (Restlessness)

- HPA axis responds to stressors robustly.
- Chronic stress results in overactive HPA-axis overwriting the negative feedback loop and, consequently, increases the overall cortisol levels - both diurnal and nocturnal.

Signs & Symptoms: restlessness, insomnia, sleep difficulty, high blood sugar, elevated DHEA & catecholamines (epinephrine and norepinephrine).

Stage 2 - Over-Exertion (Wired & Tired)

- HPA axis activation is sustained but exerting to keep up with continuous stress.
- Long-term high outputs of ACTH and cortisol begin to affect the physiology of the HPA-axis. The circadian rhythm becomes disrupted (ie. the diurnal cortisol levels not high enough to provide energy while the nocturnal levels not low enough to promote relaxation).
- Chronic elevated cortisol baseline levels also affect the immune function rendering the individual susceptible to frequent infections and autoimmune responses.

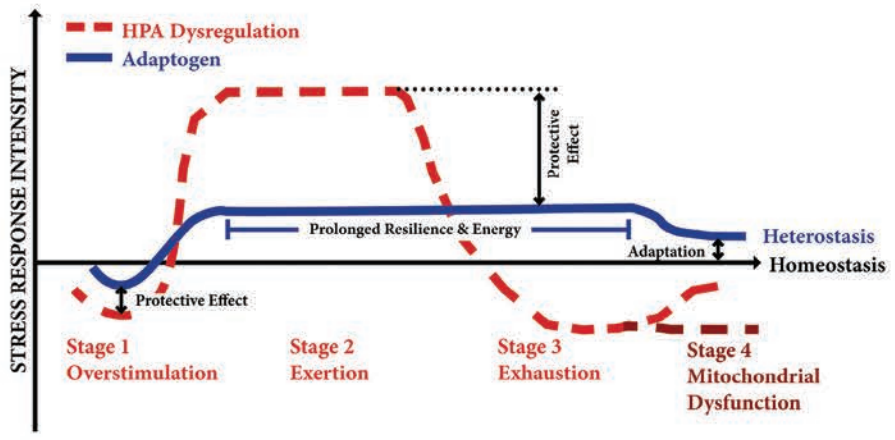

Figure 2. Adaptogens increase the non-specific resistance to stress by decreasing the sensitivity to stress and prolonging the phase of resilience.

Signs & Symptoms: fatigue, anxiety, irritability and depression under moderate stress, IBS, and chronic muscle/joint pain.

Stage 3 - Exhaustion (Extreme Fatigue & Multiple Systems Affected)

- Tolerance to stress becomes extremely low due to the hypoactivity of the HPA-axis.
- The CRH, ACTH, cortisol, DHEA, and catecholamine levels are low in response to stress.
- Cumulative stress and chronically elevated cortisol result in wear and tear on multiple systems of the body from excessive exposure to the catabolic properties of glucocorticoids, stress peptides, and proinflammatory cytokines.

Signs & Symptoms: Extreme lethargy, sub-optimal or hypo-thyroidism, sleep-deprived, depression, anxiety, chronic myalgia and arthralgia, IBS, low pulse & blood pressure, and dysglycemia.

Stage 4 - Mitochondrial Dysfunction

- While the mitochondria are technically not considered a part of the HPA-axis, they play a crucial part in regulating the body's neuroendocrine, metabolic, inflammatory and transcriptional responses to stress via energy transformation and intracellular signalling.
- Chronic oxidative stress from long-term HPA dysregulation depletes the body's antioxidant capacity (ie. glutathione) and wreaks damage on a cellular level, particularly the mitochondria of cells involved in the HPA-axis signalling.
- Typically non-responsive to cortisol/glandular supplementation because tissue regeneration is compromised.

Signs & Symptoms: chronic degenerative disease(s), slow wound-healing, cognitive/memory decline, and chronic fatigue syndrome.

Chronic HPA-Axis dysregulation has been associated with a number of chronic diseases, such as hypothyroidism, metabolic syndrome, cardiovascular disease, anxiety and depression, chronic fatigue syndrome, and neurodegenerative diseases (eg. Parkinson's and Alzheimer's diseases).

While lifestyle interventions, such as stress management, relaxation techniques, exercise, eating a whole-food, low-glycemic diet, and getting regular sleep, are vital to restoring overall health and well-being, patients often need additional aid to overcome the 'therapeutic hump' from being chronically ill before they can start incorporating these lifestyle changes.

This is where the adaptogenic herbs come in.

Adaptogens: Promote Resilience & Establish Optimal Heterostasis

When the body responds to stressors, many systems are forced out of homeostasis. The HPA-axis activation would bring the body to a 'heterostatic' state - a higher level of homeostasis, or an adaptation to stress. The closer the gap between heterostasis and homeostasis, the easier it is for the body to later return to the original state after stress subsides.

Adaptogens are a group of herbs that act to render stress protection and prolong the phase of resilience. In other words, adaptogens can help modulate the magnitudes of stress response and 'narrow the gap' between heterostasis and homeostasis allowing the body to restore normal physiological activities sooner. (Figure 2)

The mechanisms of action of various adaptogens may include hepatoprotective, cardio-protective, neuroprotective, CNS stimulating (ie. enhancing physical and cognitive performances), anti-inflammatory, antidepressive, anxiolytic, immunotropic, and antioxidative effects.

Table 1 is a summary of recommended adaptogens and nutrients for each stage of HPA dysregulation.

Tolle Totum

HPA dysregulation is a multi-factorial problem involving multiple systems, and therefore, its treatment approach should also be multi-faceted and individually tailored based on the individual's symptoms and lifestyle.

Combining the adaptogenic herbs and nutrients with lifestyle changes that include stress management, diet, and exercise, we can start to promote tissue repairs, optimize the body's tolerance to stress, and restore the modulatory actions on the HPA axis, improving the overall health and well-being.

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Table 1. Adaptogens & Nutrients for the 4 Stages of HPA Dysregulation

Therapeutic Targets	Adaptogens & Nutrients
Stage 1: Over-Stimulation Calm the overly activated HPA-axis, anxiolytic, modulate nocturnal cortisol levels.	Ashwagandha, Phosphatidylserine, L-Theanine, Chamomile, Lemon Balm, Passionflower, Magnesium
Stage 2: Over-Exertion Restore the circadian rhythm, stabilize mood, support HPA-axis response to stressors	Cordyceps, Eleuthero, Rhodiola, Astragalus, St. John's Wort
Stage 3: Exhaustion Support HPA-axis response to stressors, restore baseline cortisol levels (not overly stimulate the CNS)	Licorice, Panax ginseng, Coleus forskohli, Bacopa, Curcuminoids, Boswellia, B-Vitamins (B5/B6/9/12), Vitamin C
Stage 4: Mitochondrial Dysfunction Promote tissue repair, restore mitochondrial integrity, support antioxidant capacity	Coenzyme Q10, PQQ, Alpha-Lipoic Acid, L-Carnitine, N-Acetyl-Cysteine