NATUROPATHIC DOCTOR NEWS & REVIEW

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Naturopathic Perspective

Post-Viral Cough

Clinical Considerations

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A persistent, lingering, non-productive cough following a viral upper respiratory tract infection (URTI) is not uncommon, and can persist for 2-8 weeks after the acute infection resolves.[1] Although non-life-threatening, post-viral coughs can be painful, irritating, and annoying for the patient, invoking additional stress to the airway and associated structures, and potentially exposing the area to prolonged inflammatory and degenerative processes.

Several possibly interrelated mechanisms may be responsible for a prolonged cough after a viral URTI. Secretions from a lingering post-nasal drip can stimulate receptors in the upper respiratory tract, causing irritation that stimulates cough.[2] Enhanced sensitivity of airway nerves due to viral-induced epithelial damage and inflammation may

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Vitamin D & Visual Disturbances

A Case Study

NADIA CIUHA, ND

Sudden visual disturbances and partial loss of vision are usually quite disabling symptoms that make an affected individual seek prompt medical care. In most cases of sudden vision loss, head/eye trauma, or an autoimmune neurologic condition (such as multiple sclerosis) is the underlying cause.

Vitamin deficiencies have long been implicated in gradual decline of vision; however, an association between sudden vision loss and nutritional deficiencies has been less well researched.

The following case study describes a correlation between sudden temporary loss of vision, blurry vision, chronic photophobia, and severe vitamin D deficiency.

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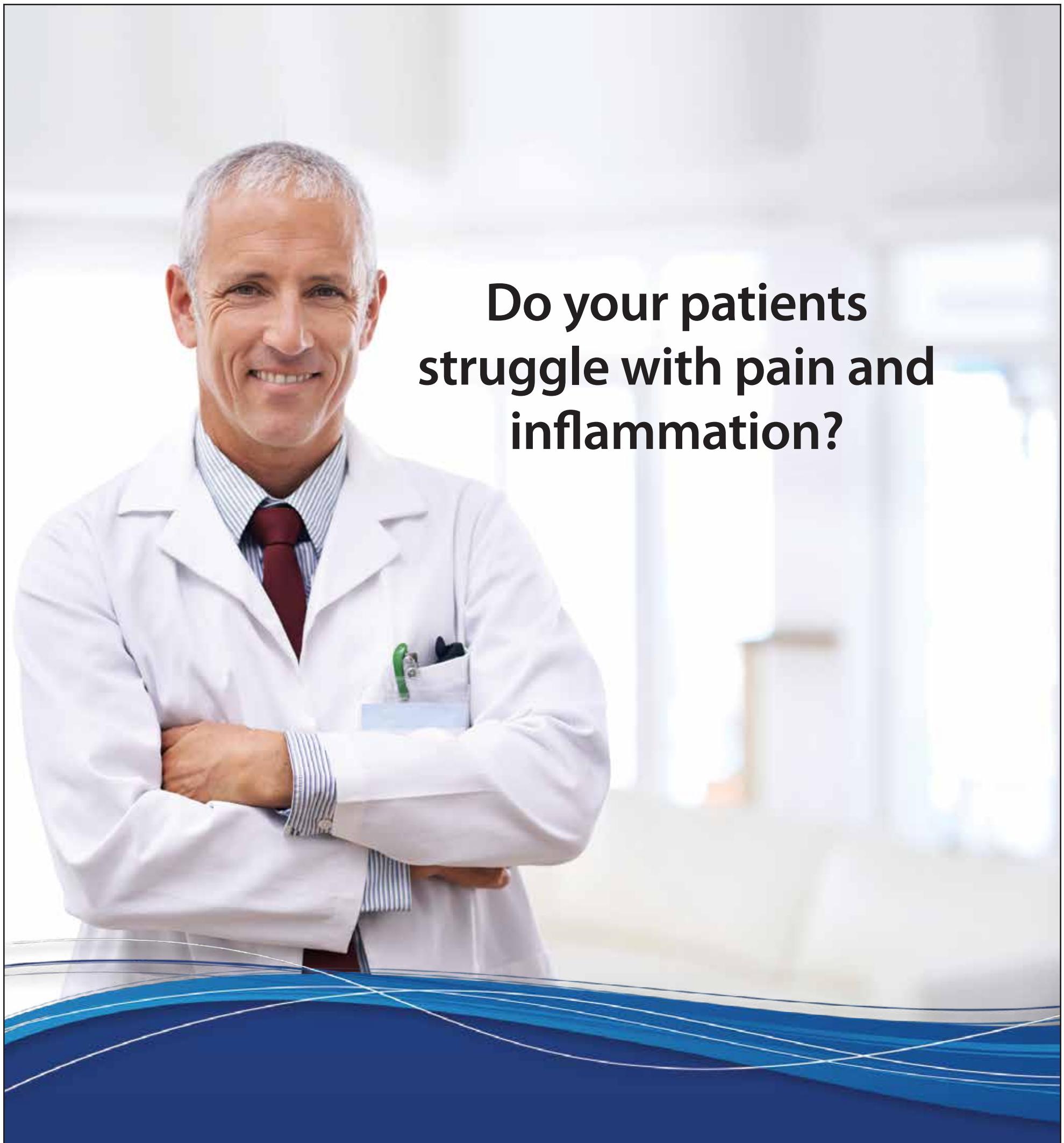

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induce upregulation of the neurologically driven cough reflex arc, resulting in airway hyper-responsiveness and constriction, thereby inducing cough.[3-5]

The use of nebulized glutathione/N-acetylcysteine (NAC) solution, alongside key demulcent, antitussive, broncho-relaxant, and antimicrobial herbs, may be effective in combination at reducing severity and duration of post-viral cough by impacting the above mechanisms. Unfortunately, high-quality clinical outcome studies on integrative approaches for post-viral cough do not exist. That being said, clinically we have seen the severity and duration of post-viral cough reduced significantly when the therapeutics outlined below are implemented. We have also seen the prevalence of lingering post-viral cough reduced in our patients when these therapeutics have been employed at the first sign of a viral URTI.

Initiating therapy early can go a long way toward reducing the incidence of post-viral cough syndrome. For patients fortunate enough to be under our care, this annoying situation has been reduced or mitigated completely. The use of nebulized glutathione early on in an URI can significantly reduce the duration of the respiratory distress.

As always, a lingering cough refractive to intervention can be indicative of persistent pathology, and thus should be fully evaluated before a diagnosis of post-viral cough syndrome is made. Although any bacterial or viral URTI can result in a post-viral cough, the frequency of post-viral cough is increased in cases of *Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, and *Bordetella pertussis*,[6] with the recognition that pertussis in adolescents and adults has increased over the past decade.[7] GERD and bronchial tumors must also be excluded, as well as exposure to inhaled irritants.[1]

Nebulized Glutathione & N-Acetylcysteine

Glutathione can be found in the epithelial lining fluid of the respiratory tract and is considered part of our host defense against infection and oxidative damage in this area. Administration of nebulized glutathione has been shown to increase levels of reduced glutathione in the epithelial lining fluid, decrease oxidant-induced damage in the area post-infection, locally reduce rhinorrhea, reduce post-nasal drip, increase oxygen saturation, and increase pulmonary function (FVC and FEV1).[8] The ability of nebulized glutathione to positively impact post-viral cough syndrome could therefore be due to an increase in the antioxidant potential of the epithelial lining fluid via direct supplementation to the area, thereby aiding in the repair of any remaining epithelial-induced damage post-URTI. In doing so, afferent nerve fibers previously exposed from epithelial lining damage post-URTI are no longer exposed, the cough reflex arc is interrupted, and airway hyper-responsiveness subsequently improves. Increased antioxidant potential of the epithelial lining fluid as a result of direct supplementation could also support ongoing host immune response to any lingering infection in the area, and reduce any post-nasal drip that may be contributing to elicitation of the cough response.

Although nebulized dosing can range from 600 mg to as high as 1.3 g daily, given in

single or divided doses, we find maximum patient compliance and successful clinical outcomes in reducing post-viral coughs when administering 2-3 mL of a compounded 10% glutathione/10% NAC solution via nebulizer BID-QID alongside key herbal treatments discussed below. Other known formulas include a mixture of glutathione, licorice, and NAC compounded together for nebulization, as well as 1 mL glutathione (200 mg/mL) mixed with 1 mL NAC and mixed into filtered water and nebulized.

Care may need to be taken when giving nebulized glutathione to asthmatic patients, due to the possibility of inducing bronchoconstriction, particularly if the patient has a sulfite sensitivity.[9] In practice, this rarely occurs, but a dilute test dose should be administered if there is concern; most derive tremendous benefit from this treatment.

Herbal Considerations

The use of demulcent, antitussive, antimicrobial, and bronchial relaxants can help soothe the respiratory lining, targeting airway hyper-responsiveness and addressing any possible persistent infection in the area. Demulcent herbs contain mucilage and thus tend to soothe dry, irritated tissues that come along with post-viral cough. Key demulcent herbs to consider include *Althaea officinalis* (marshmallow root) and *Ulmus rubra* (slippery elm bark).[10,11] Antitussive agents can reduce respiratory spasm and bronchoconstriction. Key antitussive herbs to consider include *Prunus serotina* (wild black cherry bark) and *Glycyrrhiza glabra* (licorice root), which also has antimicrobial effects.[12,13] Bronchial relaxants to consider include *Asclepias tuberosa* (pleurisy root) and *Pulmonaria officinalis* (lungwort).[14]

Antimicrobial agents, including *Usnea* spp (old man's beard), *Ligusticum porteri* (osha), *Hydrastis canadensis* (goldenseal rhizome), and *Mahonia aquifolium* (Oregon grape root), can combat lingering microbial insult in the area, particularly due to their berberine content.[15-18] Soothing expectorants can also help relieve bronchial membrane irritation, and include *Verbascum thapsus* (mullein), and *Inula helenium* (elecampane).[14,19]

In combination with the nebulized solution listed above, we have found clinical success incorporating concentrated berberine supplementation (1 g TID) to address any lingering viral infection that could be contributing to post-viral cough. When taking this dose of berberine, patients are instructed to take it with food due to the hypoglycemic nature of berberine.

Based on a small number of studies conducted in eastern Europe, an extract of *Pelargonium sidoides* (also known as EPs 7630) has been shown to reduce acute bronchitis symptom duration and intensity. Studies have demonstrated similar beneficial effects in children, adolescents, and adults.[20-24]

There are a few studies suggesting that ivy extract may reduce coughing fits and overall cough in patients with acute bronchitis.[25,26]

Cineole (eucalyptol), the main component of eucalyptus oil, has been observed to increase mucociliary beat rates and has broncho-dilating effects. One randomized placebo-controlled trial found that it improved bronchitis symptom scores, owing to a decrease in cough.[27] Similar results were obtained in another randomized controlled trial of a preparation containing cineole, in which patients had a reduction in several cough-related symptoms, including night cough, coughing fits, and overall impairment.[28]

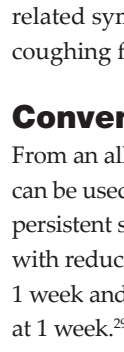
Conventional Treatments

From an allopathic approach, albuterol can be used for wheezing in patients with persistent symptoms. Its use is associated with reductions in cough frequency at 1 week and overall symptom improvement at 1 week.[29,30] However, this potential benefit is not well supported by the available data and must be weighed against the adverse effects associated with its use.[31,32] Combining albuterol with an antibiotic has shown no additional benefit over albuterol alone, although outcomes at >1 week have not been studied.[29] The treatment benefits must be balanced by the adverse effects of nervousness and tremor, which may be more disruptive to the patient than the underlying cough. Inhaled corticosteroids have not been shown to be effective in post-viral cough in adults with subacute (3-8 weeks) or chronic (>8 weeks) cough, adolescents with a history of asthma but without recent asthma activity, or children with a history of episodic viral wheezing without asthma.[33]

Summary

Although not life-threatening, post-viral cough syndrome can be irritating and annoying to patients, negatively impacting quality of life and potentially exposing the area to prolonged inflammatory and degenerative processes. By targeting the underlying pathologic mechanisms associated with the cough reflex arc through integrative approaches, we can actively reduce the severity and duration of patients' symptoms, improve quality of life, and ultimately reduce prolonged exposure to degenerative airway inflammatory processes.

References available online at ndnr.com



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Case Study

A 39-year-old female presented for a naturopathic consultation with chief complaints of blurry vision, fatigue, and photophobia. The photophobia had been present for several years and she was used to wearing sunglasses, even indoors and during winter months. She was under the care of an ophthalmologist for monitoring of increased intraocular pressure. She had not had glaucoma, but her family history (mother, maternal grandmother) was positive for acute narrow angle glaucoma. Several weeks prior to her visit, she started experiencing sudden temporary loss of vision in both eyes. She was diagnosed with ocular inflammation and treated with ocular corticosteroids. Her vision returned but had since become blurry; everything was described as being "behind a veil."

Fatigue had been gradually developing, and she had a long history of anemia. At the time of consultation, the patient could barely function and was unable to perform her daily activities. Due to her vision decline, she had taken a medical leave of absence from her work.

We reviewed prior imaging tests, including head CT scan and MRI of the brain, neither of which showed brain lesions.

Initial Exam, Assessment, & Plan

Physical exam revealed the following: BP, 92/56 mm Hg; temperature, 96.7° F, cervical lymphadenopathy; non-tender thyromegaly; mild inspiratory wheezes on lung auscultation; systolic heart murmur; and tender splenomegaly on abdominal examination. She had painful red lesions on the bottoms of her feet, bilaterally. These were previously diagnosed as athlete's foot. The lesions were scaling, cracking, thick, and erythematous. She had similar lesions on her scalp. Both the foot lesions and the scalp lesions had a clinical appearance of plaque psoriasis.

Her ophthalmologic exam revealed injected sclerae and normal and symmetric pupillary reaction to light. Her optic discs were clear, but small; fundal blood vessel crowding was observed. She reported extreme photosensitivity.

I ordered the following laboratory tests : CBC, TSH, free T4 and free T3 levels, vitamin D (25-hydroxyvitamin D), and a renal panel.

The patient was advised to start on bilberry extract, 160 mg BID. Lab test results were received in 5 days, at which point the patient returned for a follow-up visit.

Lab test results revealed the following:

- **CBC**: mild lymphocytosis: 12.8 (normal = 3.4-10.8); neutrophilia: 9.5 (normal = 1.4-7); microcytic anemia: MCV of 75 (normal = 79-97)
- **TSH**: mild hypothyroidism: 6.7 mU/L (normal = 0.45-4.5)
- **Vitamin D** (25-OH): deficiency: 4 ng/mL (normal = 30-100)

The patient was diagnosed with microcytic anemia, hypothyroidism, and severe vitamin D3 deficiency.

She was started on dessicated thyroid (30 mg QAM), vitamin D3 (10 000 IU/d), and iron glycinate (34 mg QD). She also was prescribed calcipotriene 0.005% ointment, to apply BID to the affected areas on her skin.

Four-Week Follow-up

Four weeks later, the patient reported better energy, less blurriness, and less pain in her eyes. She also mentioned that a feeling of eye fullness of several months' duration was now improving as well. She was tolerating the thyroid medication well. Her skin lesions on the feet and scalp were thinner, smaller, less erythematous, and not itchy.

She was instructed to continue on the regimen as previously described. At this point, we also added reduced glutathione (100 mg BID) to her regimen, to support the small blood vessels in the eyes.

In between the visits, the patient had her eyes examined by her ophthalmologist and was told that her eye pressure had normalized.

Three-Month Follow-up

Three months after her initial visit, the patient reported that her blurry vision had resolved and her fatigue had improved. There had been no need for ocular corticosteroids for 3 months. Ocular pressure remained normal. At this point, she reported that she still was experiencing photophobia, but only outdoors.

Follow-up lab test results showed the following:

- **CBC**: anemia was improving: MCV of 79 (vs 75); WBCs had decreased in number but were still elevated: 11.5 (vs 12.8); at this point there was an increased platelet count: 482 (normal = 150-379)
- **TSH**: thyroid function was improving: 2.53 mU/L (vs 6.7)
- **Vitamin D** (25-OH): 43 ng/mL (vs 4)

I decided to continue the patient on vitamin D3 in order to bring the 25-OH-vitamin D level to over 50 ng/mL, as these are the levels that are recommended for patients with increased ocular pressure.[1] I also increased her dosage of dessicated thyroid to 45 mg/d, and instructed her to continue on iron and blueberry extract. The presence of increased intraocular pressure, small optic disc and crowding of blood vessels, along with increased platelet count, increased this patient's risk for "eye stroke." In conventional ophthalmology settings, aspirin is recommended in such cases for prevention of blood clot formation. I decided to start the patient on a natural substance, quercetin (1000 mg/d), which is similarly effective in preventing platelet aggregation.[2]

Four Weeks Later

The patient called me 4 weeks later. She had been seen by her ophthalmologist and reported that her intraocular pressure was steady for the first time in 2 years. There had been no more episodes of blurry vision or seeing white spots. The photophobia was significantly improved, but since she had experienced some degree of sensitivity to light since her late teens, I expected this would likely take longer to resolve.

She reported feeling a more stable energy level and having better sleep since taking thyroid medication. At this point, she reported being 60-65% better overall. We have a follow-up scheduled 2 months from now, and at that point I will retest her CBC, thyroid markers, and vitamin D level. I intend to tightly monitor her serum vitamin D level every 9 weeks in order to ensure that it remains higher than 50 ng/mL.

Three months after her initial visit, the patient reported that her blurry vision had resolved and her fatigue had improved.

Discussion

This patient's history of increased ocular pressure, along with her chronic avoidance of sun exposure, prompted me to check her vitamin D levels. Research suggests that vitamin D status is associated with various eye symptoms, ranging from eye fatigue to open-angle glaucoma.[1,3-5]

The exact mechanism by which eye function is affected by vitamin D is not clear at this point. It is possible that vitamin D affects both small blood vessels and the innervation/speed of impulse conductivity of the eyes.

The fact that normalizing vitamin D levels appears to stabilize even advanced eye symptoms, such as blurry vision and increased eye pressure, is very promising. It can be a powerful tool for us as naturopathic physicians, particularly given the fact that such symptoms can only be marginally controlled by conventional interventions. Additionally, most of the conventional interventions are associated with significant side effects, whereas treatment of visual disturbances, even using very high doses of vitamin D (10 000-15 000 IU/d) appears to be safe and well tolerated.

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Case Study of Metabolic Syndrome

Part 1 – Cardiometabolic Assessment

TEERAWONG KASIOLARN, ND, MSAC, LAC

According to the Heart Foundation and the Centers for Disease Control and Prevention (CDC), heart disease remains the leading cause of death for both men and women in the United States.[1] In fact, someone has a heart attack every 34 seconds, and coronary heart disease (CHD) is the most common type of heart disease, which kills more than 370 000 people annually in the United States.[1,2] Direct and indirect costs of heart disease have been estimated to be more than $320 billion annually.[2] Heart disease is highly preventable and is mainly associated with poor dietary and lifestyle habits, with minimal genetic contribution. Naturopathic medicine can be at the forefront to prevent and address this national dilemma.

Metabolic Syndrome & Heart Disease

The strongest risk factor for developing heart disease is metabolic syndrome (MetSyn).[3,4] A gold-standard definition of MetSyn is still unclear, as there are multiple definitions offered by various organizations, including the World Health Organization (WHO), the US National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III), the European Group for the Study of Insulin Resistance (EGIR), and the International Diabetes Federation (IDF). Despite there being various definitions of MetSyn, the underlying factors are still agreed upon, including abdominal (central) obesity, atherogenic dyslipidemia (elevated triglycerides and/or low HDL-C), hypertension, and insulin resistance (elevated fasting glucose and/or hyperinsulinemia).[3-5]

Researchers, however, have determined that WHO-defined MetSyn is a better predictor of coronary calcium than are NCEP ATP III criteria, due to WHO's insulin resistance requirement.[6] Personally, I concur with the WHO's clinical criteria for MetSyn, which specify hyperinsulinemia (fasting insulin level in the upper quartile among non-diabetic individuals) or hyperglycemia (fasting glucose ≥110 mg/dL), in addition to at least 2 of the following criteria[5-7]:

- **Abdominal Obesity**: Waist-to-hip ratio >0.9 in men, and >0.85 in women; or body mass index (BMI) >30 kg/m^2
- **Dyslipidemia**: Triglycerides ≥150 mg/dL; and/or HDL-C <40 mg/dL in men, and <50 mg/dL in women
- **Hypertension**: Blood pressure (BP) ≥140/90 mm Hg, or taking anti-hypertensive medication(s)
- **Microalbuminuria**: Urinary albumin secretion rate ≥20 μg/min, or albumin-to-creatinine ratio >30 mg/g

A recent study, published in *JAMA* in September 2015, revealed that 49-52% of adults aged 20 years and older in the United States either have full-blown diabetes or pre-diabetes.[8] Most of these individuals, unfortunately, are not aware of their medical condition. This is an alarming result, since people with prediabetes or diabetes have a much higher risk of having cardiac events during their lifetime.

An exciting piece of news is that the IDF has been working on the Platinum Standard Definition of MetSyn; they are utilizing advanced metabolic measures and taking into account the following criteria[4]:

- **Abnormal body fat distribution**: Adipose tissue biomarkers (eg, leptin, adiponectin)
- **Atherogenic dyslipidemia**: Small LDL particles (ApoB, etc)
- **Vascular dysregulation**: Endothelial dysfunction biomarkers, microalbuminuria, etc
- **Insulin resistance**: Fasting insulin/proinsulin levels, elevated free fatty acids, HOMA-IR, etc
- **Pro-inflammatory state**: hs-CRP, IL-6, TNF-□, etc
- **Prothrombotic state**: PAI-1, fibrinogen, etc
- **Hormonal factors**: Pituitary-adrenal axis

Ideally, these advanced biomarkers will be able to identify and detect early signs of insulin resistance or metabolic syndrome. The Standard Lipid Panel does not do a good job of evaluating cardiovascular risk, as 50% of people who have had a heart attack received "normal" cholesterol results.[9] A more complete evaluation of individuals for MetSyn and cardiovascular risk assessment is clearly essential, as early interventions can often prevent or reverse the progression of heart disease.

This article consists of 2 parts. Part 1 of the article provides an overview of MetSyn and heart disease, introduces a naturopathic case study, and discusses the patient's comprehensive cardiometabolic laboratory tests and results. Part 2 (upcoming) will delve into the comprehensive naturopathic treatment plan that can resolve MetSyn, and provides follow-up lab results of the same patient following naturopathic treatment.

Naturopathic Case Study

Brief Medical History

A 36-year-old Asian male came to see me for an initial naturopathic consult, with the chief complaint of fatigue for a few years. The patient had also been obese for several years, his weight having steadily crept up over the past 5 years due to physical inactivity and poor eating habits. He was married and had 2 young children, was self-employed, and had been working long hours with moderate stress for several years. He wanted to understand the underlying causes of his fatigue other than working too much. The patient reported sleeping well, getting 7 hours of sleep per night. He had not had an annual physical exam for over 10 years.

The patient had a strong family history of diabetes and heart disease. In fact, his mother was recently admitted to a hospital due to a heart attack, and fortunately survived the event. The patient expressed that he would like to prevent any future cardiac events if possible. He reported feeling motivated to change his lifestyle, since he would like to live a long, healthy life for his wife and his 2 young children. He reported having no chronic health issues, and took no prescription medications. The only over-the-counter medication he took as needed for seasonal allergies was an anti-histamine. The patient denied any alcohol intake or smoking of cigarettes. He had not been taking any nutritional supplements but said he would like advice on nutritional supplementation. He also wanted to get a comprehensive laboratory assessment to find underlying causes of his fatigue, evaluate his cardiovascular risk, address his obesity problem, and thoroughly assess his overall health status. His ultimate goal was to feel well again with good energy, lose weight, and optimize his health.

Physical Exam

Since naturopathic doctors are not licensed in Virginia, I referred this patient to one of our medical providers in the same medical group for an annual physical exam and my recommended comprehensive lab work. The patient was found to be 170.18 cm (67 in) tall, and weighed 104.3 kg (239 lb, BMI 36.0 kg/m^2). His overall examination was unremarkable, other than being classified as Class II Obesity with significant central obesity (waist circumference 36.5 in). A series of blood tests (listed below) were performed during this office visit, to rule out metabolic syndrome, nutritional deficiencies, hormonal imbalance (especially thyroid function and sex hormones), genetic risks for heart disease, and to thoroughly assess cardiovascular risk biomarkers and overall health status.

Laboratory Evaluation & Discussion

The patient came to see me 2 weeks after the blood draw for a second naturopathic visit in order to review the lab test results and the naturopathic treatment plan. The information below shows the initial lab results from his annual physical visit.

Figure 1. **Fasting Glucose**

Laboratory Test	Notes	High Risk	Intermediate Risk	Optimal	High Risk Range	Intermediate Risk Range	Optimal Range
Glucose (mg/dL)				94	> 125	100-125	70 - 99

Figure 2. **Liver Panel**

Liver	Result	Flag	Reference Interval
ALT / GPT (U/L)	40		< 42
AST / GOT (U/L)	22		< 41
ALP (U/L)	50		< 16 years: 96 - 410 16-20 years: 49 - 210 21-90 years: 35 - 117 > 90 years: 38 - 140
GGT (U/L)	111	H	8 - 61
Total Bilirubin (mg/dL)	0.8		Up to 1.2

Figure 3. **Standard Lipid Panel**

Laboratory Test	Notes	High Risk	Intermediate Risk	Optimal	High Risk Range	Intermediate Risk Range	Optimal Range
Lipids							
Total Cholesterol (mg/dL)			208		≥ 240	200 - 239	< 200
LDL-C Direct (mg/dL)			127		≥ 130 CHD & CHD risk eq. > 100	100 - 129 CHD & CHD risk eq. 70 - 100	< 100 CHD & CHD risk eq. < 70
HDL-C (mg/dL)				43	< 40		≥ 40
Triglycerides (mg/dL)		301			> 199	150 - 199	< 150
Non-HDL-C (mg/dL) (calculated)		164			≥ 160	130 - 159	< 130

Figure 4. **Advanced Lipoprotein Panel**

Laboratory Test	Notes	High Risk	Intermediate Risk	Optimal	High Risk Range	Intermediate Risk Range	Optimal Range
Lipoprotein Particles and Apolipoproteins							
Apo B (mg/dL)		113			≥ 80	60 - 79	< 60
LDL-P (nmol/L)*		1830			≥ 1360	1020 - 1359	< 1020
sdLDL-C (mg/dL)*		56			> 30	21 - 30	< 21
% sdLDL-C (calculated)		44			> 30	26 - 30	< 26
Apo A-I (mg/dL)			122		< 114	114 - 131	> 131
HDL-P (μmol/L)*		32.6			≤ 34.0	34.1 - 38.0	> 38.0
HDL2-C (mg/dL)*		8			≤ 8	9 - 11	≥ 12
Apo B:Apo A-I Ratio (calculated)		0.92			≥ 0.81	0.61 - 0.81	≤ 0.6
Lp(a) Mass (mg/dL)				4	≥ 30		< 30

Figure 5. **Inflammation/Oxidation Panel**

Laboratory Test	Notes	High Risk	Intermediate Risk	Optimal	High Risk Range	Intermediate Risk Range	Optimal Range
Inflammation/ Oxidation							
Fibrinogen (mg/dL)		586			< 126 or > 517	438 - 517	126 - 437
hs-CRP (mg/L)			1.5		> 2.9	1.0 - 2.9	< 1.0
Lp-PLA$_2$ (ng/mL)				136	> 235	200 - 235	< 200
Myeloperoxidase (pmol/L)*			330		≥ 400	321 - 399	≤ 320
Uric Acid (mg/dL)		9.6			≥ 8.0	7.0 - 7.9	2.0 - 6.9

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Figure 6. **Genetic Markers**

	Laboratory Test	Notes	High Risk	Intermediate Risk	Optimal	
Coagulation Genetics	MTHFR (C677T)^ rs1801133 (Methylenetetrahydrofolate Reductase)				C/C	Estimated Genotype Frequency: C/C (~49.3%), C/T (~39.8%), T/T (~10.9%)
	MTHFR (A1298C)^ rs1801131			A/C		Estimated Genotype Frequency: C/C (~7-12%), A/C (~30%), A/A (~58-63%)
Lipoprotein Genetics	Apolipoprotein E (T471C, C609T)^ rs429358, rs7412				3/3	Estimated Genotype Frequency: 2/2 (~1-2%), 2/3 (~15%), 2/4 (~1-2%), 3/3 (~55%), 3/4 (~25%), 4/4 (~1-2%)

Figure 7. **Nutritional Status Biomarkers**

Laboratory Test	Notes	High Risk	Intermediate Risk	Optimal	High Risk Range	Intermediate Risk Range	Optimal Range
25-hydroxy-Vitamin D (ng/mL)			22		≤ 14	15 - 29	30 - 100
Homocysteine (µmol/L)		14			> 13	11 - 13	< 11
Vitamin B_{12} (pg/mL)				497	< 211	211 - 400	> 400
RBC Folate (ng/mL)				794	< 700	700 - 750	> 750

Figure 8. **Omega-3 Index**

	Laboratory Test	Notes	High Risk	Intermediate Risk	Optimal	High Risk Range	Intermediate Risk Range	Optimal Range
Index	HS-Omega-3 Index* (RBC EPA+DHA)*			7.0		< 4.0%	4.0% - 8.0%	> 8.0%

Figure 9. **Iron Panel**

Others	Result	Flag	Reference Interval
Iron (µg/dL)	120		59 - 158
Ferritin (ng/mL)	311		30 - 400

Figure 10. **Diabetes Panel**

	Laboratory Test	Notes	High Risk	Intermediate Risk	Optimal	High Risk Range	Intermediate Risk Range	Optimal Range
Glycemic Control	Glucose (mg/dL)				94	> 125	100-125	70 - 99
	HbA1c (%)				5.6	≥ 6.5	5.7 - 6.4	≤ 5.6
	Estimated Average Glucose (mg/dL) (calculated)				114.0	≥ 139.9	116.9 - 139.8	≤ 116.8
	Fructosamine (µmol/L)				252	> 346	302 - 346	< 302
	Insulin (µU/mL)		23			≥ 12	10 - 11	3 - 9
	Adiponectin (µg/mL)		2			< 10	10 - 14	> 14

Figure 11. **Thyroid Panel**

Thyroid	Result	Flag	Reference Interval
TSH (µIU/mL)	1.73		0.27 - 4.20
T4 (µg/dL)	9.9		4.5 - 11.7
T4, free (ng/dL)	1.49		0.93 - 1.70
T3 (ng/dL)	145		80 - 200
T3, free (pg/mL)	4.0		> 19 yrs - 2.0 - 4.4
Reverse T3 (ng/dL)^	16		8 - 24
Anti-Thyroglobulin Antibody (IU/mL)ŦŦ	28		< 115
Anti-Thyroid Peroxidase Antibody (IU/mL)	8		< 34

Figure 12. **DHEA**

Male and Female Hormones	Result	Flag	Reference Interval
Dehydroepiandrosterone sulfate (µg/dL)	279		15 - 19 years: 70 - 492 20 - 24 years: 211 - 492 25 - 34 years: 160 - 445 35 - 44 years: 89 - 427 45 - 54 years: 44 - 331 55 - 64 years: 52 - 295 65 - 74 years: 24 - 249 > 75 years: 16 - 123

Figure 13. **Testosterone**

Male and Female Hormones	Result	Flag	Reference Interval
Testosterone (ng/dL)	188		Men: 280 - 800 Boys: < 1 year 12 - 21 1 - 6 years 12 - 32 7 - 12 years 12 - 68 13 - 17 years 28 - 1110

Complete Blood Count (CBC)

The patient's CBC results were unremarkable.

Comprehensive Metabolic Panel

The patient's electrolytes, kidney function tests, and proteins were unremarkable. His fasting glucose (Figure 1) was 94 mg/dL. Even though the lab labeled this level "optimal," I considered it "borderline-high." This is because of a 22-year prospective study[10] that found that men with fasting blood glucose >85 mg/dL had a significantly increased risk of dying from cardiovascular disease (CVD).[10] As a result, my optimal level for a fasting glucose level ranges from 70 to 85 mg/dL. In addition, a fasting glucose test is simply a snapshot of blood glucose at a specific time of day while fasting (with water only) over 8-12 hours. Hence, other, more advanced blood sugar biomarkers should ideally be measured as well for a comprehensive overview of patient's blood glucose status, including Hemoglobin A1c (HgbA1c), Fructosamine, Fasting Insulin, and Adiponectin. These biomarkers will be discussed in the Comprehensive Diabetes Panel section.

The patient's AST, ALP, and total bilirubin (Figure 2) were unremarkable.

However, his ALT (alanine-transaminase) level was borderline-high at 40 U/L, suggesting that he might have an underlying non-alcoholic fatty liver disease (NAFLD) due to his obesity issue. (He denied drinking any alcohol beverages.) The ALT level should be <30 U/L, but ideally <20 U/L.[11,12] Researchers found that even when ALT was <30 U/L, subjects whose ALT was in the highest ALT (upper 20s range) had a 1.878-times-higher risk of developing MetSyn than those with ALT in the lowest quartile (lower teens).[11]

The patient's GGT (gamma-glutamyltransferase) level was elevated at 111 U/L (almost twice the upper limit). Serum GGT has long been utilized clinically as a biomarker for excessive alcohol consumption or liver disturbances.[13] However, GGT has recently been shown to also be a useful biomarker for inflammation and oxidative stress, as well as the development of CVD, hypertension, stroke, type 2 diabetes, and their complications, independent of alcohol consumption.[13] Moreover, in prospective studies, elevated levels of ALT and GGT have been shown to predict and increase risk of CVD events.[11]

Standard Lipid Panel

The patient's Total Cholesterol and LDL-C Direct levels (Figure 3) were mildly elevated at 208 mg/dL and 127 mg/dL, respectively. His HDL-C was borderline-low at 43 mg/dL. His Triglycerides and Non-HDL-C levels were highly elevated at 301 mg/dL and 164 mg/dL, respectively. According to the Framingham Heart Study, the patient's chance of having a myocardial infarction (MI) within the next 10 years was about 3.3%.[14] However, as mentioned previously, the Standard Lipid Panel alone is not comprehensive enough to evaluate a patient's risk for a CV event, since an estimated 50% of patients admitted to hospitals for MI have "normal" LDL-C levels.[9] Personally, I have found the Triglyceride (TG) level to be the most clinically relevant biomarker on the Standard Lipid Panel. Optimally, the TG level should be <100 mg/dL.[15] The TG/HDL Ratio should be less than 2. In this case, his TG/HDL ratio was highly elevated at 6.98, signifying increased risk of a coronary event.[16] Elevated TGs can be due to several causes, including:

- A diet high in refined carbohydrates, animal saturated fats (including dairy products), and trans fats
- Being physically inactive, overweight, and/or obese
- Other factors, including hypothyroidism, increased alcohol consumption, type 2 diabetes, cigarette smoking, and genetic factors

Advanced Lipoprotein Panel

The Advanced Lipoprotein Panel (Figure 4) provides an excellent in-depth CV risk assessment. This patient's results showed a classic "Atherogenic Lipid Triad"[17-19] of elevated TG levels, low healthy cholesterol fractions (Apo A-I, HDL-P, and HDL2-C levels), and high atherogenic cholesterol fractions (Apo B, LDL-P, and sdLDL-C). Fortunately, his Lp(a)-P level (a genetic risk marker for developing coronary artery disease) was normal.

- **Apo B** (Apolipoprotein B) is the scientifically accepted measurement of atherogenic particle number. Optimally, Apo B should be <70 mg/dL. Several studies identified elevated Apo B concentrations to be highly predictive of CV events.[19,20]
- **HDL2-C**, an HDL-C subclass that is larger in size and has a heart-protective effect, is associated with the majority of reverse cholesterol transport and regression of coronary atherosclerosis.[18,19,21]
- **LDL-P** (LDL Particle Count) represents the actual number of all-sized LDL particles within a liter of plasma (expressed in nmol/L). An elevated LDL-P level is associated with increased CHD risk, increased carotid intimal medial wall thickness, and has been shown to be a better marker for CV risk assessment than the traditional LDL-C marker.[18,19]
- **sdLDL-C** (small-dense LDL-C) is associated with increased atherogenic risk, especially in combination of high TGs and low HDL-C.[17-19,21] Increased sdLDL-C has been associated with both the presence and severity of CHD.[20] Small-dense LDL particles are more likely to damage artery walls than larger LDL particles.[18,21]
- **Apo A-I** (Apolipoprotein A-1), the major protein component of HDL, plays an essential role in reverse cholesterol transport and has an anti-clotting effect on platelets.[22] In addition to lowering CVD risk, Apo A-I has been shown to have anti-tumor, anti-inflammatory, and neutralizing effects against endotoxin lipopolysaccharide (LPS).[22]
- **HDL-P** (HDL Particle Count) represents all-sized HDL particles within a liter of plasma (mmol/dL). HDL-P has been shown to be a better biomarker than the traditional HDL-C marker.[23]
- **Lp(a)-P** (Lipoprotein[a] Particle) is an LDL-like particle that consists of an abnormal protein, apolipoprotein(a), attached to 1 molecule of Apo B100 via a disulfide bond.[24] Lp(a) is well recognized as an independent causal risk factor for ischemic CVD, and has been associated with aortic stenosis.[24-26] It is usually elevated due to an inherited abnormality.[25]

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Inflammatory & Oxidative Stress Biomarkers

Inflammation and oxidative stress are known contributors to cardiovascular risk. This patient had several elevated markers in this area, reflecting increased CVD risk (Figure 5).

- **Fibrinogen** is a protein that converts to fibrin during blood clot formation, and is also an acute phase reactant, responding to any inflammatory process including atherosclerotic lesions in the arteries. In this case, the patient was found to have an elevated Fibrinogen level, which enhances platelet adhesion and promotes a prothrombotic state. A high fibrinogen level was shown to be an independent predictor for the development of coronary artery disease (CAD) in the Framingham study.[27] In several large prospective studies, fibrinogen has been established as an independent risk factor for CAD.[28,29]
- **hs-CRP** (high-sensitivity C-reactive protein) is a highly sensitive assay capable of detecting low levels of CRP. An elevated hs-CRP is currently considered an independent risk factor for atherosclerosis and hypertension.[30] The patient's hs-CRP was mildly elevated.
- **Lp-PLA2** (Lipoprotein-associated Phospholipase A2), also known as Platelet-Activating Factor Acetylhydrolase, or PAF-AH), is an enzyme that promotes inflammation and oxidative stress, leading to atherosclerotic lesions.[31] An elevated Lp-PLA2 level is a strong risk factor for CHD.[32] This patient had a normal level of Lp-PLA2.
- **Myeloperoxidase** (MPO), an enzyme synthesized and stored within monocytes and polymorphonuclear leukocytes, has been linked, when elevated, to the development of atherosclerotic disease, plaque instability, carotid plaque inflammation, and endothelial dysfunction by limiting nitric oxide bioavailability and by directly consuming nitric oxide.[33,34] This patient had an elevated MPO level, which has been shown to be associated with an increased risk of CVD in several studies.[35] MPO catalyzes the oxidation of HDL-C, impairing its ability to perform reverse cholesterol transport, and promoting the development of dysfunctional HDL-C.[36]
- **Uric Acid** is a product of the metabolic breakdown of purine nucleotides. Purines are found in high concentration in meat products, especially internal organs such as liver and kidney. In this case, the patient's uric acid level was highly elevated, increasing his risk of developing gout. He denied having any previous gout attacks. Multiple studies have shown that hyperuricemia is also a strong risk factor for CAD, hypertension, and obesity-related MetSyn.[37]

Genetic Tests

C677T & A1298C MTHFR Gene

The methylenetetrahydrofolate reductase (MTHFR) enzyme plays a critical role in maintaining the equilibrium between DNA methylation, DNA synthesis/repair, folate metabolism, and the remethylation of homocysteine (Hcy).[38,39] The MTHFR 677 T-allele is associated with reduced enzymatic activity, reduced folate levels, and homocysteinemia (elevated Hcy levels).[38,39] Homocysteinemia is a strong risk factor for both CVD; hence, early detection of MTHFR gene mutations, B vitamin status, and homocysteine level are essential to optimize brain and cardiovascular health.[40] The presence of MTHFR gene mutations also increases the risk of thrombosis.[38,39]

In addition, a large meta-analysis showed that the MTHFR T-allele increases the risk for Alzheimer's disease (AD) in the general population, particularly in Asian populations.[40] Although the MTHFR 1298 C-allele is associated with decreased enzymatic activity, it has not been linked with homocysteinemia.[38,39] Although this patient's genetic analysis (Figure 6) showed a heterozygous A1298C genotype, his homocysteine level was elevated. This could be due to borderline-low levels of serum B12 and RBC Folate (discussed below).

Apolipoprotein E (ApoE) Gene

Apo E-containing lipoproteins transport dietary lipids to the tissues for storage, and transport cholesterol and other lipids from the tissues to the liver for excretion; hence, genetic abnormality in the ApoE gene would result in lipid metabolism problems.[41] The APOE gene polymorphism has been associated with CVD, hypertension, dyslipidemia, diabetes, neurodegenerative disorders, and MetSyn.[37] The APOE gene exists in 3 different forms, including ApoE2, E3, and E4. Epidemiological studies have demonstrated that E4-allele carriers are particularly predisposed to higher cholesterol levels and a higher incidence of CAD mortality,[42,43] although E4 carriers without visceral obesity appear to have a lower prevalence of CVD.[42] ApoE4 individuals should limit the amount of saturated, trans fat, and alcohol in their diet. ApoE2 individuals are prone to develop diabetes and insulin resistance, so should further limit the amount of carbohydrate and sugar in the diet.[44]

This patient was found to have the ApoE3/E3 genotype, which is considered normal lipid metabolism. Individuals carrying ApoE3 should eat a portion-controlled, balanced diet that is rich in vegetables, some fruits, and low in sugar.

Nutritional Status Biomarkers

- **25-hydroxy-Vitamin D**: Vitamin D deficiency is very common due to our modern lifestyle, in which we are mostly living and working indoors, with minimal exposure to sunlight. This patient had a clear vitamin D

deficiency (Figure 7). Optimally, I like to see the 25-hydroxy-Vitamin D level in the 60-80 ng/mL range. Vitamin D deficiency is associated with chronic degenerative diseases such as atherosclerosis, hypertension, insulin resistance, diabetes mellitus, MetSyn, osteopenia/osteoporosis, cancers (eg, breast, colon), autoimmune diseases (eg, multiple sclerosis, rheumatoid arthritis, psoriasis), fatigue, muscle pain, dementia, AD, chronic infections, and all-cause mortality.[45-47]

- **Homocysteine (Hcy)**: (See the MTHFR gene section for a discussion of Hcy). The patient's Homocysteine level was elevated at 14 mmol/L. An optimal level of Hcy is <8 mmol/L.
- **Serum B12 & RBC Folate tests** should be checked along with Homocysteine, as B vitamin status has a huge impact on Hcy levels. Optimally, serum B12 should be >800 pg/mL, and RBC Folate should be >1000 ng/mL. The patient's serum B12 and RBC Folate were both borderline-low. Researchers have found that low B vitamins can increase the risk of developing MetSyn.[48] Supplementation of L-methylfolate can often normalize homocysteinemia.[49]

RBC Omega-3 Index

Omega-3 Index (RBC EPA + DHA) not only provides a clinically reliable evaluation of omega-3 fatty acid status, but is also a CV risk factor. A low Omega-3 Index has been associated with sudden cardiac death, acute coronary syndromes, accelerated cellular aging, early mortality, impaired cognitive function, and increased risk for developing AD.[50-53] This patient's Omega-3 Index status was suboptimal (Figure 8).

Iron Panel

Excessive accumulation of iron in the body (iron overload) is a strong risk factor for a wide range of diseases, including CVD, liver dysfunction, peripheral arterial disease, and neurodegenerative diseases, to name a few.[54] Researchers have also found that hyperferritinemia can be linked to insulin resistance and fatty liver in the absence of iron overload (determined by liver biopsies).[54] In this case (Figure 9), the patient had a normal serum Iron level but a borderline-high Ferritin level (which could be due to insulin resistance and fatty liver, especially considering his borderline-high ALT level).

Comprehensive Diabetes Panel

- **Fasting Glucose** (See CMP section)
- **Hemoglobin A1c (HbA1c)** is a well-established diabetic screening test that provides a picture of the average amount of blood glucose for the past 2-3 months, unlike a fasting blood glucose, which only provides a snapshot. HbA1c is also a good test for monitoring compliance of dietary recommendations in patients who have prediabetes/diabetes. However, its level can be affected by several medical conditions, including anemia (iron and/or B12 deficiency), kidney or liver disease, recent severe bleeding or blood transfusion, and hemoglobin disorders. This patient's HbA1c was borderline-high at 5.6% (Figure 10).
- **Fructosamine (Glycated Serum Protein)** provides an average blood sugar measurement for the past 2-3 weeks. Fructosamine is formed by non-enzymatic glycation of multiple serum proteins, including hemoglobin and albumin.[55] Moreover, Fructosamine is not affected by RBC turnover or hemoglobinopathies, so can be used in specific clinical conditions that exclude the use of HbA1c.[55] However, Fructosamine, because it is dependent on glycation of protein, will not be a reliable marker in conditions in which global protein metabolism is altered, such as nephrotic syndrome and liver cirrhosis. The patient's Fructosamine level was found to be normal.
- **Adiponectin** has been shown to be a crucial molecule involved in limiting the pathogenesis of obesity-linked disorders, and may have potential benefits in the treatment and prevention of CVD. High levels of adiponectin are linked to a reduced risk of CAD and increased endothelial nitric oxide production.[56] Hypoadiponectinemia is associated with the pathogenesis of type 2 diabetes, CAD, hypertension, and left ventricular hypertrophy.[56] In this case, the patient's adiponectin level was very low.
- **Fasting Insulin**, especially when combined with elevated Triglycerides and a high waist-to-hip ratio, provides an excellent estimate of current insulin resistance status and risk of future CVD.[57] Insulin is responsible for regulating blood glucose by facilitating uptake of glucose by cells for energy or for storage. Progressively elevated fasting insulin levels is significantly associated with insulin resistance as well as atherosclerosis and CVD risk. This patient's fasting insulin level was highly elevated at 23 mU/mL, indicating significant insulin resistance and MetSyn.

Comprehensive Thyroid Panel

Thyroid hormones can have a huge impact on the CV system.[58-60] For example, hyperthyroidism has been linked to tachycardia, atrial arrhythmias, increased left ventricular mass, impaired ventricular relaxation, poor exercise performance, and increased risk of cardiovascular mortality.[58-60] On the other hand, hypothyroidism has been linked with impaired left ventricular diastolic function, systolic dysfunction, and an increased risk of atherosclerosis and MI.[58-60] Therefore, it is essential to get a complete assessment of thyroid function with the following tests: TSH, free T3, total T3, free T4, total T4, Reverse T3, and thyroid antibodies (Anti-TPO & Anti-Thyroglobulin Antibodies). In this case, the patient had normal thyroid

parameters (Figure 11).

Sex Hormones

The adrenal sex hormone, dehydroepiandrosterone (DHEA), mainly present in the body as a sulfate ester (DHEA-S), is the most abundant steroid hormone in human blood. DHEA has been shown to be crucial for body composition, insulin sensitivity, endothelial function, female fertility metabolism, and neuronal/CNS functions.[61,62] Moreover, DHEA is considered to have a cardioprotective effect by reducing vascular inflammation and remodeling, platelet aggregation, oxidative stress, and atherosclerosis.[61] Low serum levels of DHEA-S have also been linked to age-related cardiometabolic diseases and an increased risk of coronary events.[61] This patient's DHEA-S level was normal (Figure 12).

Several longitudinal population studies have demonstrated that testosterone deficiency is associated with an increase in all-cause mortality, including cardiovascular, respiratory, and cancer deaths.[63] Testosterone deficiency is linked to several key CV risk factors, including central obesity, insulin resistance, hyperglycemia, dyslipidemia, chronic inflammation, and hypertension.[63] This patient's Testosterone level was found to be low (Figure 13).

Summary

In summary, the comprehensive cardiometabolic assessment revealed that this patient had been suffering from metabolic syndrome (obesity, high Triglycerides, low HDL-C, and insulin resistance with hyperinsulinemia and reduced Adiponectin), increased inflammatory markers (elevations in Fibrinogen, hs-CRP, Uric acid, Hcy, and MPO), vitamin D deficiency, borderline B12 and folate deficiencies, elevated liver enzymes (ALT and GGT), and low Testosterone.

Part 2 of this article will discuss the comprehensive naturopathic treatment principles and plan used to address these abnormalities, as well as the follow-up lab results following his treatment.

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OCPs & Cerebral Venous Thrombosis

A Case Study

RHONDALYNN SMITH BRUSTOSKI, ND

Victoria, a 35-year-old female, presented to my office in April 2010 with diffuse cerebral venous sinus thrombosis secondary to oral contraceptive pills (OCPs). She had residual ataxia and gait disturbances, weight gain, eye pain, poor sleep, acne, musculoskeletal pain, paralysis, dizziness, loss of balance, anxiety, high stress, and migraines.

Patient History

The patient had a cerebral venous thrombosis (CVT) while training for a half-marathon. Once hospitalized, she had a mild seizure. She was given levetiracetam, nortriptyline, gabapentin, and warfarin. As a result of the medications, she experienced severe acne and weight gain. Since experiencing the CVT, her vision had declined to near-sightedness. The patient had difficulty falling asleep, and said she had always had poor sleep patterns throughout life. She had a lifetime history of anxiety and high stress. Within the past year, she lost a loved one, which caused her significant grief. She had been on OCPs for half of her life including the time of the CVT. She had a history of mild to severe constipation, as well as a past history of menstrual issues. She had a significant family history of CVTs and cardiovascular conditions that dated back 4 generations. Her health priorities were to reduce her medications over time, lose weight, and to run a half-marathon in 5 months.

Assessment & Plan

The patient's significant family medical history of CVTs suggested a genetic or miasmatic predisposition to the condition. I suspected that the significant loss she had experienced mentally and emotionally, in addition to her high stress, anxiety, family medical history, and use of OCPs, all played roles in her current condition. The systems most affected were her central nervous system, and her cardiovascular and endocrine systems.

I prescribed Dr Dick Thom's Basic Treatment Guidelines (BTGs),[1] to establish a foundation of health and well-being that would support and optimize the above systems. These BTGs included: deep conscious breathing AM and PM, filtered water (one-half of body weight in ounces), gradual daily movement, contrast hydrotherapy, castor oil packs, sleeping in total darkness, being outside everyday, probiotics, a proprietary vitamin/mineral supplement to support the cardiovascular and nervous systems,[2] massage therapy, and a diet that was gluten-free, casein-free, and anti-inflammatory. The patient was also advised to stop OCPs.

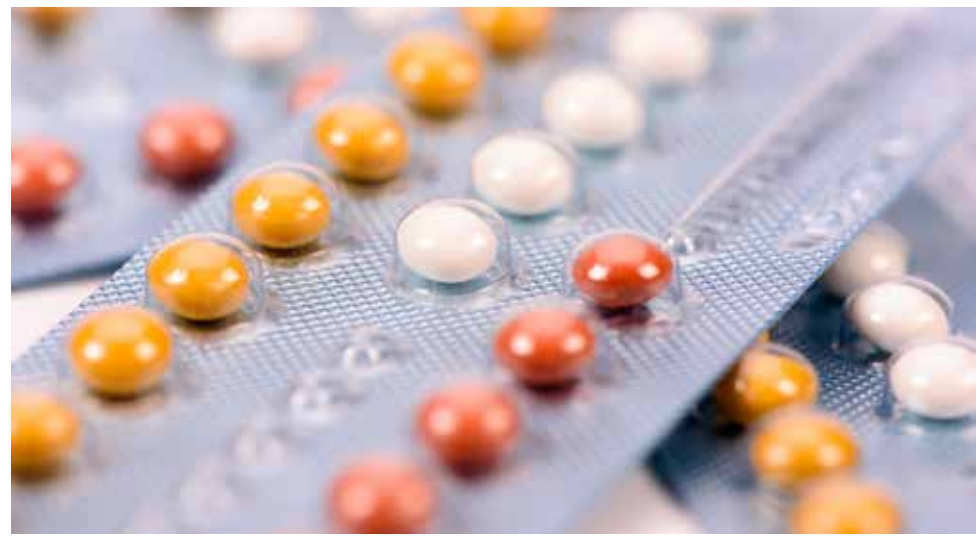
Follow-up Visits

One-Month Follow-up & Plan

At the 1-month follow-up, the patient reported an 18-lb weight loss, reduced pain, complete mobility (including walking a few miles with walker assistance), improved sleep, greater calm, improved energy, no migraines, and no eye strain. She had worked 30 hours the previous week, felt no musculoskeletal pain, and had experienced an increased frequency of bowel movements. She was instructed to continue her current treatment plan and to add in 3 proprietary low-potency homeopathic combinations of plants and minerals targeting specific systems, as well as a mixed homeopathic to reduce stress, a botanical immune booster, and grape seed extract.

Two-Month Follow-up & Plan

At 2 months, the patient felt overall better and calmer despite experiencing 2 emotional breakdowns during the past month. Blood clots had decreased by 80%.



She craved dairy and had eaten cheese. As a result, she felt sick for 3 days, and experienced diarrhea and abdominal pain.

The patient was instructed to continue her treatment plan, and to add in the following: apple cider vinegar before meals, a rotation of ground seeds and essential fatty acids, B-complex, a liquid calcium/magnesium supplement, Epsom salt baths, and Mag Phos 6X tissue salt.

Four-Month Follow-up & Plan

The patient had lost 40 pounds since mid-April, was tolerating some dairy, felt improved mentally and emotionally (improved mood, no emotional breakdowns), and had decreased all medications per her neurologist. The treatment plan was to continue BTGs and the plan established in the previous visit.

The tremendous improvement displayed in this patient's condition demonstrates the power of building and supporting the foundation of health and well-being via nature-cure and Basic Treatment Guidelines.

Six-Month Follow-up & Plan

The patient had continued to lose more weight, losing a total of 60 pounds since the CVT. She was off all medications per her neurologist. She was able to be 100% active in terms of movement; however, she had muscle stiffness. She had improved sleep, mood, energy, and appetite, and reported an improved menstrual cycle, with decreased pain. She was instructed to continue her current plan.

Nine-Month Follow-up & Plan

The patient had seen her neurologist, whose neurological exam was within normal limits. As a result, she was released from neurological care. Her bowel movement frequency had improved to 1-2 times per day, and her acne had cleared. She wanted to be more physically active, and she had set a goal to run a half-marathon in a few months.

At this point, the patient continued all BTGs and was advised to follow up as needed. She ran 2 half-marathons in less than 2 years after a full recovery.

Discussion

Several studies show the use of oral contraceptives is strongly associated with CVTs in women. One particular study showed that the presence of both the prothrombin gene mutation and OCP use raises the risk of CVT even further.[3] I did not test for this mutation in my patient; however, her strong family history of CVT over 4 generations was suggestive of possible miasmatic and hereditary influence. In this case, the patient reported that changing her diet and lifestyle behaviors resulted in the most improvement.

The tremendous improvement displayed in this patient's condition demonstrates the power of building and supporting the foundation of health and well-being via nature-cure and Basic Treatment Guidelines. The specific low-dose, mixed homeopathic formulations addressed the overall toxicity of the case by targeting the function of liver and kidneys, and promoting the catabolism of medications. Her other treatments were specifically selected to address the nervous system. The patient was very happy with her progress, and we continue to follow up over time. She still maintains her diet and BTGs.

Rhondalynn Smith Brustoski, ND, graduated from Bastyr University and is in private practice at Nature Cure Health and Wellness, in Chagrin Falls, OH. In her practice she works to transform the paradigm of medicine by offering a preventive and curative approach to health care. She believes it is vital to create a long-term, healing therapeutic relationship with each patient so that she can unveil the underlying cause(s) of signs and symptoms rather than simply manage symptoms. Her foundational nature-cure approach to health care and wellness focuses on optimal lifestyle choices, biotherapeutic drainage, craniosacral therapy, counseling, hydrotherapy, homeopathy, and botanical medicine. Dr Brustoski is also a contributing author for the textbook *Foundations of Naturopathic Medicine.*

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Risk Stratification of CVD

Making Use of an ECG Interpretation Guide

NATHANIEL BINGHAM, ND

Electrocardiography (ECG), today, is an essential part of the initial evaluation for patients presenting with cardiac complaints. An ECG plays an important role as a non-invasive, cost-effective tool to evaluate arrhythmias and ischemic heart disease.[1] As an important diagnostic tool, healthcare providers of all levels of training and expertise consistently recognize the need to have the ability to interpret ECGs; however, an increased rate of misinterpretation has occurred among non-specialized physicians and especially among medical students.[2]

Evolution of the ECG

Dr Willem Einthoven, a Dutch physiologist, developed the first ECG machine in 1901 and demonstrated the 5 deflections known today as the waveforms PQRST.[3] The original device weighed 600 lb, and 3 electrodes were used to construct Einthoven's triangle.[4,5] In 1924, Einthoven was awarded the Nobel Prize in physiology and medicine for the invention of the ECG.[5] Over the next 30 years, a central terminal was developed to establish the precordial leads and the augmented unipolar leads. In 1954, the American Heart Association's 12-lead ECG, as we know it, was standardized.[5,6]

There is a multitude of clinical uses of the 12-lead ECG. For example, the ECG may reflect changes associated with coronary artery disease, hypertension, cardiomyopathy, infiltrative disorders, metabolic and electrolyte abnormalities, and therapeutic or toxic effects of drugs or medical devices.[7] Each waveform of an ECG has its own sensitivity and specificity and is influenced uniquely by pathophysiologic factors. There are more structural/pathophysiologic changes than recognizable ECG patterns, which results in significant overlap and reduces the specificity of ECGs. For example, although ST-segment and T-wave changes are the most common and most sensitive ECG abnormalities, these changes are also the least specific.[8]

ECGs are interpreted by practitioners of cardiology, emergency medicine, internal medicine, and family medicine.[9] If the interpretation of an ECG contributes to clinical decision-making, the physician should have a sufficient knowledge base to make an accurate diagnosis. A categorical list comprised of 88 abnormalities has been established by the American College of Cardiology /American Heart Association (ACC/AHA), to represent competency.[10] An adequate knowledge base should include the ability to define, recognize, and understand the basic pathophysiology of certain electrocardiographic abnormalities. A competent ECG reader should understand the importance of comparing a current ECG tracing to previous tracings in order to make the correct diagnosis, and recognize that not all clinical disorders always produce a diagnostic ECG pattern.[10]

ECG Interpretation Guide for Primary Care

Dr Martin Milner, Professor of Cardiology at the National University of Natural Medicine, developed a 1-page ECG interpretation guide 25 years ago as a reference for reducing interpretation time and aiding in the education of medical students. The backbone of Dr Milner's original interpretation guide consisted of topics including: rate, rhythm, axis, hypertrophy, ischemia, and infarct. This framework guides students through a standard 12-lead ECG and highlights basic-to-complex concepts in a method that results in an acceleration of content/pattern recognition and recall.

In 2013, Cory Szybala (an eager naturopathic medical student at the time) , and I (a 1st-year medical resident) attempted to update Dr Milner's classic document. Dr Szybala was the lead graphic designer and essential to the development of the new ECG Interpretation Guide. Our goals were to 1) enhance the guide with an overview section; 2) create a graphic-enhanced, stepwise approach for students to learn specific aspects of ECG tracings; 3) include keynotes of specific ECG findings; 4) provide a review of the cardiac conduction pathway; and 5) create a means of locating ECG findings and associating them with specific coronary artery abnormalities. The new edition has been updated 11 times in the last 2 years and has been used by more than 400 medical students. During this process, the feedback from students was surveyed, cataloged, and reviewed before changes to the Interpretation Guide were completed (Figure 1).

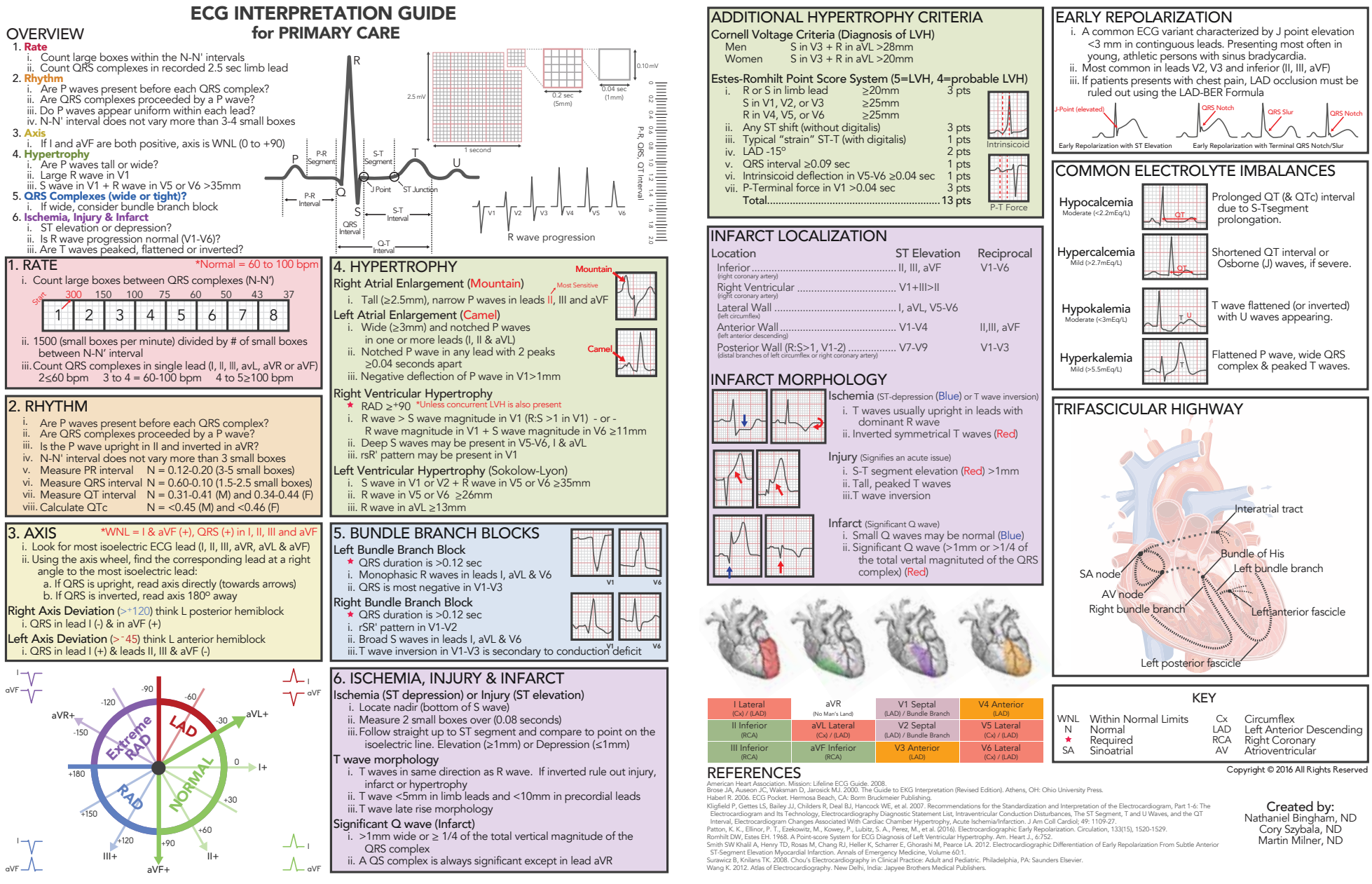
The indispensable reference source for ECGs – *Chou's Electrocardiography in Clinical Practice: Adult and Pediatric*, 6th edition – has 752 pages, which is obviously very difficult to summarize into a 2-page document. The ECG Interpretation Guide for Primary Care explains rhythm concepts; however, it never discusses premature atrial, junctional, or ventricular contractions, types of atrioventricular blocks, sinoatrial blocks, paroxysmal supraventricular tachycardias, Torsades de Pointes, or wide QRS complex tachycardias. Unique ECG findings, such as coved ST-segment elevation in Brugada syndrome; the S_I Q_{III} T_{III} pattern associated with a pulmonary embolism; or PR interval depression and the "Fireman's hat sign" in pericarditis, are also not discussed due to a lack of space and a need for greater competency of the ECG reader.

Dr Milner has stated, "An electrocardiogram is not cardiology; it is primary care." I believe this as well and have seen first-hand how ECGs can guide clinical decision-making, risk-stratify patients for or with cardiovascular disease, and facilitate the best patient care for our patients. As there is an increased interest in an integrative approach to medicine, which naturopathic physicians provide, we as a profession must strive to educate medical students, new doctors, and established doctors to strengthen our abilities to be primary care physicians. The ECG Interpretation Guide for Primary Care is an attempt to create a building block for our profession and will hopefully one day be a keystone to naturopathic cardiovascular medicine.

References and guide available online at ndnr.com

Nathaniel Bingham, ND, completed a joint 3-year residency as the Heart & Lung resident at the National University of Natural Medicine (NUNM) and at the Center for Natural Medicine (CNM). During his residency, he completed a 3-year external rotation in Cardiology, which included ECG and echocardiogram interpretation, direct current (DC) cardioversion, and the observation of pacemaker/loop monitor implantation and 37 coronary angiograms. Dr Bingham has been in private practice since 2015 and is currently an adjunct clinical faculty member at NUNM.

Figure 1. **ECG Interpretation Guide**



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Novel PRP Treatment for COPD?

A Case Study

MICHAEL MASON-WOOD, ND

This is a case report of an 85-year-old male patient that I have been treating for 3 years. He initially presented in 2013 with a chief complaint of chronic obstructive pulmonary disease (COPD) from smoking for over 30 years. He was experiencing severe symptoms of difficulty breathing and chest tightness. Under conventional medical care, the next treatment option available to him was oxygen therapy – a typical treatment for individuals with COPD. He contacted our clinic, as he wanted to explore other avenues of treatment.

Initial Treatment

The patient was house-bound for a year prior to contacting our office, so I began by treating him at his home. Administering nebulized glutathione (QD-BID) on the second and third visits enabled him to come to our clinic for IV hydrogen peroxide (H_2O_2) treatments, started during our fourth session. H_2O_2 is a naturally occurring compound produced in the body and used in enzymatic reactions. As a treatment, it can be administered topically, orally, or injected intravenously. H_2O_2 reacts in the body, releasing a free-oxygen molecule that oxygenates tissues. Additionally, it stimulates 2,3-diphosphoglycerate (releasing O_2 to the tissues), activates the Krebs cycle (stimulating ATP) and upregulates enzymes such as glutathione peroxidase, catalase, and superoxide dismutase; it also increases production of the vasodilator, prostacycline.[1]

Glutathione is an antioxidant generated within the body to help fight many conditions including COPD.[2] It is often referred to as the body's "master antioxidant" because of its ability to regenerate other antioxidants that become unstable radicals after neutralizing free radicals.[3] Glutathione also plays important roles in detoxification and immunity.[3]

Follow-up Visits

After several nebulized glutathione and IV H_2O_2 treatments, the patient's health was not improving. I decided to review his lab results from the previous year, which indicated the likelihood of a bacterial pneumonia (neutrophils were chronically elevated at 85%, normal being 60%). As such, I referred him to his primary care physician for possible antibiotics. I also ordered measurements of DHEA, LH, testosterone, and cortisol, as hormone abnormalities can adversely impact immune system function. All of these results were low. Following the antibiotics, I administered 5 more H_2O_2 treatments, (since H_2O_2 is bacteriostatic/antibacterial and also helps to detoxify the lungs). I also gave him high doses of vitamin D; maitake, reishi and shiitake mushrooms; grapefruit seed extract; and a blend of immune-stimulating herbs.

His symptoms slightly improved and his neutrophils normalized. He continued using nebulized glutathione until October 2015. During this time, his condition stabilized, which is significant, as COPD is a progressive condition with symptoms typically worsening.

Platelet-Rich Plasma

In November 2015, I attended a conference and learned about a new use for platelet-rich plasma (PRP) besides joint regeneration. This involves using the PRP solution in a nebulizer for the purpose of regenerating lung tissue. I immediately thought of my patient. When I returned to the clinic, I called him to discuss how this might be of benefit to him. He was excited about the idea, and we started the treatment the following month. The PRP treatment involves the following:

1. Withdrawing blood from the patient
2. Spinning the blood in a special centrifuge, which separates the red blood cells from the serum and platelets
3. Mixing the platelets (PRP) with saline and having the patient inhale the mixture through a nebulizer

Each blood draw provides enough PRP solution for 3-5 nebulizer applications.

Anecdotal reports suggest that 1-2 months are required for full effect because the stem cells in the PRP need time to generate into lung tissue.

Two Months Later

Two months after this single PRP treatment, the patient had a follow-up visit with his respiratory therapist, and his lung function tests were the best he had received in 7 years. Both he and I were very happy about these results.

In conclusion, for this particular COPD case, it appears that PRP was a beneficial treatment option. We are also working with another COPD patient, whom I hope to report on in detail at a future date. Preliminary results are encouraging, though: Ten days following her first PRP treatment in August 2016, her lung capacity increased from 2.5 to 4.0. I would recommend that practitioners consider PRP as a viable treatment option for COPD, so that more clinical case reports can be used to substantiate this research.

References available online at ndnr.com

Michael Mason-Wood, ND, graduated from CCNM in 2003. He is a licensed practitioner in good standing with the College of Naturopathic Doctors of Alberta and the Canadian Association of Naturopathic Doctors. Dr Mason-Wood's many interests include anti-aging and aesthetic treatments using facial acupuncture and mesotherapy. He has furthered his training in PRP therapies to include Vampire facelifts, breast augmentation, the O-Shot for women, and the Priapus Shot for men. He also treats pain and sports injuries using prolotherapy, prolozone, PRP, acupuncture, and Bowen therapy. He has additional training in environmental medicine. Dr Mason-Wood uses an individualized, and whole-body approach to medicine, blending time-tested naturopathic treatments with cutting-edge therapies.

Allergies

A Route to Resolution

TODD A. BORN, ND

Allergens appear in many forms: food, environment, pets, chemicals, lotions, potions, medications, even "natural substances." You may have noticed that you suddenly have allergies that you never had before. The all-too-classic scenario presents to your office: "Doc, I don't know what it is, but I seem to be becoming more and more allergic! I can't eat certain foods any longer, and certain smells give me a headache and brain fog. What is going on?" Or, another classic patient presentation: I have had countless patients say to me, "Doc, my seasonal allergies seem to get worse every year, and they're active longer. Why is this?"

Usually there's a very simple explanation. As I tell my patients, this is how I think of it… Imagine a cup that is half-full of water. The cup is your immune system and the water is everything you're exposed to. Then add dust mites, cat and dog dander, pollen, ragweed, mold, chemicals in our environment, medications, poor food choices,[1] etc, and now that cup is overflowing. Essentially, the immune system can no longer keep in check what it had kept in check for so long.

The Asthma and Allergy Foundation of America defines "allergy" as an overreaction of the immune system to substances that usually cause no reaction in most individuals.[1] Essentially, what is normally a benign and inert substance, the body sees as a foreign invader. Through a complex series of chemical messages and reactions, matters get out of control. And allergies are certainly on the rise, affecting approximately 30% of adults and 40% of children in the United States.[1]

For allergy sufferers, symptoms can include sneezing; sinus congestion, sinusitis, rhinitis, itching or discharge; itching anywhere else; rashes or urticaria; burning/itchy, watery eyes; difficulty thinking and/or concentrating; fatigue; headaches (usually from the nasal congestion) and swelling; the list can go on.[2] These symptoms can be mild to extreme. Mild is more of a nuisance for most, while extreme can be life-threatening (eg, anaphylaxis).[2]

Causes of Allergy

Food

Let's address 2 of the main causes of allergies. First, food. Before jumping into a discussion of allergies, it's helpful to distinguish between a food intolerance, sensitivity, and allergy, since this is a common area of confusion. WebMD puts it succinctly: "Food intolerance is a digestive system response rather than an immune system response. It occurs when something in a food irritates a person's digestive system or when a person is unable to properly digest – or break down – the food. Intolerance to lactose, which is found in milk and other dairy products, is the most common food intolerance."[3] Essentially, food intolerance is a local gastrointestinal (GI) response, which is non-immune-mediated and generally produces few systemic issues. Intolerances can also occur when certain products are added to foods; monosodium glutamate and sulfites are 2 examples.[4]

Food sensitivities are a bit more convoluted in that they may or may not be mediated by the immune system via immunoglobulin E (IgE), and are composed of individualized adverse reactions to the offending foods.[5] This, in part, may help to explain both local GI and systemic symptoms that occur when these offending foodstuffs are ingested, and they aren't necessarily mutually exclusive.

Food allergies, on the other hand, are definitively immune-mediated, induce many more systemic symptoms, even

leading to anaphylaxis in susceptible individuals. Food allergies may be immediate (and are IgE-mediated), or delayed-onset (usually T-cell-mediated and occurring 4-24 hours after exposure). Food intolerances are much more common than food allergies, which affect only about 2.5% of the general population.[6]

Environment

The second cause of reactions – and a very contentious and contemporary allergy issue – is the environment. There are more than 83 000 chemicals registered with the US Environmental Protection Agency (EPA).[7] Most of these have not been thoroughly tested for their effects on human health (let alone our beloved animal friends). In 2009, the EPA established a "Chemicals of Concern List."[8] The Centers for Disease Control and Prevention (CDC)'s 2011 National Report on Human Exposure to Environmental Chemicals (NHANES), Fourth Report, presented data on 212 chemicals, including 75 measured for the first time in the US population.[8]

Key findings from the report include widespread exposure to some commonly used industrial chemicals, first available exposure data on mercury in the US population, and first-time assessment of acrylamide exposure in the US population, just to name a few.[9] The research literature clearly points to many of these chemicals acting as neuroendocrine disruptors that get stored in adipose, organs, and the fatty sheaths surrounding nerves, wreaking havoc on many of our systems.[10-12] Two of these systems are our immune[13] and detoxification[14] systems. As the body is overburdened by attempting to detoxify the toxicants, the immune system may become "preoccupied" and over-reactive. What was normally an inert, benign substance (such as your beloved cat and dog, for examples), now causes symptoms.

Conventional Approaches to Allergy

How can we best help our patients? Conventional medicine's answer, which can be very helpful, is not without its drawbacks. Allopathic medicine's approach is usually to treat the symptoms and calm down the immune system with the use of anti-histamines (of which there are different classes),[15] leukotriene inhibitors (mostly used with asthma),[16] mast cell stabilizers,[17] decongestants, and corticosteroids.[18] Another method that many practitioners are familiar with is subcutaneous immunotherapy, or allergy shots, where very small amounts, in gradually increasing doses, of the offending substance(s) are injected into the subcutaneous tissues to promote desensitization.[19]

These medications are not without their side effects. The most common with antihistamines (particularly first-generation) include drowsiness, dry mouth, urine retention, difficulty concentrating, constipation, and blurred vision.[20] Common side effects of leukotriene inhibitors include headache, earache, sore throat, respiratory infections, nervousness, behavioral issues, nausea, heartburn, fever, stuffy nose, cough, and rash.[18] Mast cell stabilizers can cause throat irritation, coughing, or skin rashes. Mast cell-stabilizing eye drops may cause burning, stinging, or blurred vision.[18] Decongestants may raise blood pressure, insomnia, irritability, and restrict urinary flow.[18] Short-term use of systemic steroids may cause weight gain, fluid retention, and hypertension. Long-term use may suppress growth in children, adolescents, and teens, and in adults may cause hypertension, diabetes, cataracts, depressed immunity, and osteoporosis.[18]

Allergy shots can be painful and even cause anaphylaxis in some individuals. Although they can help a lot of people, evidence suggests that they are clinically efficacious only in asthma, allergic rhinitis, and insect venom reactions.[21,22]

By definition, an allergen is an IgE-mediated (Th2-cell) immune response that stimulates histamine release. Physical disruption of tissue and various substances can also trigger histamine release directly, independent of IgE.[23] Mast cells are widely distributed, but are most concentrated in skin, lungs, and GI mucosa. Histamine facilitates inflammation and is the primary mediator of clinical hypersensitivity.[24]

Naturopathic Approaches to Allergy

My personal approach to treating allergy, like most naturopathic physicians, is to treat well beyond palliation, and to cure individuals of their affliction:

1. Reduce allergen burden as much as possible (I give my patients my "How to Allergy Proof Your Life" handout)
2. Establish a more appropriate balance in the Th1/Th2 immune response. This will help to calm an over-reactive immune system, thereby mitigating allergy symptoms.
3. Heal the GI tract[25-27]

Fortunately, there are many natural substances that can restore Th1/Th2 balance. Also available are "natural" antihistamines, mast cell stabilizers, leukotriene inhibitors, and medicines that have corticosteroid-like effects. Examples of Th1/Th2 balancers are: zinc,[28,29] *Astragalus membranaceus* (also known as Huang qi),[30] medicinal mushrooms (eg, *Agaricus blazei*,[31] *Ganoderma lucidum*[32]) and edible mushrooms[33] (preferably organic, given their high bioabsorption of heavy metals),[34] and omega-3 essential fatty acids (EFAs).[35] Natural antihistamines and mast cell stabilizers include vitamin C[36] and flavonoids,[37] and nettle leaf (*Urtica dioica*).[38] Examples of leukotriene inhibitors include omega-3 EFAs,[39] and Indian frankincense (*Boswellia serrata*).[40] Examples of corticosteroid modulators include ashwagandha (*Withania somnifera*),[41] black currant (*Ribes nigrum*),[42] and licorice (*Glycyrrhiza glabra*).[43]

The aforementioned treatments are quite safe and usually very well tolerated. However, some of these herbs should not be used without the guidance of a well-trained physician. For example, licorice can cause hypermineralocorticoidism, with sodium retention and potassium loss, edema and hypertension, due to its aldosterone agonist effects and depression of the renin-angiotensin-aldosterone system. These effects are more common with doses of 400 mg/d of glycyrrhizic acid)[44,45]; however, some

sensitive individuals have experienced these side effects using a dose as low as 100 mg/d of glycyrrhizic acid.[45] Clinically, it is imperative to place patients utilizing larger doses of licorice on high-potassium foods, and possibly potassium supplements as well. Zinc in amounts greater than 50 mg/d can result in copper deficiency over time, leading to arrhythmias and anemia.[46,47]

There is also a homeopathic desensitization approach to dealing with allergies. This is in the form of either sublingual immunotherapy (SLIT) or subcutaneous immunotherapy (SCIT), also known as allergy shots. Outside of the United States, SLIT is the most common method of treating allergies. Although they work via different physiological pathways in the body, the advantages of SLIT over SCIT are fewer visits to the physician, no painful injections, and a much larger safety profile.[48,49]

One form of SLIT uses homeopathic dilutions of substances that an individual is allergic to, which serve to "desensitize" that person to the offending substance over a relatively short time; SCIT works in a similar fashion. The clinical efficacy of SLIT is not statistically different from SCIT, and both treatments are clinically effective compared with placebo.[50,51] I have used this treatment with over 500 patients and have seen these patients come off of their allergy medications completely, with little to no side effects.

Prior to implementing SLIT, I find it best to test the patient for their inhalant and food allergies for what they're truly allergic to, which increases the precision of the sublingual immunotherapy. This is easily conducted via IgE, region-specific blood tests through your local commercial laboratory and which is generally covered by insurance. I use ICD-10 code, T78.40XA, along with other pertinent codes based on what transpires during the intake and physical exam.

These are just a few of the many natural treatments that naturopathic and other integrative physicians employ to help allergy sufferers deal with their symptoms. Again, my integrative medicine approach is not to use these medicines as Band-Aids, but rather to find all the triggers, remove them as much as is possible, and allow the body's own natural systems to come back into balance, utilizing the aforementioned interventions. My goal is to eliminate the need for medications or to *only* use them as a last resort in the worst-case scenarios. Among the 500+ patients with whom I have conducted the above procedure, most stay symptom-free for 6-24 months, then only needing the SLIT and "natural" agents for a few short weeks during the height of their allergy season.

CASE STUDY

A great example of how naturopathic medicine can help severe allergy sufferers was a patient I saw during my residency. He was a 45-year-old South Korean man who stated he had been suffering from allergies all of his life. Since moving to Seattle, WA, and beginning medical school (yes, at the age of 45!), his eyes burned all the time; he had difficulty breathing; his wife said his sonorous snoring kept her up all night; he had difficulty concentrating and thinking; antihistamines were making him drowsy; and he was suffering from constant post-nasal drip, which caused a chronic cough. He was embarrassed to say this, but his family also complained of extremely malodorous breath.

Upon physical exam, his bilateral frontal and maxillary sinuses were tender to palpation; his eyes were watery and injected; he had a thick white coating on his tongue, white posterior pharyngeal streaking (an indication of post-nasal drip), and swollen tonsils and cervical lymph nodes. There were also a few small pits in his tonsils (common in childhood that usually close up in adulthood). He had mild to moderate serous effusion of his tympanic membranes, compounded by moderate cerumen. His lungs were clear to auscultation. Pulse oximeter readings and peak flow were within normal limits.

I gave him my "How to Allergy Proof Your Life" handout, which discusses the basics of lowering your exposure to common allergens of pets, the house, and self. I gave him high-dose omega-3 EFAs and a combination product of flavonoids and vitamin C. I suggested that, besides the post-nasal drip, food was most likely getting stuck in those little pits of his tonsils (I have seen this many times), putrefying and causing the bad breath. I suggested he chew his food more thoroughly to create a smaller size and therefore decrease the likelihood that it would get stuck. I also suggested swishing and gargling with water after meals. I didn't even need the SLIT!

Like the dream-patient all physicians love, he did everything I told him to do, and he came back 2 weeks later, saying he couldn't believe he was 90% symptom-free! He reported that his energy was back to normal and he felt great. His wife even stated his breath no longer smelled and he wasn't snoring. A win-win for everybody!

References available online at ndnr.com

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Might Your Cancer Not Be Cancer?

Papillary Thyroid Cancer Reclassified

KEONI TETA, ND, LAC

Well, this is now true for a common type of thyroid cancer. This is wonderful news! According to a recent study in *JAMA Oncology*,[1] your thyroid cancer might not even be thyroid cancer. Specifically, evidence suggests that a very slow-growing thyroid tumor with the long and intimidating name Encapsulated Follicular Variant of Papillary Thyroid Carcinoma (EFVPTC) might be benign after all. In other words, this type of thyroid tumor has a very low risk of causing a problem, especially one that can threaten your life. As such, EFVPTC has been reclassified as Noninvasive Follicular Thyroid Neoplasm with Papillary-like Nuclear Features (NIFTP). Although this new name is just as long and intimidating, this reclassification basically states in layman's terms that your so-called thyroid cancer is not actually cancer at all.

This reclassification is going to save a lot of thyroids from being subjected to invasive treatments such as radiation, surgical removal, and/or chemotherapy. It is estimated that up to 20% of thyroid cancer diagnoses in Europe and North America are EFVPTC, which would now be called NIFTP.[1] In absolute numbers, this is approximately 10 000 thyroid cancer diagnoses in the United States alone that are not cancer. This translates into huge healthcare cost savings, and most importantly lifts the heavy psychological burden from thousands of people that have mistakenly been diagnosed with a thyroid malignancy. For the patient, having the new diagnosis of NIFTP means that treatment, in the conventional sense, is now officially unnecessary. The revised recommended treatment for this type of tumor is more of a "wait, watch and see" approach.

What Does NIFTP Mean?

So, what does this scary-sounding, but benign, reclassified name (NIFTP) actually mean?

- **N** and **I**, for Non-Invasive, means that this type of tumor does not invade the body
- **F,** for Follicular, in terms of the thyroid gland, are the cells that make the thyroid hormones T3 and T4
- **T**, for Thyroid Neoplasm, is just telling us that a mass of abnormal tissue is present
- **P**, for Papillary-like Nuclear Features, tells us that the abnormal cells have a nucleus that only looks cancerous but is not. And, most importantly, without the word "carcinoma" in the name, this implies that tumor is benign, not malignant.

Why the Reclassification?

According to Dr Yuri Nikiforov, the lead investigator in the study[1] that brought about the change in classification of EFVPTC to NIFTP, "this is the first time in the modern era a type of cancer is being reclassified as a non-cancer." This reclassification came about after 26 years of observing a very low risk of adverse outcomes in more than 200 patients with "EFVPTC." Ie, their tumors did not cause any significant problems because they did not spread beyond the tissue that encapsulates them.

This makes one wonder how many other types of "cancer" out there are actually benign or are just so slow-growing that they will not cause any problems at all. This study might be the first of many that will reclassify certain cancers of the lung, prostate, and breast as non-cancerous, or benign.

Classification of Tumors

Tumors are classified on a scale, if you will, from Benign to Premalignant to Malignant. Unfortunately, for some types of cancer there is not a completely clear division between what is benign and what is malignant. Ie, there is a lot of gray area, as is apparent from the study above. This is why some types of cancer of the breast, prostate, and even lung may be best treated with a "wait and watch" approach. Currently, research is being conducted on other cancers, which may conclude that what we currently think is malignant cancer may be benign or just very slow-growing. With advances in technology, this is sure to be the case.

Benign Tumors[2]

Benign tumors, also known as benign neoplasms, do not spread, and therefore are usually not a problem. Common examples of benign tumors include:

- Adenoma: A tumor that arises in tissue surrounding glands and organs. A colon polyp is an example of an adenoma.
- Fibroid: A tumor that arises from fibrous tissue of any organ in the body. An example is a uterine fibroid.
- Hemangioma: A tumor that consists of too many blood cells. On the skin, hemangiomas appear colloquially as "strawberry marks."
- Lipoma: A tumor that consists of fat tissue. Lipoma is the most common benign type of tumor.

Premalignant Tumors[2]

Premalignant tumors have the potential to spread, and if nothing is done to treat them, a high percentage will turn cancerous and spread. Examples of premalignant tumors include:

- Actinic keratosis: A scaly/crusty skin lesion
- Cervical dysplasia: Abnormal cells lining the cervix
- Lung metaplasia: Abnormal cells in lung bronchi
- Leukoplakia: White patches in the mouth that cannot be scraped off easily

Malignant Tumors[2]

Malignant tumors are the ones that have a high potential to cause death, especially if not treated early enough. Examples of malignant tumors include:

- Carcinoma: A tumor that arises from the tissues (epithelial cells) that surround organs
- Sarcoma: A tumor that arises from mesenchymal cells in connective tissue, such as cartilage, bones, fat, and nerves
- Lymphoma/Leukemia: A cancer that arises from the blood-forming (hematopoietic) cells in the marrow and which tends to mature in the blood or lymph nodes
- Germ cell: A tumor that arises from a germ cell, most commonly present in the ovaries and testes
- Blastoma: A tumor consisting of immature cells

Thyroid Cancer

Thyroid cancer is the most common type of endocrine cancer.[3] Unfortunately, the incidence of thyroid cancer is rising.[3] On the other hand, most cases of thyroid cancer are not life-threatening if caught early enough. The prognosis is usually very good, especially for the most common types of thyroid cancer.

Women have a higher incidence of thyroid problems than men,[3] including thyroid nodules, thyroid cancer, hypothyroidism, and hyperthyroidism. The reason for this is not completely known, but may have to do with the high concentration of estrogen receptors in the thyroid. It is also interesting to note that women have a higher incidence of autoimmune disease than men; this is especially true of autoimmune thyroiditis.

How to Support the Thyroid Gland

The thyroid gland is very sensitive to environmental contaminants. Chemicals found in pesticides, cosmetics, cookware, plastics, water, etc, may adversely affect the thyroid gland. With radiation exposure, this is usually the first organ to be affected.[4] A great place to check for possible contaminants in daily-use cosmetics is the Environmental Working Group's cosmetic database.[5] Encourage patients to engage in healthy habits for their thyroid, including periodic thyroid self-exams and regularly consuming organic foods that contain iodine (eg, eggs, seafood, seaweed, cheese, yogurt, beans, and strawberries). As outlined below, a simple and quick exam, along with general thyroid-supporting measures, can help your patients prevent serious thyroid problems. Check the research out there (currently mostly animal studies) that implicates certain environmental chemicals in order to familiarize yourself with them.

Do a Self-Exam

Here is a simple self-check of the thyroid gland, which patients can easily do at home[6]:

1. In front of the mirror, focus on the area of your thyroid between your voice box and collar bone in the lower third on your neck
2. Tip your head back, take a sip of water and swallow, while looking for any protrusions in this area
3. If you notice any bulges or lumps,

especially asymmetrical or atypical ones, then you should contact your physician for evaluation

Avoid Chemicals That Can Disrupt Thyroid Function[7]

1. Avoid halogen-containing products, eg, percholorate, chloride, fluoride, bromide, organochlorine pesticides
2. Avoid endocrine-disrupting chemicals, eg, polychlorinated biphenyls (PCBs), bisphenol A (BPA), polybrominated biphenyl ethers (PBDEs)
3. Avoid heavy metals; cadmium and mercury are especially toxic to the thyroid

Minimize Radiation Exposure

1. Certain medical treatments
2. Radiation fallout from power plant accidents or nuclear weapons

Thyroid-Supporting Lifestyle Measures

1. Eat foods that contain iodine on a regular basis
2. Take a multivitamin that contains some iodine
3. Exercise regularly
4. Drink filtered water
5. Choose organic foods when possible
6. Avoid using products containing triclosan (eg, some soaps, toothpastes, deodorants)[8]
7. Avoid cooking in non-stick pots and pans, many of which contain perfluorochemicals[9]

Thyroid Nodules

Most thyroid lumps or bulges, aka thyroid nodules, are usually not cancerous or even very serious.[3] However, patients should follow up with their healthcare provider to make sure. It is estimated that upwards of 95% of thyroid nodules are benign. Depending on the study, 20-76% of Americans may already have at least 1 thyroid nodule.[3] With that said, a biopsy may be necessary to completely rule out the small possibility of a cancer diagnosis. Some thyroid nodules can cause problems in other ways by pressing on structures surrounding the thyroid. This can lead to some discomfort or, in rare cases, difficulty swallowing or breathing.

Types of Thyroid Cancer

The 4 main types of thyroid cancer are papillary, follicular, medullary, and anaplastic; the type is determined by how the cancer looks under a microscope. As with all cancers, the chance of recovery is determined by the type, how much it has spread throughout the body, how healthy the person is, and the person's age. The earlier the cancer is caught, the better the outcome or prognosis.

The most common type of thyroid cancer is papillary carcinoma, accounting for 70-80% of all thyroid cancers.[3] The good news is that papillary cancers are slow-growing and the prognosis is very good.[3] And, as mentioned, we now know that 20% or more of these thyroid cancers are no longer considered cancer.[1] The second most common thyroid cancer is follicular carcinoma, accounting for about 10-15% of thyroid cancers.[10] Follicular cancer is more aggressive than the papillary type, but is easily treated if caught early. The cure rate is excellent in younger patients with small lesions. The overall 5-year survival rate for follicular thyroid cancer, for all ages, is 91%, and the 10-year survival rate is 85%.[10] Medullary thyroid cancer makes up about 3% of all thyroid cancer cases.[3] It originates from the parafollicular cells in the thyroid, which produce the hormone calcitonin. The overall 5-year survival rate for this thyroid cancer is 80%.[10] Finally, anaplastic thyroid cancer represents only 2% of thyroid cancers and is very aggressive, with the worst prognosis.[3]

Summary

It turns out a person's "thyroid cancer" might not even be cancer, and thus might not require any treatment at all. This is wonderful news because it reduces the mental/emotional stress of receiving a cancer diagnosis, and allows patients to avoid treatments that can cause other negative side effects. Moreover, any conventional treatment of cancer comes with a cost that is prohibitively expensive. The cost savings of a "wait and watch" approach will be substantial.

In order to keep your patients' thyroid gland healthy, encourage them to be active participants in their healthcare and to get regular physical exams (including thyroid palpation and, if necessary, a blood test). Encourage patients to do the simple self-exam outlined above, do their best to avoid chemicals that can compromise thyroid function, and incorporate foods in their diet that contain iodine.

References available online at ndnr.com

Keoni Teta, ND, LAc, is a naturopathic physician and acupuncturist practicing at The Metabolic Effect Clinic in Winston-Salem, North Carolina. Dr Teta attended medical school at Bastyr University. His passion is in the study and practice of exercise, nutrition, bone health, and longevity. Dr Teta is a contributing writer for *Natural Triad Magazine* and *The Townsend Letter for Doctors and Patients*, and a contributing author for the *Textbook of Natural Medicine*. He is also co-founder of the online health and wellness company, Metabolic Effect, and author of the books *The Metabolic Effect Diet* and *Lose Weight Here*.

A Pain in the Back

JOSEPH KELLERSTEIN, DC, ND

Homoeopathy is a crazy thing. We continually study in order to acquire the acumen needed to provide relatively consistent results for our patients. The effort is enormous… unending, in fact. Most often, we do see nice rates of improvement, but occasionally we get a "Wow!"

I do admit that "wow" is the stuff I long for in a clinical result. Yes, it's juvenile, but that's me. It all started years ago when treating the family of a student who later consulted. She discontinued treatment after a while, saying that for her, homeopathy consisted of those "wow" sudden results. It had been a while since my prescribing talents had produced one, so she left. Gradual improvement was not so interesting to her.

I guess Hero/Bum is a role we sometimes do straddle uncomfortably.

One of my teachers passed on what I feel is useful wisdom. He said that his most successful cases were those where the patient was the most persistent. It is true to my experience as well; we need patients who are patient and persistent. Homoeopathy demands precision, yet frequently the needed pieces of golden information are slow in coming, often revealing themselves only after successive approximations have chipped away at the case.

Figure 1. **Repertorization**

	Sulph.	Kali-c.	Sep.	Rhus-t.	Lyc.	Nat-m.	Bell.	Sil.	Cham.	Bry.	Carb-an.	Caust.	Phos.	Puls.	Calc.	Cimic.	Ars.	Con.	Chel.	Nit-ac.	Graph.	Petr.	Ruta	Staph.	Sul-ac.	Kali-bi
Total	17	14	14	13	11	11	11	11	10	9	9	9	9	9	8	8	7	7	7	7	6	6	6	6	6	6
Rubrics	8	7	7	6	8	7	5	5	5	7	5	5	5	5	5	5	5	5	4	4	3	5	5	5	5	
Kingdoms																										
Traditional Miasms																										
worse aft delivery (87)	2	3	3	3	1	1	3	1	3	2	2	2	1	3	2	3		1		1	1	2	1		1	
GENERALITIES; PAIN; stitching; transversely (38)	2	1	2	1	1		3		1	1		1	1		1	1									1	2
BACK; PAIN; broken, as if; lumbar region (47)	1	2	2	2	3	3	3		2	1	2		3				2	1	2		2		1	1		
BACK; PAIN; General; sitting, while; agg.; erect (7)	3	3			1											1										
BACK; PAIN; General; stooping; when (80)	3	2	3	2	1	1		2	2	2				1			1	2	3		1	1	1	1	1	1
BACK; PAIN; General; lying, while; agg.; back, on (37)			1		1	1	1			1	1			1		2	1			2				1		
BACK; PAIN; General; morning; rising; agg.; on (42)	1	2			2	2		2				1			2	1		1	1	1	1	1		1	1	1
BACK; PAIN; General; rising; sitting, from (57)	3		1	3	1	1	1	3		1	1	3	3	3	2		2	2	1			1	1	2		2
EXTREMITIES; WEAKNESS; Ankle (68)	2	1	2	2		2		3	2	1	3	2	1	1	1		1			3	1	1	2		2	

Patient Case

This case is about Sarah. She was a student. It is now almost a decade that she has been a successful, wonderful homoeopath.

Here is her case, in her own words:

"Up until my second child was born, I had never experienced back pain. After a very intense and fast delivery with my second child, it was a gradual progression of right SI pain and pain across the lumbar region. In the weeks and months that followed, it became so bad that I was unable to pick up my baby girl, and breastfeeding in most positions was excruciating.

"I spent the first 4 months of her life going to physiotherapy twice a week, the chiropractor once a week, and the osteopath once a week. I felt as though my lower back was broken and I was getting little to no relief with the previous mentioned modalities. As a homeopath myself, I tried various remedies, such as Kali carb, Sepia, Phosphorus, Sulphur, Calc carb, to name a few, all with no relief.

"For the first couple of months, I slept with my daughter, and lay on my back to breastfeed her at night, as it was the most comfortable for her. But as she grew and became heavier, it became more and more difficult to lie on my back for even a few minutes. The worst was rising from sitting, stooping, bending over, rising from lying in the morning, and trying to sit erect – all positions that were a big part of caring for her. During this time, I also noticed a weakness in my ankles and a tendency to roll them."

Remedy & Follow-up

"I still can't figure out why it took me so long to call Dr Kellerstein, as he has been my homeopath for years, but in the haze of postpartum, with two babies under the age of two, not much was clear. We consulted on a Thursday and he recommended I take Lycopodium. Without hesitation, I took a dose of Lycopodium 1M, 2 pellets that afternoon, followed by a second dose that evening and went to bed.

"The next morning I woke up and had absolutely no back pain. It was truly amazing! 100% better. I remember, at the time, my husband was so struck by the cure, he wanted me to tell him about Lycopodium… To which I replied, 'Usually people who need it are so bossy,' at which point he chuckled and said, 'Well, Joe hit the nail on the head there!'

"My daughter is now 17 months old. A few weeks ago I was playing soccer, and after the game my right SI joint began to ache ever so slightly, so I took 2 pellets of Lycopodium, and it was gone within 15 minutes. I am forever grateful to Joe for his help, and now when something happens, he's the first person I call for help."

Prior Repertorization

Let's look at the chart (Figure 1)...

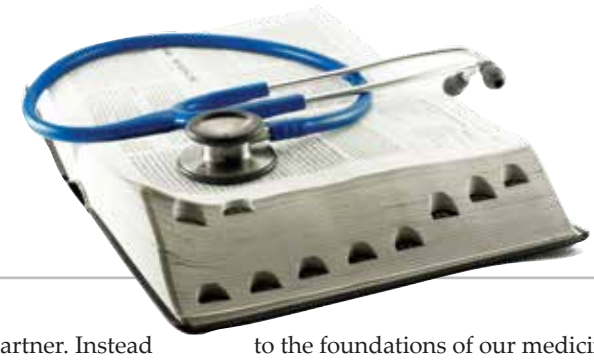
Lycopodium was not indicated for the weakness of the ankles, but did most consistently seem to cover the back pain and the (unbeknown to me) mental symptom of "bossy."

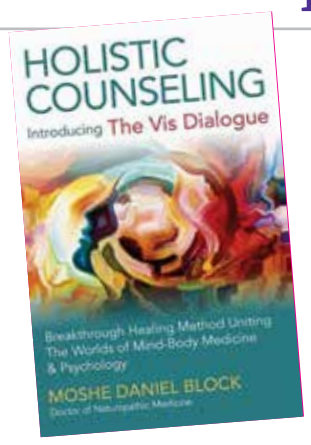
Isn't that the way it often goes – working partially in the dark?

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

Medical Resources for NDs

A review of current publications for the naturopathic industry





DIANE GRISE, ND

Holistic Counseling – Introducing "The Vis Dialogue": Breakthrough Healing Method Uniting the Worlds of Mind-Body Medicine & Psychology

Dr Moshe Daniel Block is a true believer in The Healing Power of Nature. Dr Moshe healed himself of myasthenia gravis through the questioning of a practitioner who helped him uncover the false belief of "needing to be perfect." After discovering this to be the root of his autoimmune condition, he committed his professional life to practicing and teaching mind-body medicine. Through his experience, he was shown the power of asking the right questions that help patients discover the false beliefs residing in their own subconscious minds – beliefs at the root of their physical and mental suffering. For the past 15 years, Dr Moshe has specialized in the treatment of autoimmune conditions, particularly myasthenia gravis, utilizing Holistic Counseling alongside homeopathy. His commitment to promoting *Vitalism* and the principles of naturopathic medicine, based on years of successfully assisting patients in reversing their "incurable" conditions, is a breath of fresh air to a new doc like myself who is often discouraged by the modern naturopathic approach that so often resembles the allopathic model of "this-for-that" medicine. Dr Moshe's new book, *Holistic Counseling – Introducing "The Vis Dialogue,"* is full of great insight and practical tips that are easily applied to clinical practice.

The Book

Part I offers a review of the 7 Principles of Naturopathic Medicine in a profound way that sets the stage for the reader to grasp the fundamental rationale behind the practice of Holistic Counseling. Graphics in the second chapter support the reader, in a way that is tangible and easily digestible, in understanding why and how imbalances in one's mind and emotions can result in physical imbalance. Case stories, empowering quotations, and wise reflection are woven throughout the book to bring the reader back to the heart of the matter: the most effective practice as naturopathic physicians is to work with The Healing Power of Nature, to allow for true, lasting healing in ourselves and our patients.

Dr Moshe discusses many key concepts of effective holistic practice while also emphasizing the importance of Physician Heal Thyself. I appreciated that he discusses how in order to hold the space for patients to work through their own struggles, we must first face our own. I enjoyed his examples of the importance of developing and maintaining a balance between our male and female sides as practitioner – a concept I had not pondered before reading this book. By reflecting on the profound role of "doctor as teacher," Dr Moshe demonstrates why we must develop inner character, strength, and balance before expecting to reveal that in our patients.

Part II reviews the principles of Holistic Counseling and offers metaphors for grappling with common scenarios often seen in practice. This section helps to set the stage for Part III and Part IV, which dive into the specific non-directive and directive questions utilized in Holistic Counseling practice. Through the use of case examples that are interspersed with commentary from Dr Moshe, designed to point out areas of common mistakes he made in the beginning of his own practice, the reader is provided with an easy-to-use list of thought-provoking questions and examples for guiding dialogue that can be utilized immediately in practice. In fact, after beginning the book, I found myself utilizing the principles and examples in my personal life through reframing the way in which I spoke with my partner. Instead of offering suggestions, as I so often find myself doing as the pervasive "fixer," I instead asked non-directive questions to engage a deeper dialogue. As a result, I witnessed my partner reach a more profound and genuine understanding of the issue at hand. I was amazed at how simple and natural this process was, and felt empowered to utilize this healing process of questioning with my patients.

Summary

Dr Moshe writes in an engaging and inspiring language that allowed me to move through the book quickly and kept me hungry for more. The use of case histories and examples of dialogue bring to life the concepts of Holistic Counseling, and illustrate the ways in which this therapy can be utilized with various types of patients, both emotionally and intellectually focused, each requiring a different approach. The book serves as an introduction to the healing method that can be learned in more detail by attending Dr Moshe's Holistic Counseling seminars.

This book is highly recommended for both students and physicians who wish to improve upon the effectiveness of the medical interview with their patients, as well as for those who are eager to return to the foundations of our medicine by emphasizing self-healing via self-reflection. By reframing the role of the doctor from the "fixer" to the "revealer of the patient's inner wisdom," it not only takes the pressure off the doctor to find the right answer, but more importantly allows for profound, lasting healing that empowers the patient to identify the common thread between their subconscious beliefs and their illness. *Holistic Counseling - Introducing "The Vis Dialogue"* offers a practical, effective approach to helping patients discover the underlying beliefs that are causing their illness. Through non-directive questioning, patients are guided to give themselves permission to no longer allow those beliefs to run their lives and promote disease.

Just the FACTS

- Title: *Holistic Counseling - Introducing "The Vis Dialogue"*
- Author: Moshe Daniel Block, ND
- Publisher: Psyche Books
- Available through: http://www.psyche-books.com/books/holistic-counseling-introducing-vis-dialogue
- Pages: 398
- Style: Soft Cover
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- MSRP: $36.95

1902's Editorial Drift

SUSSANNA CZERANKO, ND, BBE

The Naturopath, as is implied by its name, will endeavor to place before the American reading public, in subsequent essays and contributions by various well-known writers, the quintessence of natural hygiene. This Naturopathic magazine will not accept any obnoxious or quack advertisements.

Lust, 1902, p.14

Have you ever noticed a motherly old hen, clucking anxiously to her little brood, as some malicious urchin comes into view with a wicked sling shot? The little chicks may be scattered far and wide; they may be foolishly playing with their toes, or wisely cogitating over worms, or even pecking at each other in a semi-serious sort of way; but when the enemy approaches they all lovingly gather in the shelter of the mother. Naturopathy has hosts of children, each trying in his baby way to out-crow the other.

Lust, 1902, p.124

In the early nineties, a raw German youth came to America with a small sum in his grasp, and a large purpose in his heart.

Lust, 1902, p.168

The year 1902 was one of great change for Benedict Lust's magazine. His publication was undergoing an overhaul. He gave it a new name and a new platform, embarking on an ever-expanding vision, for reaching the American public, of new medicine and a new health paradigm for the nation. Just last month in *NDNR*, we learned that Benedict Lust began using the designation of "Naturopathic Physician" for the first time in December 1900, evidenced by the advertisement he placed in *The Kneipp Water Cure Monthly* that month. This was a first, small step for Lust – the beginning, as it turns out, of a sustained growth of his original mission to a more far-reaching one. It would take 1 more year for Lust to shape a different brand for his journal, an identity that respected and recognized the roots of the medicine in Europe, but which contemplated a stronger American identity. He removed Kneipp's name and now featured the term, embossed on the covers of his publications, "Naturopathy." By the January 1902 issue, this transformation gathered even more momentum. Lust essentially displaced the Kneipp branding from his publications and adopted a new name: *The Naturopath and Herald of Health*. The name was just the beginning of a series of changes that he would bring to his publication that would transform and scale the existing paradigm of therapeutics forever.

A valuable microcosm of these transformative changes is Lust's column, "Editorial Drift." What is so interesting about Lust's editorial is that he does not shrink from being completely honest as he shares news and ideas with his readers. His editorial "voice" has strengthened; it has become more robust, and sometimes has an abrasive edge, always fearless and prescient. We also get a glimpse of Lust's sense of humor, and witness his own transformation from young entrepreneur to young leader within this very new discipline of Naturopathy that is not quite hatched by January 1902.

Ten Years and Building Fast

What is significant about 1902? It marks the 10-year anniversary of Lust's arrival to America. In those first years, much occurred to toughen Lust from a young immigrant bedazzled by America, to a businessman and health professional full of conviction and purpose. In the inaugural issue of *The Naturopath and Herald of Health,* and in the first article that appears, Lust wishes his readers Happy New Year, and discloses right away why he changed the name of his magazine. He writes, "There was one very great impediment which hampered *The Kneipp Water Cure Monthly* from growing rapidly; this was its name." (Lust, 1902, p.13) *The Kneipp Water Cure Monthly* was first published in the German language and called *Amerikanische Kneipp Blätter* in 1896. By 1900 and 1901, Lust had added an English version for his American readers. The struggle to introduce Kneipp to Americans was arduous and an uphill battle. Lust states, "The name of the esteemed late very Reverend Sebastian Kneipp, who preached and practiced the water cure treatment for so many years in Wöerishofen in Germany, is a well-known name in German circles—but not so amongst the Americans." (Lust, 1900, p.13) He continues, "Most of the average American readers associate the name of Kneipp with the fad of walking barefoot in the grass." (Lust, 1902, p.13) Lust, in his enthusiasm to spread the word of water cure and the work of Kneipp in America, expanded his reach by publishing in English. Subscriptions, though, did not materialize to support this English magazine, and advertisers were not so keen on the *Kneipp Water Cure Monthly* name. From this initial setback and lack of momentum emerged the birth of *The Naturopath and Herald of Health.*

The Birthing of Naturopathy

Lust posed exactly the right question, right out of the gate, in his new magazine: "What is Naturopathy?" (Lust, 1902, p.14) The answer that he gives became the text for the publication's ensuing Mastheads. The primary heading was "Editorial Drift," and in the subsequent editorial we learn that Benedict Lust is Editor (Figure 1) and that he was also Proprietor at 111 East 59th St, New York City. Following this header is the original answer to his question: "A monthly magazine devoted to Natural Healing and Living Methods, on the basis of Self-Reform and Popular Hygiene, Hydrotherapy (Priessnitz, Kneipp and Just's systems), Osteopathy, Heliotherapy (Sun, Light and Air Cure), Hygienic and Physical and Mental Culture to the exclusion of Drugs and Non-accidental Surgery." (Lust, 1902, p.32) In what amounts to the first definition of Naturopathy, we can see that the foundation of this new healing system rested on some of the current therapies of his time. As well, we are introduced to the work of Adolf Just, who would soon become a prominent, guiding force in the emergence of Naturopathy. Indeed, we learn more and more about this remarkable European natural healer in subsequent issues of *The Naturopath and Herald of Health*.

Significantly, Lust placed his first "Editorial Drift" at the *end* of his first issue, on page 32. The content which preceded his editorial formed a backdrop for what Lust wanted to articulate. In this editorial, Lust takes great care to expound upon his initial naturopathic definition, and explains that "Naturopathy is a hybrid word. It is purposely so. No single tongue could distinguish a system whose origin, scope and purpose are universal: broad as the world, deep as love, high as heaven." (Lust, 1902, p.32) The birthing of Naturopathy involved many people over a long period of time. He introduces to Americans the notion that there are many more "progenitors who have for eons been projecting thoughts and ideas and ideals whose culminations are crystalized in the new Therapy." (Lust, 1902, p.32) Some of these names include Connaro (Dietetics), Priessnitz and Kneipp (Hydrotherapy), Kuhne (Serotherapy), Still (Osteopathy), Macfadden (Physical Culture), Helen Wilmans (Mental Science), and Orrison Sweet Marden. (Lust, 1902, p.32)

Admitting that Naturopathy in this time of birth "is pitifully inadequate" (Lust, 1902, p.33), Lust appeals to his readership to give him feedback and suggestions. He writes: "If you don't like it, say so. Tell us wherein the paper is inefficient or redundant or ill-advised, how it will more nearly fit into your personal needs, what we can do to make it the broadest, deepest, truest most inspiring of the mighty host of printed powers." (Lust, 1902, p.33) Lust concludes with an offer to his readership, "The most salient letter of less than 300 words will be printed in full, and we shall ask to present the writer with a subscription receipt for life." (Lust, 1902, p.33) In closing, Lust, in a 1-breath statement, outlines his mission: "Between now and December, we shall tell you just how to preserve the right attitude, physical and mental, without a single external aid; and how, every moment of every day, to tingle and pulsate and leap with the boundless ecstasy of manhood consciously nearing perfection." (Lust, 1902, p.33)

Inviting critiques from his readership opened up the gates for those threatened by Lust's new magazine and its radical ideas. In the March issue, Lust tackled some of his readership's concerns in his "Editorial Drift" column. Without mentioning names, Lust responds to his critics accusing him of "selling editorial space and auctioning off personal comments." (Lust, 1902, p.122) He writes, "I want to declare once and for all that it is of absolutely no consequence to us where the Truth hits or whom it hurts." (Lust, 1902, p.122) He goes on to explain, "The January [issue] contained certain theological references that not only simply startled and offended certain estimable brethren, but apparently also alienated them forever. They have cancelled their subscriptions and ex-communicated this entire office." (Lust, 1902, p.122) Lust lived in an era of devout religion and extremism, and he introduced metaphysical topics and authors that would have challenged prevailing opinions, especially orthodox religious ones. He does not apologize for, nor attempt to atone for, the opinions of his writers. His response: "This much should be said: a contribution inherently valuable will not be rejected because of ambiguous religious tone." (Lust, 1902, p.123)

Figure 1. **Benedict Lust; 1902**

BENEDICT LUST, EDITOR.

True Method of Healing.

In this same editorial, Lust shares excerpts from a letter from a reader who found what she had been eagerly looking for regarding the soul and body. She is delighted to have found Lust's magazine: "I really believe my goal is to be attained and through your instruction. There is every element for soul and body in your teaching." (Lust, 1902, p.123) She continues with her gratitude: "I am not exaggerating when I say that I would sooner have [Lust's] magazine in my home than any I know of—excepting none—and I think many others here will be taking it before long." (Lust, 1902, p.123) Despite the raucous response and candor of his readers, Lust quickly learned that people had opinions, and his publishing enterprise would hear about it.

Lust was quite aware that the healing arts of his era espoused many different flavors and brands. He describes the scene: "Osteopathy is off in a corner picking a bone—literal and figurative; Massage is softly stroking its feathers and oiling its ruff; Dietetics is pecking spasmodically at a kernel of corn, and pondering whether to cook it or chew it down raw; Hydropathy is religiously shivering in a little puddle all its own; Heliotherapy is batting its dazed eyes at the sun in an anxious endeavor to vibrate right; Mental Science habitates a distant vantage ground, forcing an 'all good' smile and chirping softly, '*Procul, procul, O Profani*'; Christian Science is on the roof, with wings outstretched and feathers flying, humping itself straight to Olympus." (Lust, 1902, p.124) All of these different groups, he understood, were determined to be the only and right way to health. However, he also understood that such diversity was not a strength but rather a disadvantage when these groups persistently squabbled publicly with each other. Rather than focus on the differences, Lust proposes a different strategy: "Wait till Allopathy gets ready to pounce, then you'll see the whole drugless family beautifully united in the stand for their rights." Lust predicts, "We haven't massed forces yet,

on the common ground of Nature's laws. Nothing but the attack of the common enemy will bring all of Naturopathy's true children together." (Lust, 1902, p.124)

In the April issue of 1902, Lust reveals his personal journey of discovering Father Kneipp and his water cure. Lust had spent 8 months at Wöerishofen, both as a patient and as a student. "He had witnessed countless cures of the most 'incurable' diseases. He had become imbued with a sympathy for human suffering and a love for human hearts." (Lust, 1903, p.168) So began Benedict Lust's excursion into Naturopathy. The experiences gained in Wöerishofen left Lust "bubbling over with thoughts and plans and ideas and purposes, and he simply couldn't contain himself." (Lust, 1903, p.168) Kneipp personally bestowed upon this young man of 24 years the mandate to return to New York to spread the word of water cure. Lust plunged into this quest, promoting Kneipp therapies with fervent gusto to see his promise to the Bavarian priest fulfilled.

Competitors

Lust was not the first in America who had Kneipp interests. There were already many Kneipp water cure establishments in New York City which reacted to this newcomer. The difference between Lust and those established Kneipp centers was that Lust courageously scaled this work. He started a publishing business, to grow awareness and to expand the knowledge. He launched a Kneipp *Verein* – or Kneipp Society – in America to promote Kneipp's work broadly. Not surprisingly, the ripples in the serene New York City pond began to manifest. Lust took note, explaining, "A band of polite plagiarists have proceeded to steal [Kneipp's] ideas and to put them into a catchy vernacular." (Lust, 1902, p.168) Lust's own efforts were imitated and borrowed too. In the midst of these confused reactions, claims and counterclaims, Lust was careful to point out that the water curists in New York City were inappropriately taking great liberties with the work of others. Lust writes, "Not satisfied with plundering the poor German immigrant of his hard-won knowledge, they parodied shamelessly and copied ruthlessly the life discoveries of Priessnitz, Kneipp, Rikli, Schroth, Hahn, Kuhne and other German Naturists." (Lust, 1902, p.168) Lust used his "Editorial Drift" column to speak out against the questionable practices of some of the people promoting the healing practices of others, without acknowledging their sources, and all too often without rigor.

Naturopathic Imposters

What irked Lust most was that these enterprising opportunists were guaranteeing "impracticable cures with the most sweeping and indiscriminate abandonment." (Lust, 1902, p.169) The impact of so many renditions of healing created confusion and chaos. These behaviors also exposed the Naturopathic movement to unnecessary and unwarranted criticism. Lust comments, "The name of Kneipp, instead of being the household word it had grown to be in Germany, and as a certain simple hearted youth fondly hoped to make it in America, had become a hissing and a stench and a synonym for therapeutic quackery." (Lust, 1902, p.169) To witness Kneipp's life work so plagiarized and desecrated infuriated Benedict Lust, and he used his magazine to say so. Rather than be associated with those defaming Kneipp, Lust "had to change the name of *The Kneipp Water Cure Monthly* because the true Kneipp we represented was inveterately confounded with the false Kneipp these charlatans had fabricated." (Lust, 1902, p.169)

Of interest to the contemporary naturopathic doctor is that the healthcare landscape is such that many individuals and groups even a century ago, not unlike the contemporary landscape of so-called "CAM" and "integrative medicine," bandy about in the marketplace hijacking and cherry-picking convenient versions of modalities, imitate principles superficially, and undermine the spirit and philosophy of a medicine grounded in nature. So, the milieu in which Naturopathy was being created may sound familiar to us even now. Lust witnessed different camps vying for power and making claims to which they were not entitled. Lust recognized that in order for real healing methods to be taken seriously by the public, he needed to disconnect himself from the commercial Kneippians. But the problems were not only with the Kneippians; Lust also found that many other groups latched on to the title "Naturopath" without embracing the foundations of the medicine. The public was at the mercy of a confusing array of practitioners inappropriately and unethically holding themselves out as genuine Naturopaths. Lust cites an example of a self-proclaimed "'Naturopathic physician' who had recently sanctioned a 'Naturopathic operation' (as well speak of a deific devil) and the butchered woman died of divine dispensation." (Lust, 1902, p.169) With a public hungry for natural healing options, Lust found himself on a new mission: to clean up the confusion.

In the conclusion of his April "Editorial Drift," Lust made very clear what the public needed to know – that is, what constituted a real Naturopath. First, he cautioned his readers to not "judge Naturopathy by the character, claims and 'cures' of every self-labeled Naturopath … [and] don't risk your health and life to the bungling malpractice of even a 'graduate' charlatan." (Lust, 1902, p.170) This statement was made almost a full decade before Flexner, and certainly well before the wholesale suppression of natural medicine began after 1910. By 1902, Lust's school in New York City (Figure 2) had been operating for almost a full year. Lust knew that there was a vacuum for natural healing methods in America, and characteristically he was doing something about it. The curriculum in Lust's school encompassed the whole spectrum of Natural Healing masters. Lust is clear about what a Naturopath would need to know to be competent. He states:

> *[The Naturopath] is thoroughly versed in the works of Priessnitz, Kneipp, Schroth, Rikli, Ling, Boehm, Walser, Kuhne, Winternitz, Lahmann, Bilz, Platen, Just and the other Naturists in Germany; of Leppel, Beard, Metcalfe, and the leading Health advocates in England; of Swoboda, Macfadden, Von Boeckmann, Thomas, Stone, Savage, Roberts, Latson, and like Physical Culturists; and of every New Thought movement from the Vedantic adepts in India to the Mental Scientists in America: Helen Wilmans, William Walker Atkinson, Elizabeth Towne, S. A. Weltmer, Charles Brodie Patterson, W. J. Colville, Ralph Waldo Trine.*
> *(Lust, 1902, p.170)*

From its inception in 1902, naturopathic medical education embraced knowledge from many sources, welcoming into the curriculum and clinical tutelage the champions of various disciplines that included hydrotherapy, heliotherapy, dietetics, physical culture, and mental culture. Lust was certain not to leave any area left out. The first naturopathic *materia medica*, in fact, enthusiastically encompassed water, sunlight, air, diet, exercise, breathing, body-mind, and spiritual elements.

Lust recognized that in order for Naturopathy to become acceptable by the American public, it needed to organize schools to produce competent practitioners. The confusion and cumulative harm of anyone holding out a shingle indicating an unearned and unrecognized credential was not the direction that the early pioneers wanted to go. Lust states, "Naturopathy will never meet the American people on a fair footing until there is a great College organized and legalized, whose diploma will distinguish its possessor from the crowd of copyists now imposing on the ignorance of the public." (Lust, 1902, p.171) It didn't take long before the early Naturopaths realized that they needed to be accountable to the professional education structures, regulations, and processes of the land. One of the objectives that *The Naturopath and Herald of Health* soon assumed was to help the American public "discriminate between the horde of mal-practitioners and the handful of true Naturists." (Lust, 1902, p.171)

In the next issue of *NDNR*, we will continue to explore Benedict Lust's writings in this landmark year, 1902, studying more of his work in the "Editorial Drift" column. Through the lens of Lust, we can discover what occurred and what were the prevailing thoughts as Naturopathy evolved in that first year of growth. Lust did not miss anything.

Figure 2 available online at ndnr.com

Sussanna Czeranko ND, BBE, incorporates "nature-cure" approaches to primary care by including balneotherapy, breathing therapy, and nutrition into her naturopathic practice. Dr Czeranko is a faculty member working as the Rare Books curator at NCNM and is currently compiling a 12-volume series based upon Benedict Lust's journals, published early in the last century. Her published books include: *Origins of Naturopathic Medicine*; *Philosophy of Naturopathic Medicine*; *Dietetics of Naturopathic Medicine*; *Principles of Naturopathic Medicine*; *Vaccination and Naturopathic Medicine*; and *Physical Culture in Naturopathic Medicine*. Dr Czeranko is the founder of the Breathing Academy, a training institute for naturopaths to incorporate a scientific model of breathing therapy called Buteyko into their practice. She is also a founding board member of the International Congress of Naturopathic Medicine and a member of the International Society of Medical Hydrology.

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The First and Second Rs

Why ND Educators are Worried

DAVID J. SCHLEICH, PHD

The second "r" is actually a "w" in the familiar phrase, *readin'*, *(w)ritin'*, and *(a)rithmetic*. The "r's" have become more like "grrr's" in recent years for postsecondary educators, though. Let's begin at the beginning to explore why the first 2 "r's" give us so much pause these days.

There is consensus among our educational leaders that naturopathic students have to have, among other things, adequate writing, reading, speaking, and listening skills all the way through medical school. Such skills are fundamental for academic but also for later professional success. The assumption is that such skills are there in the ND student's repertoire before we welcome him or her into a matriculating cohort. However, our teachers have a nagging concern about a declining language proficiency among Millennials, in particular. Research indicates that postsecondary underachievement, failure, and attrition are highly correlated with academic underpreparedness, especially with respect to deficits in language proficiency. These, in turn, seem to correspond to numeracy deficiencies too.

It's reasonable to rely on our admission processes to funnel out those in trouble before they get into more trouble. Our students, as it turns out, though, do not represent a homogeneous population with easily diagnosed English language-use difficulties; rather, they exhibit a wide range of abilities and needs related to language proficiency. Our faculty have pointed out more than once that we will all have to do a better job of identifying students who are "at risk" of not successfully completing their programs due to deficits in language proficiency, along with concerns about numeracy and science knowledge. It's important to catch these rocks in their academic backpacks before they get too far along on the ND degree trail.

Almost 15 years ago, researchers with the US National Commission On Writing [NCOW] (2003) warned professional education schools that there was ferment in the pipeline, in terms of the emergent skills level of students moving out of the secondary school panel into undergraduate preparation for further study. The data indicated that the conduit into the postsecondary continuum was filling with more students whose skills were challenged. The Commission, in speaking of "the need for a writing revolution" (p.1) also called back then for a new commitment to measuring writing quality, insisting that assessment composed only of multiple choice tests, for example, or which did not include significant training in expository writing, critical thinking, and confident listening and study skills, was not up to this demanding task. An authentic assessment of writing, they explained, would increasingly depend on requiring the student to produce a piece of prose that "carefully trained people read and evaluate in a fair and consistent fashion" (p.29). Similarly, the NCOW recommended that postsecondary institutions place writing squarely in the center of the school agenda and that policy makers provide the resources required to improve writing. Our admissions colleagues and the deans of our programs, not to mention the professors on the front line, acknowledge the NCOW contention that the reward of disciplined writing is the most valuable job attribute of all: a mind equipped to think. Writing today, they insisted, is not a frill for the few, but an essential skill for the many. Writing can help students seize opportunities, imagine endless possibilities, and surmount life's difficulties (p.11, 26). Mix into that equation the constant harassment from biomedicine on the frontiers of new state legislation, or wherever controversy arises about competence, and the task before us is high priority.

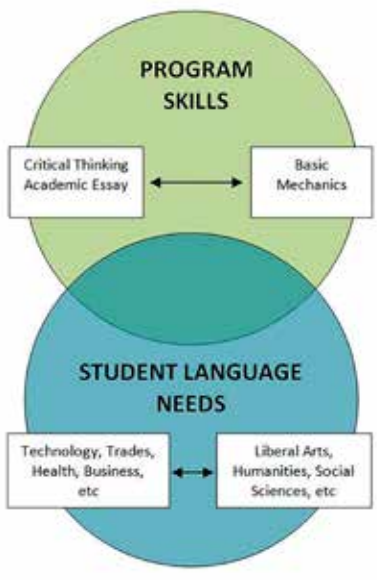
Assessment: The Meter is Running

There is no study that identifies a persistently high dropout rate in our ND programs attributable to writing and thinking skills. So far, none of the individual programs – or the AANMC (Association of Accredited Naturopathic Medical Colleges), as the framework academic body for the profession – has had the opportunity to capture data about this issue. We don't know for certain if there are significant numbers of students in difficulty because of writing skills. Since no recurrent alarm bells have sounded, there has not been a call halfway through the second decade of our new century for a wide survey which might discover trends, even though we were warned about these halfway through the first decade. The meter is running. There are clues, though, that there could be trouble in our educational network. Such clues grow out of the well-documented correlation

between the persistently high college dropout rate in the general population of postsecondary students and the level of academic underpreparedness characteristic of a significant proportion of beginning students, including language challenges faced by students arriving from non-traditional pathways.

The literature is replete with studies supporting the need for early identification and upgrading for students who are "at risk" of not completing their postsecondary programs because of deficits in academic preparedness, especially with respect to language deficits. (Andres & Carpenter, 1997; Beck & Davidson, 2001; Boylan, 1999; Fisher & Engemann, 2009; Griswold, 2003; Kozeracki, 2002; McCarthy & Smuts, 1997). Roueche & Roueche (1994a,b) similarly noted – writing not only about undergraduate, but also about graduate level programs – that "colleges must require entry-level assessment of *all* entering students to determine if skill levels are adequate for college-level courses. Has the time come, then, in our naturopathic admissions and matriculation processes, to turn to test data to keep students from enrolling in classes where they have no chance of success and to place them in classes where their skills could be developed to appropriate levels" (p.3)? Have more of these students with recurrent writing, speaking, listening, and reading skills slipped into our programs undetected?

Figure 1. **Dimensions of Language Proficiency**



(Adapted from Beck & Davidson, 2001)

Significantly, Kingsbury and Tremblay (2008, 2009) concluded their analysis of language competency assessment practices with the observation that the single element most often mentioned by the college teachers surveyed in their study was "the ability to transpose one's thoughts into writing" (p.1). This focus on the centrality of *writing* as the critical skill in academic settings and professional preparation for the world of work is also well supported by the literature (Airasian, Engemann, & Gallaher, 2007; Barakett & Cleghorn, 2000; Bartlett, 2003; Fisher & Engemann, 2009). "Writing," noted Eric Schneider, "is the edifice on which the rest of education rests" (Bartlett, 2003, p.7).

Overall, the extent and diversity of current *assessment practices* is growing, as specialty/programmatic as well as regional accreditors raise the bar on their expectations regarding assessment practices. At our naturopathic colleges, not much activity with regard to literacy skills is occurring in this field, and while many of these current practices are supported by the literature (multiple measures, focus of writing modality, use of rubrics, training and calibration of graders, etc), there is not a general understanding of what we must be on the lookout for, and what we should even shoulder with respect to formal assessment of language proficiency. Certainly, questions arise regarding the logistics, timing, and costs of universal language assessment of all incoming naturopathic medical college students, but the necessity of such a commitment is a recurrent theme in the literature which suggests that even at the graduate school level, there will be an impact (Carini et al, 2006; Colton, 1999; Kozeracki, 2002; Moore & Carpenter, 1985; Perin, 2002, 2004; Phipps, 1998; Weissman, 1997). Roueche and Roueche (1994b), for example, noted that "skills assessment and placement should be mandatory, with test data used to place students in appropriate classes" (p.221).

Three Ways to Tackle the Problem

What, then, can we do to assuage the nagging concern out there that such a problem is alive and spreading in our naturopathic programs? There are 3 general methods of formal language assessment we could turn to. We could require 1) specific language proficiency testing, using writing samples; 2) computerized assessment of reading comprehension and/or sentence skills; or 3) multiple measures that include a combination of writing samples, computerized reading assessment comprehension, and sentence skills.

Writing Samples

There is consideration of writing skills and aptitude, although indirectly assessed and not specifically graded, in naturopathic college admissions. The most common manifestation of this method requires students to write a *persuasive essay* in response to a single prompt – or, in some cases, to a selection of prompts – in the application process. Time allotments for students are neither prescribed nor monitored in our current processes. Writing samples show up as typed text, rather than as handwritten material, most often. There do exist software programs such as "*WritePlacer*" available for this purpose, requiring computer-entered writing samples.

Computer-Based Assessment

None of our college or university ND programs has a formal computer-based assessment of language proficiency in place so far. There are, though, a number of platforms available which could speed this facility. Two widely known computer-based instruments include the *Accuplacer Reading Comprehension* and the *Accuplacer Sentence Skills* tests. These commercially available products have the benefit of relative cost-effectiveness and virtually immediate turnaround time, but their perceived effectiveness is premised on the assumption that competencies in reading comprehension and/or sentence skills are legitimate proxies for language proficiency, in general, and writing. There are those who doubt the diagnostic value of such tools and materials. For example, Driver and Krech (2001), in their comparative analysis of computerized placement versus traditional writing samples, noted that "what is easiest to measure – often by means of a multiple choice test – may correspond least to good writing, and … choosing a correct response from a set of possible answers is not composing" (p.17). Similarly, Brown (1978) noted that multiple choice tests "require a passive, reactive mental state, when actual writing requires and fosters a sense of human agency, an active state" (p.3). There are also those who point to the daunting, expensive logistical problems associated with both traditional non-computerized grading methods and their digital successors. The norming and calibration process for professors involved in grading writing samples is not a skill-set our medical curriculum faculty are equipped to handle.

Multiple Measures

In any case, the *multiple measures* in language assessment show up as a preferred way to go about dealing with this challenge in the literature (Breland, 1996; Driver & Krech, 2001; Greenberg, 1992; White, 1998). White (1998), for example, noted that the "results of a careful multiple-choice test, when combined with the results of a single essay test, will yield a fairer and more accurate measure of writing ability than will either test when used by itself" (p.240). Driver and Krech (2001) similarly concluded their comparative analysis of language assessment methods by recommending "a combination of tests as the most accurate measure of students' placement needs" (p.19). However, they also noted, that because of the expense and logistical demands of using multiple measures, this practice might not be practical for many institutions (p.3).

Remediation as a Solution

There is also the challenge of dealing with the remediation needs of those students whom we may find among us already, not to mention those on their way to us. The literature overwhelmingly indicates that at-risk students who participate in some form of academic intervention, variously termed *remediation*, *upgrading*, *developmental*, *foundational*, and/or *supplemental* language instruction, achieve higher grades and retention rates than students who actually needed but had not participated in such interventions (Fisher & Engemann, 2009; Marshall, 2008; Martin & Arendale, 1992; McCarthy et al, 1997; Wallace, 2009; Weissman, 1997). Stated bluntly, remediation for at-risk students "increases academic performance and retention" (Martin & Arendale, p.3). Our curriculum delivery budgets have little room for this kind of intervention in their current manifestations. And, the last thing our students want is yet another added cost to their already burgeoning tuition load.

Whether based on pre-admission screening, post-admission informal classroom assessment, or post-admission formal assessment for placement purposes, any system we do consider in the naturopathic education world will be complex, as well as difficult to introduce and to administer, especially considering that many faculty would prefer to exclude such at-risk candidates at the admission and screen stage. However, at the same time, if this problem presents more consistently, we will have to undertake for purposes of retention and our commitment to student success, various models of classroom delivery that may well require us to employ smaller class sizes, more hours of instruction, pedagogical accommodations, and/or specialized teachers.

Such *student-centered* approaches to language remediation are well supported in the literature, which document the benefits of *smaller classes* in terms of more flexibility and individualized assistance, greater student engagement, more active learning, and more formative feedback (Beatty-Guenter, 2007; Shults, 2000). Specifically in terms of class size, some studies suggest that writing-intensive classes should set limits at "ideally 20 students and no more than 25" (UNCA, 2004, p.2), while others promote classes of *fewer than 20* students, especially in the context of language remediation (Haswell, 2006; Horning, 2007; Maggio et al, 2005; McCusker, 1999). These are expensive and probably not sustainable options.

Communication Essentials

No matter what we find, there are communication skills which our faculty consistently report to be essential, not only for success in the naturopathic medical program itself, but also for success in the working landscapes of primary care. The essential skill-set the faculty at my own institution, NUNM, emphasizes is as follows:

- communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience; and
- respond to written, spoken, or visual messages in a manner that ensures effective communication

Net Results

What these generalized expectations convert into, at a more specific level are these:

- understand, speak, and write effectively
- listen in order to understand and learn
- read, comprehend, and use written materials
- a discernible stated purpose and a logical pattern or organization
- a controlling idea that is cohesively developed
- paragraphs that develop a main idea with details and examples clearly related to the main idea
- control of the essential mechanics of writing (eg, complete sentences, subject/verb agreement, consistent use of tense)

At the very least, our incoming and outgoing students need to have mastered these very basic writing skills, which in turn assume sophistication in reading, listening, and speaking. Our profession will sputter if we don't have these fundamentals in every graduate's backpack.

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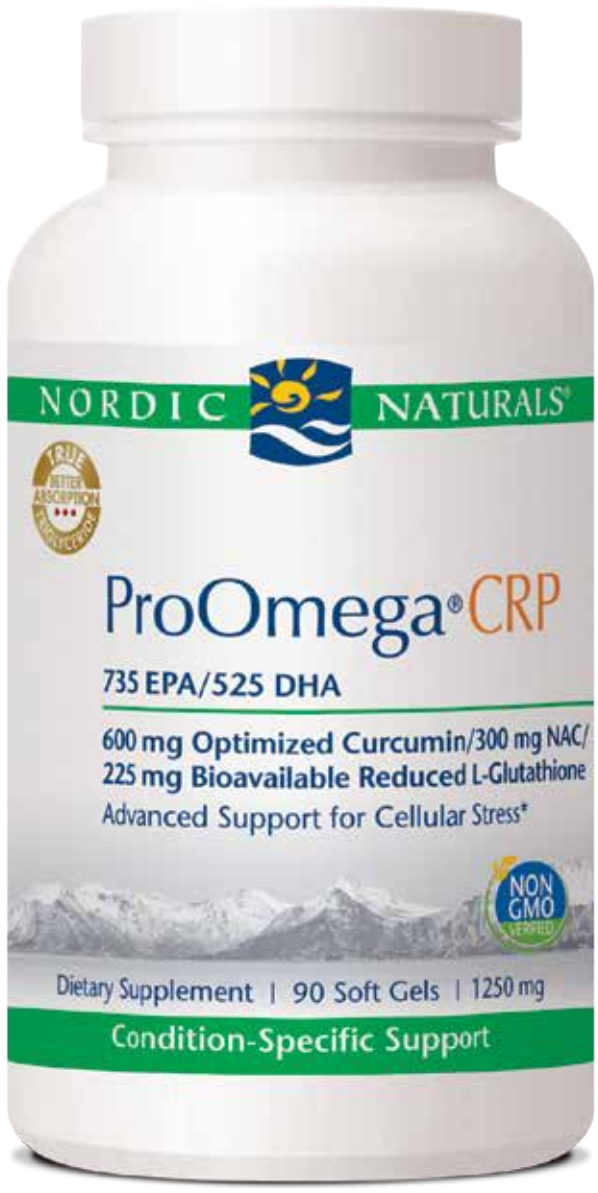

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Optimized Curcumin (600 mg)
Patented free-form curcumin. Powerful antioxidant, supports signaling pathways not regulated by EPA and DHA.*

L-Glutathione (225 mg)
Reduced form, clinically shown to increase L-Glutathione blood levels for potent antioxidant and detoxification support.*

N-Acetylcysteine (NAC) (300 mg)
Boosts L-Glutathione levels, scavenges free radicals, supports detoxification.*

Committed to Delivering the World's Safest, Most Effective Omega Oils™

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* These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

NORDIC® NATURALS

Focus on Cardiology, Pulmonology, and Eye Health

Cardio SAP™ — Science-based B vitamins and betaine for homocysteine control.* Cardio SAP™ *provides a synergistic blend of scientifically supported doses of B vitamins and betaine to promote healthy homocysteine levels and support optimal cardiovascular health.** Cardio SAP™ *supplies the activated enzyme forms L-5-methyltetrahydrofolate, methylcobalamin, pyridoxal-5'-phosphate, and trimethylglycine for optimal bioavailability and enhanced efficacy.**

Trident SAP 66:33™ — Science-based omega-3 oils: exceptional purity, standardized to the highest concentration.* *Each softgel contains 660 mg of EPA and 330 mg of DHA. Scientific evidence supports the efficacy of fish oil for cardiovascular health by promoting healthy triglyceride levels and a healthy inflammatory response.** Trident SAP 66:33™ *effectively alleviates symptoms associated with chronic inflammatory conditions.** Trident SAP 66:33™ *promotes eye health and vision, as EPA and DHA help age-related eye disorders and dry eye symptoms.** Trident SAP 66:33™ *contains vitamin E as an antioxidant, and is hermetically sealed to be secure against entry of oxygen, ensuring maximum purity, freshness, and stability of the oil through to expiration.*

Vision SAP™ — Science-based nutraceuticals for prevention of degenerative eye disorders.* Vision SAP™ *is a unique comprehensive high-dose antioxidant formula, synergistically blended with nutraceuticals, carotenoids, and vitamins to support optimal eye health and vision.* The ingredients in* Vision SAP™ *have been scientifically researched to increase blood circulation to the eye and aid in the transport of vital nutrients and antioxidants into the macular region for protection from oxidative stress.**

Seabuckthorn SAP™ — Science-based omega-7 fatty acids for cardiovascular and eye health.* Seabuckthorn SAP™ *provides a source of omega-7 fatty acids, also known as palmitoleic acid. Each softgel of* Seabuckthorn SAP™ *contains 600 mg of certified organic sea-buckthorn fruit oil, 400 mg of certified organic sea-buckthorn seed oil, and 40 mg of certified organic goji seed oil. All oils are supercritical CO_2-extracted from organically grown berries on the Qinghai-Tibetan plateau. Omega-7 oils provided by* Seabuckthorn SAP™ *support cardiovascular and eye health, especially for improving dry eye condition.**

These products, with the exception of Cardio SAP and Seabuckthorn SAP, are available through

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All ingredients listed for these product lot numbers have been validated by a third-party laboratory for identity, potency, and purity.
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