Lyme Disease | Infection | Travel Health

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Townsend Letter

The Examiner of Alternative Medicine

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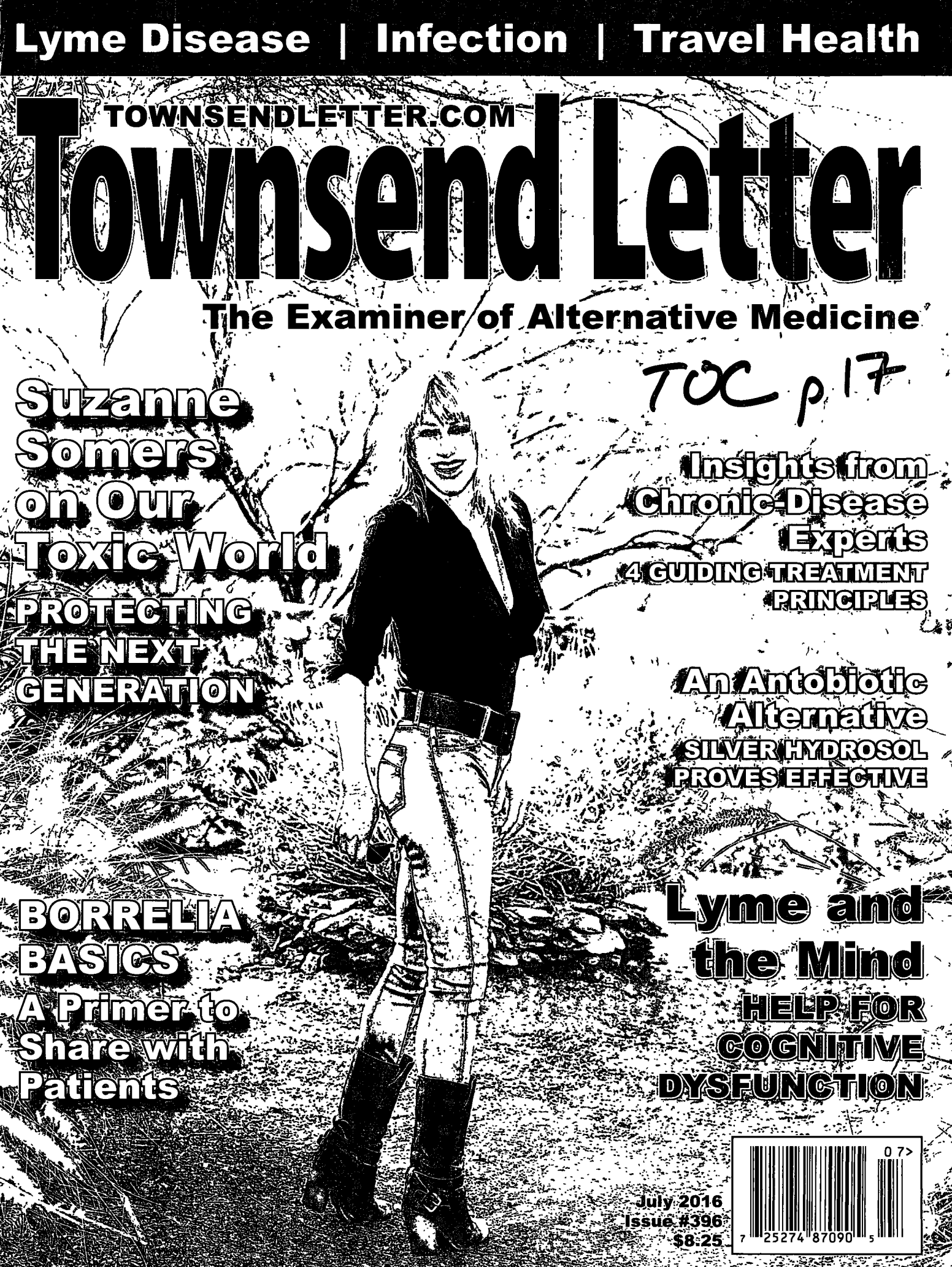

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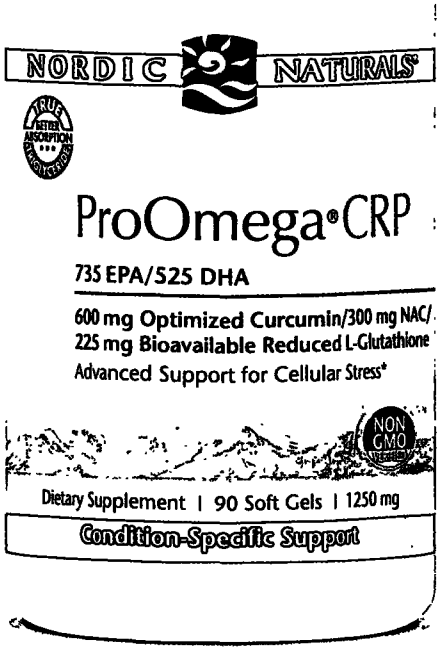

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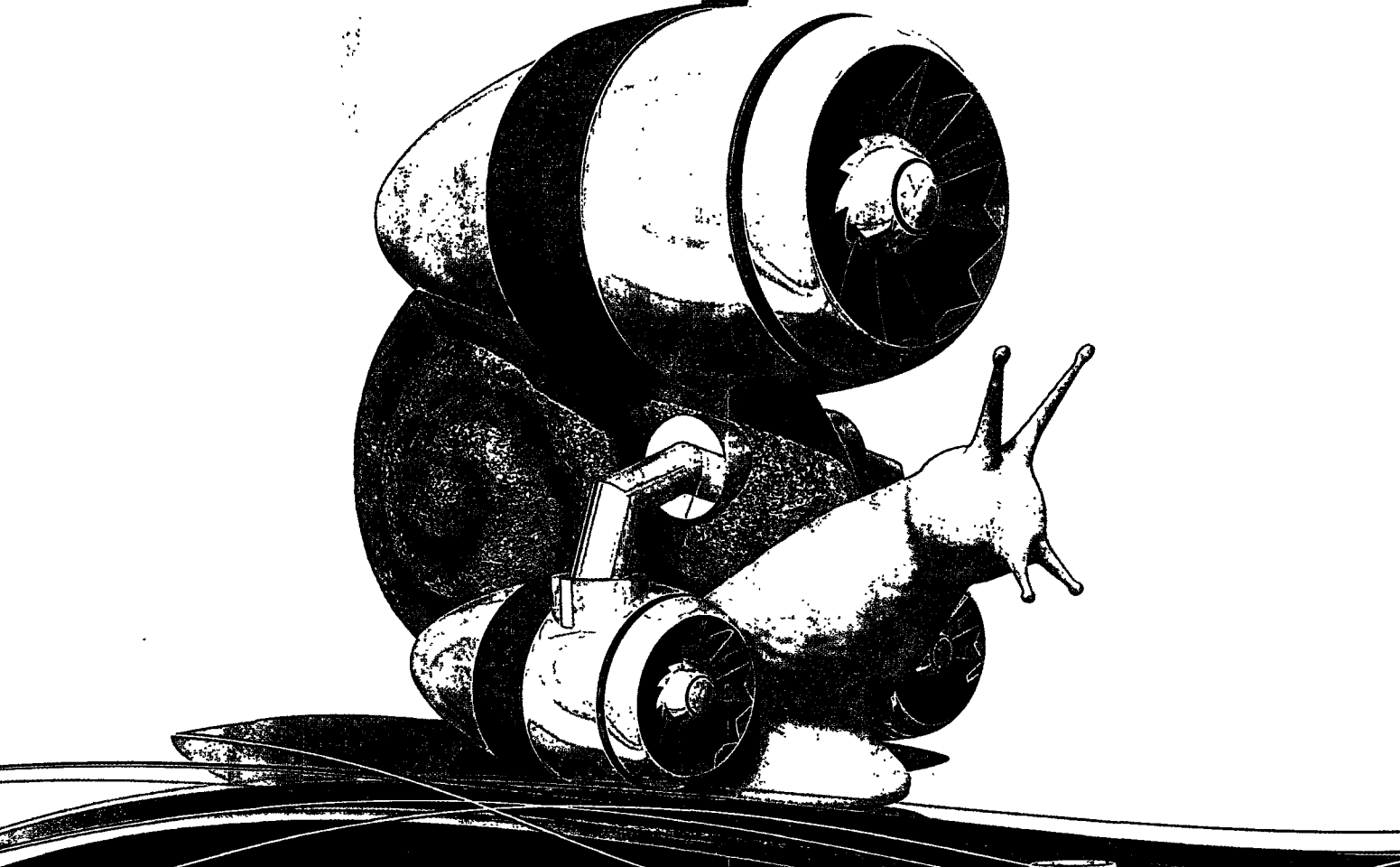

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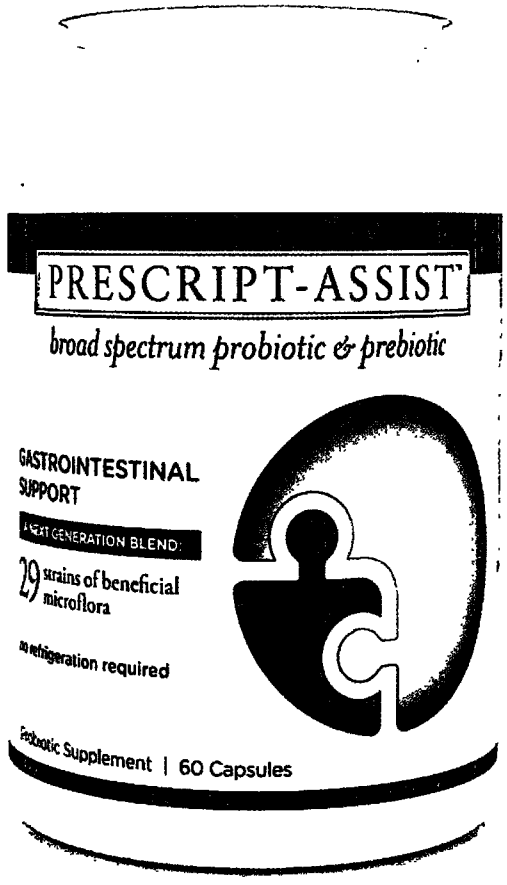

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This international conference will explore the field of Integrative Medicine in the treatment of mental health, autism, and related disorders. The current trial-and-error, poly-pharmacy approach to the treatment of psychiatric disorders may not work for everyone. Research studies have revealed that many disorders such as depression, bipolar disorder, anxiety, OCD, eating disorders, and autism spectrum disorders often have dietary and biological causes which contribute to symptoms. Patients have better outcomes when these causes are successfully addressed and treated through a combination of specialized testing and nutritional therapies, even in combination with traditional approaches.

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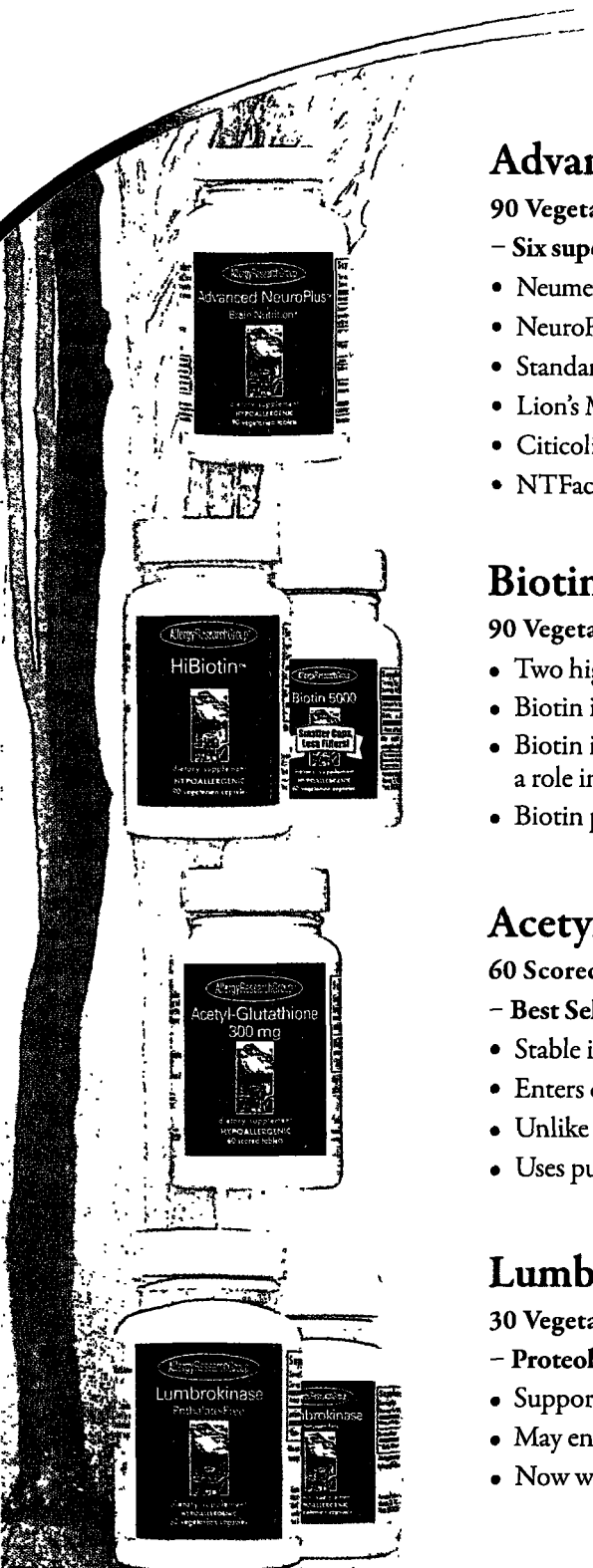

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From the Publisher

I Can't Believe How Much My Humira Costs!

Actually, I don't use Humira, a treatment for rheumatoid arthritis and other autoimmune diseases. Unlike many other medications, Humira, a biotech drug, has dramatic benefit for patients suffering with RA. The artist Pierre-August Renoir continued to paint until his death, but he did it with hands that were gnarled, mangled, and unimaginably painful. Of course, such a drug was beyond medicine's wildest imagination in the early 20th century, but if it had existed, then Renoir's suffering would have been ameliorated in weeks if not days. So powerful are the benefits of Humira, it is being administered for at least 8 other medical conditions, and more are likely. However, miraculous medicine does not come cheap. In 2007 the average cost for Humira (excluding insurance reimbursement) was $12,000 annually. In the last year Humira's price has increased to $28,000 after discounting. Does the manufacturer, AbbVie, formerly Abbott Laboratories, make a profit from this drug? Hah! Try: it is making a killing from selling Humira, based on US sales last year of $8 billion. The price of Humira has been steadily increasing over the past three years. It is expected that a "generic" knockoff of Humira will be coming down the line shortly in the years ahead. However, AbbVie has gone into patent overdrive, attempting to block any company's attempt to manufacture a copycat drug. AbbVie hopes that it will monopolize the market until 2022. Not that you asked, but the premium for your personal insurance policy costs about $65 yearly additionally to cover the insurance company's outlays for just the drug Humira.

So let's get a generic version of Humira here as soon as possible so that the price will be lower for the patient and insurance company, right? Not so fast. The generic-drug industry is in cahoots with the biotech companies. The generic manufacturers can't wait to make their own killing selling

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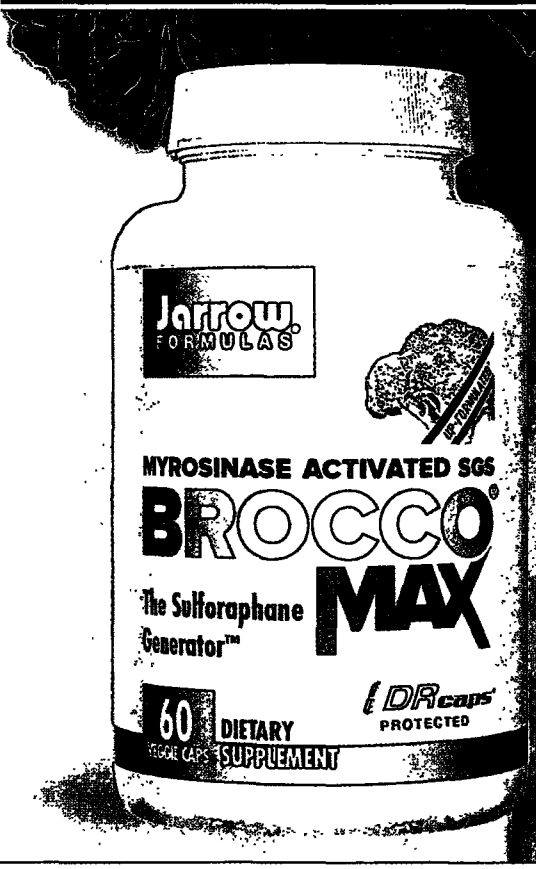

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From the Publisher

➤ *continued from page 6*

biotech knockoffs. If Humira's ultimate price before a generic is made is $50,000 yearly, the generic will probably only be 15% less, at $43,000 yearly. Not a big savings. Miraculous biotech drugs are going to cost the consumer an arm and a leg, and insurance companies will be obliged to increase premiums dramatically to match drug price increases.

Before you scream "There oughta be a law," remember those poor souls like Renoir, agonized over their disease with no cure in sight. While we in integrative and alternative medicine decry the use of drugs, arguing for natural therapies and dietary approaches, it is very hard to advise the patient not to use Humira or its ilk. After all, the reason that many of us opted to do integrative and naturopathic medicine was to offer safe alternatives that engaged Nature's healing process to cure. Most drug therapies pose major risks for side effects, even life-threatening adverse events. Still, it is very difficult to argue against a biotech drug that overwhelmingly reverses a disease's course.

Welcome to expensive medicine of the 21st century, in which insurance coverage will be increasingly expensive to cover the costs of these agents.[1]

The Zika Pregnancy Nightmare

When I was on Christmas break last year, I read a short article in the *New York Times* about the strange business of women in Brazil having pregnancies resulting in children with microcephaly. There was a weird association between a virus that I had never heard of, Zika, and the microcephaly births. Why would a virus that had been little more than a bad case of flu, like Dengue fever, cause such neurologic disruption in pregnancy especially since Zika had not caused microcephaly in Polynesia or elsewhere? I wrote about it in January for this letter, thinking that I would be introducing the readership to a peculiar monstrosity that was self-limited to Brazil and of minor clinical significance. Like you, I was amazed that Zika displaced Trump from the headlines throughout January and beyond. My editorial comments in February were old news; understanding Zika had become ground zero for the CDC and other world health authorities – what could be done to contain this virus and avert obstetric catastrophes? In fact, politicians very rapidly became involved; it was not wholly unexpected for at least some to advise women against becoming pregnant. Drug companies had their own new holy grail to develop a vaccine immediately. Governments began gearing up mosquitocide spraying programs, although experts warned that the *Anopheles* mosquito enjoys habiting the indoors and outdoors and is active day and night, so such programs would be of little avail. In fact, a guest editorial by Jule Klotter in the May 2016 *Townsend Letter* conjectured that the use of pesticides may have played a key role to causing the microcephaly.[2] Further, Klotter wrote that Brazil instituted a widespread vaccination program for pregnant women in 2014, administering MMR to women early in pregnancy. Hence Zika virus may exert its cerebral malformation only in combination with other toxicity factors.

continued on page 10 ➤

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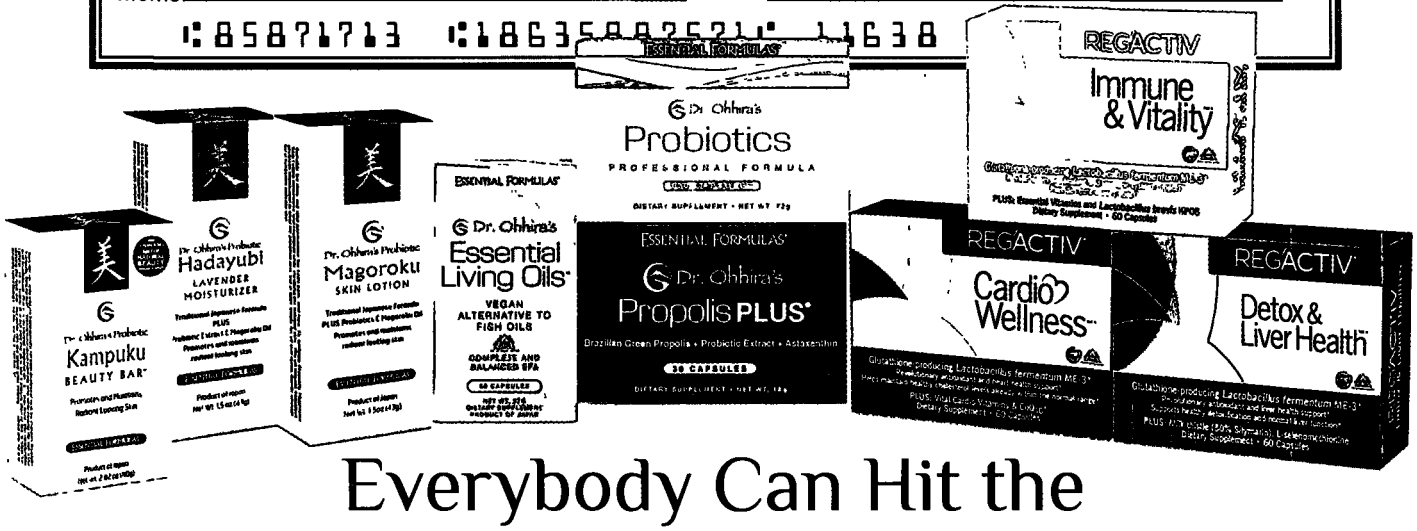

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2014 Best of Gluten Free Awards

From the Publisher

➤ *continued from page 8*

The neuropathology is worse than what is considered "typical" microcephaly. Recent exams of affected Brazilian infants have demonstrated enlargement of the cerebral ventricles and absence of the corpus callosum! There is significant abnormality in the frontal lobe, parietal lobe, and other major brain structures. Neurologists predict that these individuals will have overwhelming disabilities involving nearly all motor and sensory divisions.[3] Recent work by Guo-Li Ming, MD, and Hongjun Song, MD, professors of neurology at Johns Hopkins Hospital, has further elucidated the pathologic mechanisms of the Zika virus.[4] Zika infects and takes over brain progenitor cells that rapidly reproduce the virus. Viral metabolites damage and destroy neighboring progenitor glial cells. Such damage causes major brain disruption, especially in the first trimester.

What can a pregnant woman who has acquired Zika virus do? Typically, pregnant women are advised to avoid drugs, chemicals, and high-dose supplements because such agents may adversely affect the fetus. However, the risk for untreated Zika virus is clearly enormous – there is no evidence that a woman infected with Zika will give birth to a normal child. It would be reasonable for a pregnant woman infected with Zika to receive high-dose IV ascorbic acid infusions. The medical literature supporting the use of ascorbic acid in treating viruses is substantial – readers should refer to texts written by Thomas E. Levy, MD, JD. The substantial experience of Frederick Klenner, MD, administering ascorbic acid to treat polio virus nearly 70 years earlier argues that it will be effective for countering the virulence of the Zika virus. Oxidative therapies, particularly IV ozone administration, are also useful, although the literature supporting IV ozone administration for viruses is less substantial. Pregnant women would benefit from Myers cocktail administration as general support.

For prevention, in addition to using topical antimosquito chemicals and electronic mosquito-trapping devices, essential oils should be employed as a deterrent to mosquito bites. Pregnant women should consider avoiding travel and camping in mosquito-ridden areas. The use of oral supplements and nutraceuticals having immune-supporting activity should be implemented; for example, well-formulated colloidal silver and colostrum.

continued on page 12 ➤

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From the Publisher

➤ *continued from page 10*

Suzanne Somers: *Tox-Sick*

Suzanne Somers is one of the few Hollywood actors to transform herself into a voice for natural medicine. Her original series of books advocating for women to use hormone therapy after menopause probably did more to change the mindset of the public about anti-aging medicine than any other individual's. Somers characterized women in the throes of menopause like Snow White's Seven Dwarfs, especially "Grumpy, Sleepy, and Dopey." Somers extolled the fact that women did not need to suffer these indignities of middle age, eliminating such symptoms by being prescribed the correct dosing of bioidentical hormones. Her arguments ring true today as a rebuttal for the antihormone mentality of the medical establishment who cite the risks and lack of effectiveness seen in the Women's Health Initiative studies. Somers pushed the risk-adverse envelope even further when she was diagnosed with breast cancer and insisted that she would continue her estrogen and progesterone hormone "replacement" therapy. Despite the fact that she has faced occasional medical difficulties since her diagnosis, she remains in excellent health, full of vitality and energy, championing the idea that women should be asking, why shouldn't they be using long-term hormone therapy?

In this issue of the *Townsend Letter,* Somers continues her exploration of integrative and functional medicine by examining the risk that the public faces daily from the environment. She is not directly concerned with factory and mine workers exposed to harsh industrial agents, although these individuals are at extreme risk. She is addressing the general public, the office workers, the stay-at-home moms and dads, who seemingly live a "clean" life but are exposed daily to countless toxic chemicals and metals in the air, water, food, as well as household products including cleansers and cosmetics. Somers worries that corporate America's nonchalance regarding public use of consumables makes patients and doctors unconcerned about growing accumulation of toxins in the body. Typically, public health is more concerned about vaccination scheduling (a topic in this issue that Gary Null critically examines, while Dr. Sussanne Czeranko's historical book is reviewed) than about lead burden, although recent community exposures to lead in the water supply undoubtedly are changing that. However, most chemicals, particularly phthalates, pesticides, solvents, and metals, including mercury and aluminum, get short shrift in medical exams (meaning no examination whatsoever).

Somers worries about the bioaccumulation of these materials in pregnancy. What sort of chemical and metal doses are fetuses exposed to from the mother? What changes

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ADVANCED PROBIOTICS FROM
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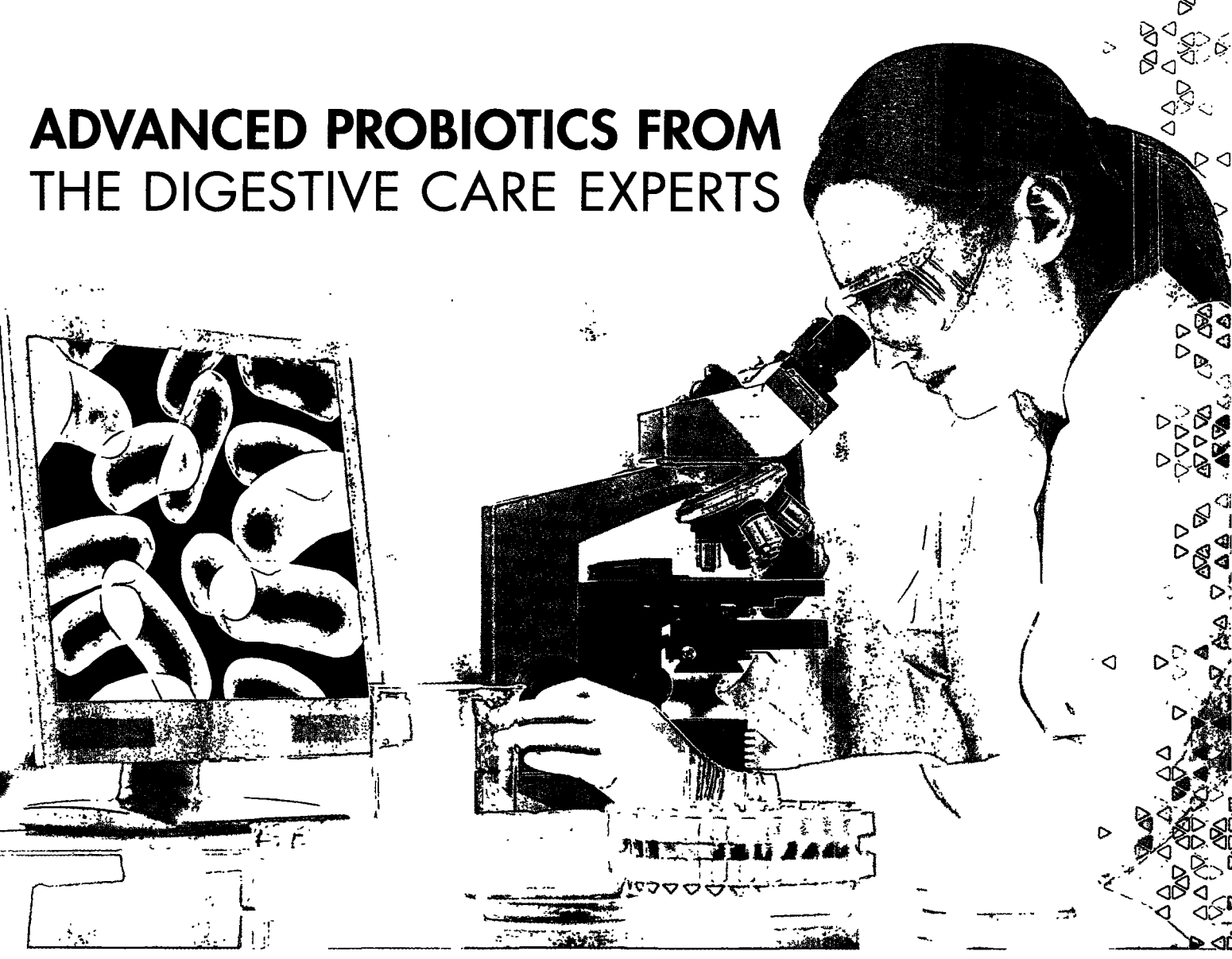

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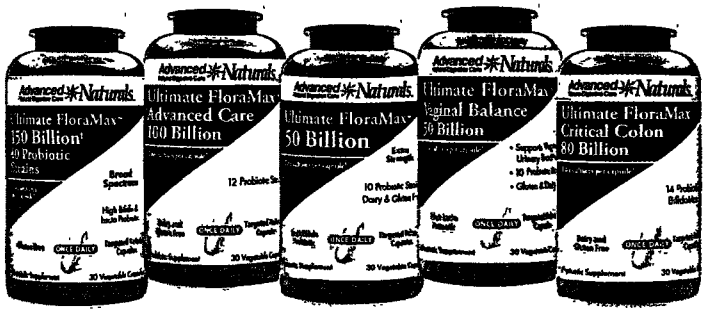

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NorthWest Naturopathic Physicians Convention 2016 Was a Great Success

by Kate Wiggin, ND

NWNPC 2016 Jurisdictional Chair

On behalf of the NorthWest Naturopathic Physicians Convention, I would like express heartfelt gratitude for the participation of all involved in the 60th annual NWNPC at the Portland Marriott Downtown Waterfront. NWNPC is the longest-running annual naturopathic medical conference in the world. Our doctors attend mostly from Oregon, Washington, and British Columbia, but we often have health-care professionals from Alaska, Hawaii, Ontario, and all over the globe. This year we even had delegates registered from Jamaica, Mexico, and the Philippines! One of the goals of our convention is to serve as a vehicle to unify the traditional practices of naturopathic medicine with the advancing knowledge obtained through current education. And we like to provide it in a fun atmosphere steeped in camaraderie! We believe that this year's convention with its "Food As Medicine" theme was a huge success. We recognize that this success is largely due to the caliber of the speakers that present to you, our doctors, and the exhibitors that bring their knowledge, products, and staff. Thank you for being part of this; for taking the time to travel, listen, and engage with the speakers, exhibitors, students, and your fellow colleagues.

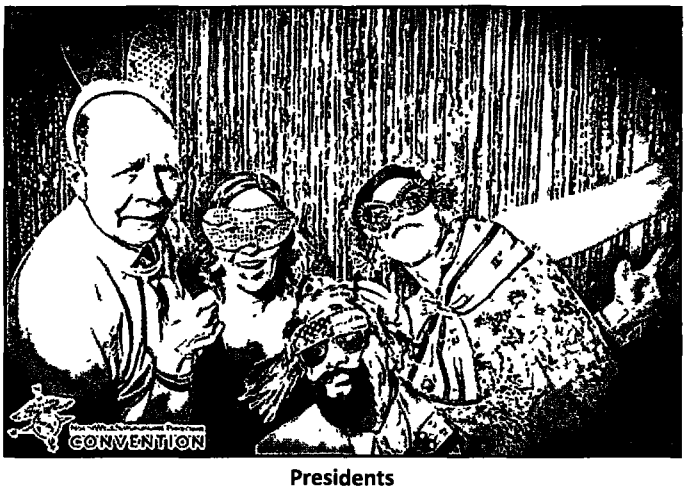
Raffle Winner

Highlights

Delegates reported being thrilled with excellent information, and "Food as Medicine" covered a wide range of topics, from the opening lecture by Dr. Russell Marz on plant-based diet essentials to the humorous lecture by microbiologist Kiran Krishnan on establishing optimal health with the use of probiotics. Dewey Caron gave an awesome lecture on honeybees (and even brought some with him!), while Dr. Tieraona Low Dog gave an inspiring presentation about the importance of having access to quality food and water. We had an amazing set of presenters!

Not everything was about academics – there were special events, too. Friday night we cruised the calm waters of the Willamette River, where we danced the evening away and had some herbal beverages provided by Dr. Glen Nagel, an herbal mixologist. Dr. Chris Turner and the NWNPA (the member association part of our organization) sponsored a reception

Scholarship Winners



Presidents

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ahead of the Saturday banquet with an amazing violinist. And then we had the banquet where Dr. Thomas Kruzel, Dr. Pamela Jeanne, and Dr. Jim Massey were all recognized for their extraordinary contributions to our profession. Many people talked about the feeling of being part of a family, and the great connections of like minds, as well as connections of veteran doctors with new doctors and students. With this year's theme of "Food as Medicine": and past themes such as "Wisdom of the Elders" and "The Heart of Naturopathic Medicine," NWNPC is known as the place to be for that sense of caring about and welcoming nature of our community. And the kind words spoken by our award recipients toward NWNPC and the naturopathic profession touched us all.

We continued to feel the love at the final round of the Scholarship Series speaking competition, where Kay Wong from Boucher Institute of Naturopathic Medicine gave a heartfelt speech about what "Food as Medicine" meant to her and to her father. Our other two student finalists gave excellent speeches, too, but there was a connection made by Kay's recognition that food follows us from birth through death and that food binds people and families together. Her message really struck a chord

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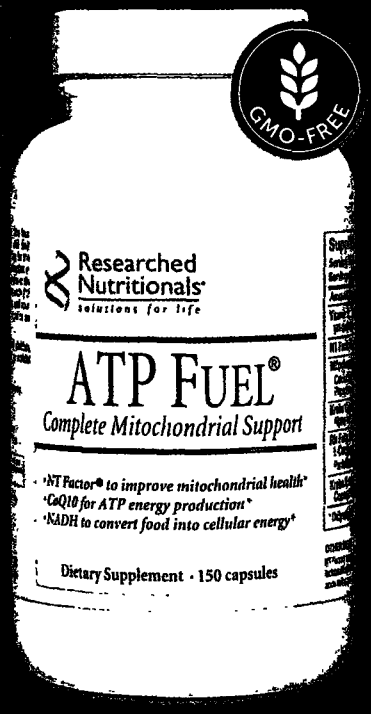
Exhibitors

NWNPC Board – See you in 2017



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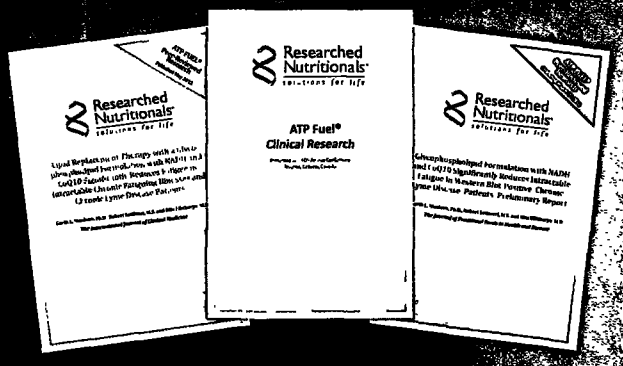

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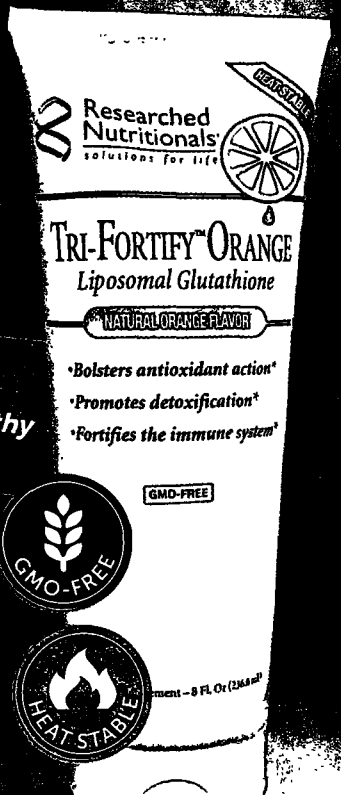

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ON THE COVER: Suzanne Somers on Our Toxic World (36); An Antobiotic Alternative (50, 60); Borrelia Basics (64); Insights from Chronic-Disease Experts (69); Lyme and the Mind (88)

NWNPC Convention 2016

➤ *continued from page 15*

with the delegates and the guest judges. Congratulations to all our finalists! Please tell us what you think of your weekend with us! If you have some feedback on what made an impression on you, about what you liked or what you didn't like, please go to our online survey and let us know.

More to Come

We are excited to announce that the 61st annual convention will take place in Vancouver, BC, from April 28 to 30, 2017, at the Pan Pacific Hotel and Vancouver Convention Centre. Next year's theme is "Relevant Medicine," where you can learn those clinical pearls of wisdom that you can put in to your practice immediately.

If you are a speaker and have a presentation that would fit into the convention, or if you have a topic that you want covered, please contact Dick Hoenninger using the info below. He would love to hear from you, and we look forward to seeing you next year!

Questions

General questions and inquiries about the upcoming 2017 convention can be directed to:
Dick Hoenninger, executive@nwnpc.com
253-230-2131

You can also reach us at:
NWNPC, 2212 Queen Anne Ave N, Suite 530
Seattle, Washington 98108

Award Winners at the 2016 Convention
The Dr. Kenneth Harmon Award went to Pamela Sky Jeanne, ND (center); the Dr. Gerald Farnsworth Award went to Thomas A. Kruzel, ND (right); the NWNPC Partnership Award went to Dr. Jim Massey, CEO Mountain Peak Nutritionals (left).

Fun times at the Dr. Chris Turner Reception

Emcee Rick Kirschner, ND, introduces NWNPC President Todd Farnsworth, ND

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Disclosure: The *Townsend Letter for Doctors & Patients* publishes information about alternative medicine written by researchers, health practitioners, and patients. As a forum for the entire alternative medicine community, we present information discussing a wide variety of alternative and integrative medicine practices. In addition to publishing original research and literature abstracts and reviews, we encourage case studies and anecdotal reports Detailed anecdotal reports are not viewed as proof but as possibilities that need further investigation. All authors are required to submit their reports to other professionals for review and include proof of peer-review with article submission.

The editors of the *Townsend Letter* recommend that all patients (and physicians) review further reports provided in the article's references and investigate the practitioner's techniques before undertaking an alternative diagnosis, examination, or treatment. Please discuss such treatments and examinations with a reputable health practitioner in your community. If you do use an alternative treatment discussed in the *Townsend Letter*, we would appreciate your report of the outcome, any side effects, and costs.

➤ *continued from page 12*

transpire from an epigenetic viewpoint modifying the infant's health? Somers's interviews of physicians in environmental medicine make the case that pregnant women, indeed, women preparing for pregnancy, need to detoxify. *Tox-Sick* is an important read to share professionally and with the patient.

Lyme Disease

Like you, I work with patients who have been diagnosed with Lyme disease. There is nothing terribly surprising about this, as approximately 300,000 individuals are diagnosed with Lyme each year in the US. Probably quite a few more have the infection but are not aware of it because they were never diagnosed. Physicians depend on ELISA and western blot tests to make the diagnosis of Lyme disease; unfortunately these tests are frequently falsely negative. Most physicians treat Lyme like a strep throat, with a short round of antibiotics, and then call it good. For the patient who has knowledge of a tick bite, who develops a bull's-eye skin lesion, and who is promptly prescribed antibiotics, this is likely to adequately treat the infection. Unfortunately, the tick bite is frequently missed, there is no skin rash or other signs, and chronic symptoms, such as fatigue and cognitive dysfunction, are perceived as "chronic fatigue," depression, ADHD, yeast syndrome, and the like. Not that each of the aforementioned symptom categories is incorrect – it's just that Lyme disease is being missed. For those who develop chronic Lyme disease, diagnosis and treatment are frequently a frustrating and expensive affair: primary care doctors are unfamiliar with, even hostile about, considering the diagnosis and long-term treatment, while insurance companies deny reimbursement for services. Of course, even for "Lyme-literate" doctors, the diagnostics are complicated and treatment courses of intravenous antibiotics are harrowing, at least for the patient. Patients who endure aggressive antibiotic treatment and intensive treatment with herbal antimicrobials expect major symptomatic changes and successful outcomes. Alas, it is not uncommon for patients to be on a complicated, unending treatment treadmill that yields minimal benefits. Lyme disease is not for individuals who are the faint of heart.

In this issue, CJ Puotinen, a journalist, author, as well as Lyme patient, writes a good primer about Lyme disease and integrative approaches to treatment. Puotinen reminds us that the disease is caused by *Borrelia*, a bacterial spirochete; another major disease brought on by a spirochete, known as syphilis, also poses a diagnostic and treatment nightmare in its advanced stages. Puotinen spells out the basics of Lyme disease and offers helpful resources. This is an article that you should copy and distribute to your patients. The Lyme books reviewed by Puotinen deserve a read and should be available on your bookshelf.

What should be done for those whose Lyme disease is primarily hallmarked by cognitive dysfunctioning? Connie Strasheim, a frequent contributor to *Townsend Letter* and author of nine books on Lyme disease, writes in this issue about nutrients useful for improving cognitive functioning. Her favorite: phosphatidyl choline. Strasheim explains how choline offers a great support for improvement of mental concentration, clarity, and general thinking. What is more surprising is that she has found that transdermal administration of phosphatidyl choline works more effectively than oral form. Look for her newest book to come out later this year interviewing doctors for their best Lyme treatment strategies.

Our primary practitioner Lyme teaching article is authored by Dietrich Klinghardt, MD, and Dr. Christine Schaffner. Dr. Klinghardt has been well recognized here in the US and internationally for his comprehensive, multifaceted diagnostic and treatment approaches to Lyme disease. In this issue's article, Klinghardt and Schaffner write of their "four guiding principles" which underlie the basic approach to managing Lyme disease patients. They explain the newest means for making a diagnosis, what they call the provoked urine PCR Lyme panel. What particularly makes the test unique is that the urine is collected following a Rolfing massage session. Klinghardt and Schaffner introduce us to the role of the "glymphatic system" and how one should treat it. They also worry that the synergy that exists between glyphosate and aluminum makes aluminum as potent a neurotoxin as mercury.

We appreciate your feedback and comments!

Jonathan Collin MD

From the Publisher

Notes

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◆

United States and Cuba Begin a New Era Together in Regenerative Medicine

Since President Obama announced the beginning of normalization between the US and Cuba back in April 2015, channels are now being opened and opportunities created among businesses and other organizations to access and share information across many fields. As an American company, Regenestem LLC (www.regenestemconference.com) will bring the field of regenerative medicine to Cuba October 13–15 for valuable information sharing at an international level. Register now for only $699.

"We are pleased that the Obama administration and the Cuban government are finally putting an end to the bitter political relations that had hampered any progress between the two nations for more than 50 years," said Ricardo De Cubas, founder and CEO of Regenestem. "Now, what better way to build cooperation than to share the knowledge and technologies of regenerative medicine, and to help serve humanity in the process?"

The list of speakers is an impressive one:

- Arnold I. Caplan, PhD, professor of biology, director Skeletal Research Center, Case Western Reserve University
- Rocky S. Tuan, PhD, director of the Cellular and Molecular Engineering Lab, University of Pittsburg
- Anthony Atala, MD, director of the Wake Forest Institute for Regenerative Medicine, Wake Forest University
- Joshua M. Hare, MD, FACC, FAHA, director, Interdisciplinary Stem Cell Institute, University of Miami Miller School of Medicine
- Robert M. Nerem, PhD, Stem Cell Manufacturing, Georgia Institute of Technology
- Jakub Tolar, MD, PhD, professor and director, Stem Cell Institute, University of Minnesota
- Sydney R. Coleman, MD, New York University Medical Center Department of Plastic Surgery, University of Pittsburgh Medical Center, Department of Plastic Surgery
- John P. Salerno, MD, board certified in family practice, osteopathic manipulative therapy
- Charles Mahl, MD, regenerative and age management medicine prolotherapy/PRP/Stem Cell/ · Hormones

To register now for only $699, please visit www.regenestemconference.com.

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The Institute for Functional Medicine Collaborates with Integrated and Functional Connections to Create Career Opportunities Platform

The Institute for Functional Medicine (IFM) has announced its collaboration with Integrated and Functional Connections, a leading-edge placement firm that specializes exclusively in the field of functional and integrative medicine and connects providers to career opportunities in which they can transform health.

IFM and Integrated and Functional Connections have created a platform that allows for functional medicine practitioners to learn about and apply for professional opportunities that may be of interest. This new platform replaces IFM's "Professional Opportunities" board and provides a much more robust service for recruitment as well as posting and searching for opportunities. This is a tool both for clinicians looking for a new job opportunity and for practitioners searching for a provider to add to their team.

IFM's Chief Executive Officer Laurie Hofmann, MPH, remarks, "IFM is pleased to announce our collaboration with Integrated and Functional Connections. As the functional medicine movement continues to grow, we are witnessing vastly expanded professional opportunities for IFM Certified Practitioners to practice functional medicine in settings uniquely suited to their interests and skills. This collaboration provides a menu of much-needed services to match professional opportunities with employers and practice owners/partners. We hope the functional medicine community will take full advantage of the services provided through our collaboration with Integrated and Functional Connections."

IFM members who are interested in receiving information regarding career opportunities will be able to sign up for monthly job alerts through Integrated and Functional Connections. All IFM members will receive a 50% discount on job advertising services.

"This is an exciting partnership that is vital to support the increasing demand of functional medicine career opportunities across the nation," says Lisa McDonald, founder of Integrated and Functional Connections.

Integrated and Functional Connections, established in 2009, is a leading-edge health-care staffing firm that specializes exclusively in functional and integrative medicine career placements. Integrated Connections is a committed advocate for a better health-care system and supports the transformation of health care by staffing positions that offer the best medicine available. For additional information, please visit integratedconnects.com.

The Institute for Functional Medicine (IFM) is the global leader in functional medicine. The mission of IFM is to serve the highest expression of individual health through the widespread adoption of functional medicine as the standard of care.

Functional medicine is a personalized, systems-oriented model that empowers patients and practitioners to achieve the highest expression of health by working in collaboration to address the underlying causes of disease. The primary drivers of the chronic disease epidemic are the daily interactions among an individual's genetics, environment, and lifestyle choices. Functional medicine addresses these underlying causes of disease and equips health-care practitioners to help their patients manage this complex, interconnected web. For more information about IFM, please visit www.functionalmedicine.org.

◆

Institute for Functional Medicine Names Toby Cosgrove, MD, as Linus Pauling Award Recipient

Toby Cosgrove, MD, president and CEO of the Cleveland Clinic, has been honored by receiving the Linus Pauling Award at the Institute for Functional Medicine's 2016 Annual International Conference, held May 12–14, 2016, in San Diego, California. Cosgrove receives this award for his vision and leadership in opening the Cleveland Clinic Center for Functional Medicine – the first medical center in the nation to take such an innovative step. The center has a broad mission, addressing 21st-century health care across the continuum of clinical care, community outreach, research, and education.

Among his many outstanding achievements, Cosgrove helped set up Cleveland Clinic Innovations, the technology transfer and commercialization arm of the health system, which has enabled nearly 60 spinoff companies to develop and sell new medical technology. He holds 30 patents for medical and clinical products used in surgical environments. Cosgrove oversaw the building of the Global Center for Health Innovation, and, in an amazing and inspiring step, under his leadership the Cleveland Clinic Lerner College of Medicine – a partnership between Cleveland Clinic and Case Western Reserve University – became the first medical school in the country to offer full scholarships to every student accepted into the program. *U.S. News & World Report* regularly names the Cleveland Clinic as one of the nation's best hospitals; it is one of only two hospitals named in the list of "America's 99 Most Ethical Companies" (Ethisphere Institute). Its heart program, in particular, has been ranked No. 1 since 1995.

Toby Cosgrove, MD

IFM CEO Laurie Hofmann has this to say about Cosgrove's selection as the 2016 Linus Pauling Functional Medicine Award recipient: "We are thrilled to recognize Dr. Cosgrove's tremendous contribution to the global Functional Medicine Movement. His visionary leadership and commitment helped establish and support the Center for Functional Medicine's research, clinical operations, education, and community outreach initiatives. This pioneering endeavor offers transformational opportunities and inspiration for clinicians, patients, health systems, policymakers, and communities worldwide."

Cosgrove replies: "The time has come for a new approach to the crisis in chronic disease. Functional medicine is destined to make a powerful contribution to American health care in the years to come. My profound thanks to the institute and its members for this very great honor."

The Linus Pauling Award recognizes a visionary clinician or researcher who has made a significant contribution to the development of the functional medicine model or to the extension of the reach of functional medicine nationally or internationally.

Cosgrove's work in support of functional medicine is critically needed to reverse the epidemic of complex chronic disease and to demonstrate a new, viable model for health care. To learn more about the Cleveland Clinic Center for Functional Medicine, visit http://my.clevelandclinic.org/services/center-for-functional-medicine.

The Institute for Functional Medicine (IFM) is the global leader in functional medicine. The mission of IFM is to serve the highest expression of individual health through the widespread adoption of functional medicine as the standard of care.

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The Institute for Functional Medicine is a nonprofit educational organization.

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Pathways to Healing

by Elaine Zablocki

Death Is a Process

Last fall, my younger brother was diagnosed with cancer, and I traveled to the East Coast to be with him. For 2 months, I spent several hours with him each day. My brother had terminal cancer, acute myeloid leukemia (AML), with only a few months to live. Transfusions kept him alive.

He was functioning well. He often had a smile on his face; he watched football games on Sunday with enjoyment. He was determined to live as long as possible, and to enjoy the time that was left to him. At the same time, his body had begun to shut down.

I didn't realize the process that he was going through, until I came across a couple of booklets by Barbara Karnes, RN, available in the hospital's educational materials. She explains that changes start happening 1 to 3 months before death occurs. "Each person approaches death in their own way, bringing to this experience their own uniqueness," she writes. "Death comes in its own time, in its own way."

Even though my brother wanted to live as long as possible, there were signs that his body was shutting down. When I came into the room in the morning, sometimes he was curled up, withdrawn. I thought that he was asleep, but actually he was turning inward My brother used to be a hearty meat eater, but in his last few months he craved canned fruit, and wasn't interested in meat.

"Caring for someone who is going live is different from caring for someone who is dying, but most people don't know that," Karnes says. "We want this person to get better. But when someone can't be fixed, their body enters a normal, natural process of shutting down"

As early as 3 to 4 months before death, a person's habits may change. "First they'll stop eating meat. Then pretty soon it's fruits and vegetables, and then it's soft foods," Karnes says.

"In the weeks before death they may only take water and Gatorade. *This is normal*. When the body is preparing to die, it doesn't want food."

Similarly, she says, over months, a person often loses interest in what's going on around them.

"They are letting go of their hold here on so many levels. Their work is taking place on the inside," she says. "They appear to be withdrawn, but on the inside they're doing what may be the hardest work they've ever done. On an unconscious level, they're processing their life."

Barbara Karnes, RN

Outreach to the Community

Karnes started out as a hospice nurse in the 1980s. After about 5 years, she became the director of a hospice and served on the board of the Kansas State Hospice Association. "In the early '90s there was a big push to offer hospice within Medicare, and we wanted every hospice in Kansas to be Medicare certified. We realized we needed to teach nurses and social workers how to provide effective care, so I began to take on an official teaching role. Nurses from throughout Kansas would visit us and spend a week at our hospice learning about end of life care."

For many years now she has been speaking about end-of-life issues and the dynamics of dying at national and state hospice and palliative care conferences, colleges, nursing schools, hospitals, and hospices. She is able to show health-care professionals how to explain the dying process to families, and demonstrate that we don't need to avoid talking about death. "While we can't take away the sadness of death, talking about death actually relieves unnecessary pain and stress and provides relief in many ways, because knowledge reduces fear," she says.

In addition to workshops for medical professionals, Karnes also speaks at community-based conferences. "I strongly believe the only way we're going to really address end-of-life care is through community education. People should understand that they have choices. This isn't just about being treated until you're dead. It is possible to take more control of

your illness, and that's why it's so important to me to educate community members as well as professionals."

Karnes emphasizes that she wants to take her message out into the community. Her training sessions are designed for families as well as health professionals. "I do not use medicalese. Any of my work can probably be understood by fifth-graders on up," she says. "I do that on purpose, because this is not just about the medical level. Dying is not a medical event. It's a social, human, communal event."

Essentialized versions of these training sessions are available via DVD. In addition, Karnes funnels educational discussions to her Facebook group, which includes nurses, social workers, people with illnesses, and their families. "We support each other," Karnes says. "I monitor what's on the site. I post interesting articles there so people can read and then discuss them. We have all sorts of specific discussions – it's a really useful group for education and support."

Always Ask About the Goal of Treatment.

What should each of us do if/when we are diagnosed with a difficult, possibly terminal condition? First, we should have an advance directive, so that we will die in a manner that matches our own values, not in some standardized way. Hopefully, most of us will respond to a difficult diagnosis by getting on the Internet and asking all sorts of questions about the illness and various possible treatments.

Most importantly, Karnes says, "Ask your physician about the goal of treatments they suggest. Most of us, when we have a serious illness and the doctor recommends this chemotherapy or that radiation, the patient and family think he is recommending something that will cure the patient and restore them to their previous healthy condition. Most of the time, that isn't what happens. If you have a serious life-threatening illness, treatment generally extends your life, but may not improve your ability to function any better than you're functioning now. Always ask your doctor about the goal of the treatment. Always ask whether this treatment this will maintain or improve your quality of life."

Resources

Website

www.bkbooks.com

This is the place to order educational materials, schedule training sessions, and more.

Booklets

A Time to Live: Living with A Life-Threatening Illness

Gone From My Sight: The Dying Experience

The Eleventh Hour: A Caring Guideline for the Hours to Minutes Before Death

My Friend, I Care: The Grief Experience

Book

The Final Act of Living: Reflections of a Long-Time Hospice Nurse

DVD

New Rules for End of Life Care

This 25-minute DVD is particularly suitable for community groups. It includes information on behavior changes related to food and sleep, as well as pain management and the use of narcotics, addiction, and overdosing.

DVD for Professionals

Dynamics of Dying: The Dying Experience

Exploring the Grieving Process

These DVDs were filmed at workshops for health professionals and hospice volunteers. They are useful training resources for health-care professionals as well as hospital, hospice, and community-based volunteers.

Facebook Page

www.facebook.com/barbarakarnesrn

Elaine Zablocki has been a freelance health-care journalist for more than 20 years. She was the editor of *Alternative Medicine Business News* and *CHRF News Files*. She writes regularly for many health-care publications. ◆

Shorts

briefed by Jule Klotter
jule@townsendletter.com

Homeoprophylaxis

Homeoprophylaxis, the use of highly diluted preparations to prevent infectious disease, has effectively protected people during epidemics since Samuel Hahnemann used belladonna to prevent scarlet fever in his patients in 1799. Fran Sheffield has recorded numerous incidences in which homeopathic remedies and nosodes (homeopathic preparations derived from disease-causing microbes) have prevented illness and death during epidemics in her referenced paper "Homeoprophylaxis: Human Records, Studies and Trials." One of the most publicized examples was Cuba's use of a nosode made from four leptospirosis strains to prevent infection in 2.3 million people living in provinces with high risk of infection in late 2007.

Leptospirosis causes jaundice, fever, skin hemorrhage, hepatitis, renal failure, and mental changes. "Within weeks, the treated provinces had an 84% decrease in disease incidence while the numbers of those infected in untreated provinces continued at expect historical levels. ... Leptospirosis infections in untreated areas increased by 22%," says Sheffield. The data were reevaluated in a 2014 article, "A Reevaluation of the Effectiveness of Homeoprophylaxis Against Leptospirosis in Cuba in 2007 and 2008" (*Journal of Evidence-Based Complementary & Alternative Medicine.* July 2014;19[3]:155–160). The authors confirmed that homeopathy can effectively immunize people against infectious diseases.

India and Brazil have also employed homeoprophylaxis. In 2007, 156,000 doses of a combination of homeopathic remedies (not a nosode) were distributed to residents of Macaé county in Rio de Janeiro, Brazil, to protect against dengue fever. Dengue causes fever, rash, and severe head, neck, and back pain. "The disease incidence in the first three months of 2008 fell 93% in comparison to the corresponding period in 2007. The rest of the untreated state experienced an increase of 128%," Sheffield reports. In addition to dengue, government agencies in India have successfully used homeoprophylaxis to prevent and treat influenza, Japanese encephalitis, and malaria. Homeopathy has prevented malaria symptoms in murine studies and in small Kenyan clinical trials as well. Some patients in the clinical trials were experiencing symptoms at least once a month before homeopathic treatment.

Australian homeopath Isaac Golden, PhD, has studied the use of homeoprophylaxis to prevent childhood infectious disease for over three decades. In a 2006 interview with Manish Bhatia, Golden explained, "Since 2004, I have used (for long term prevention) a single dose of 200C to filter out those few children who are very sensitive to the remedy. Then a month later a triple dose of 200C (unless they reacted to the single dose), and then a year later a triple dose of 10M." Data that he collected from 1986 to 2004 showed that homeoprophylaxis for whooping cough prevention was 88.3% effective, for measles prevention 91% effective, and mumps prevention was 94.1% effective – which compares favorably to traditional vaccines. In addition, disease symptoms, if they occurred, were less severe in children treated with homeoprophylaxis. In addition to preventing infectious disease, Golden found a lower incidence of atopic conditions. A retrospective study that Golden conducted using data from parents of 781 children (aged 4–12) showed significantly lower incidence of asthma, eczema, ear and hearing problems, allergies, and behavioral problems in children who received homeoprophylaxis compared with those who were vaccinated.

Golden will be sharing data from current homeoprophylaxis research at the 2nd International Conference on Homeopathic Prophylaxis in St. Petersburg, Florida, on October 7–9, 2016 (www.WorldwideChoice.org). This year's conference theme is "Homeoprophylaxis: The Evidence-Based Choice." Speakers will examine immune system function, historical application/implementation on homeoprophylaxis, and current research from around the world, Other presenters include immunologist Tetyana Obukhanych, PhD; Cilla Whatcott, PhD; Debra Gambrell, DO; Pieter DeWet, MD; Sally Morell Fallon; and Drs. Srinivasulu Gadugu and Muhammed Rafeeque, who will share information on homeoprophylaxis in India.

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Integrative Nanomedicine

In their informative 2013 literature review, Iris R. Bell, MD, PhD, and colleagues at the University of Arizona (Tucson)

explain why nanotechnology using herbs and nutraceuticals can improve infectious disease treatment. Nanotechnology involves the use of minute forms of material substances that measure 1 to 100 nanometers (billionth of a meter) along at least one dimension. Researchers have found that nanoparticles (NPs) are more reactive and adsorptive than bulk forms of the same substance. Bell et al. say, "Chemicals used in the manufacturing process also adsorb, along with the intended drug or herb, onto the surface of the NPs. Consequently, nanotechnology engineers are increasingly seeking more eco-friendly ways to manufacture nanoparticles that avoid or limit reliance on toxic chemical methods. The adsorbed materials can modify the properties, effects, and/or toxicity of the NPs."

Smaller is truly more powerful. Studies involving nanomedicine show that fewer doses are required for a therapeutic effect. For example, three doses of a nano version of an antituberculosis drug had the same antibacilli effect as 45 doses of the bulk drug in a mouse study. Similarly, nanotechnology can greatly increase the bioavailability of poorly absorbed nutraceuticals, such as the antioxidant quercetin. In addition to decreasing therapeutic dosage, nanomedicines may produce fewer unwanted effects. Instead of indiscriminately affecting the entire body, nanoparticle drugs can be made to release the active agent inside targeted cells. NPs easily cross the blood–brain barrier and cell membranes, "making them an attractive tool for delivering treatment with drugs, herbs, and/or antioxidant nutraceuticals to intracellular pathogens," say the authors.

"Ironically, one of the most controversial systems of alternative medicine, homeopathy, could turn out to be one of the oldest and demonstrably safest forms of nanoparticle-based treatment already used worldwide for infectious diseases," the authors write. Electron microscopy and laboratory analytic methods have found source nanoparticles in homeopathic metal-derived medicines with potencies of greater than or equal to 12C or 24X. According to Avogadro's number, no source particles should be present in such dilutions. Research studies have also found that agitation of preparations in glass containers (which is part of the homeopathic manufacturing process) produces glass-derived silica nanoparticles and increases their aggregation of protein molecules in solution with them. Over 200 years of empirical evidence as well as recent animal and clinical research studies attest to homeopathy's effectiveness in treating infectious disease.

"Given limitations of conventional antibiotic drugs from the emergence of treatment-resistant organisms," say Bell et al., "developing safe and effective nanomedicines from natural products that bolster host resistance and self healing mechanisms from infections should be a priority for new funding initiatives."

Bell IR, Schwartz GE, Boyer NN, Koithan M, Brooks AJ. Advances in Integrative Nanomedicine for Improving Infectious Disease Treatment in Public Health *Eur J Integr Med.* April 1, 2013,5(2):126–140.

Extended Antibiotic Therapy for Lyme

Antibiotic treatment extended beyond the recommended 2-week regimen did not improve health quality in people with chronic Lyme disease in a 2016 double-blind, placebo-controlled study. Long-term antibiotic treatment is a common treatment for chronic Lyme, also known as post-Lyme disease syndrome. Many people with Lyme disease continue to experience symptoms such as pain, fatigue, and neurologic and/or cognitive dysfunction after completing recommended therapy. Some researchers and clinicians report evidence that *Borrelia*, the bacteria that cause Lyme, can survive the 2-week treatment and recommend diverse antibiotic therapy long term.

This trial, led by Anneleen Berende, MD, recruited 280 patients with symptoms characteristic of Lyme that had persisted for at least a year. All had a history of a tick bite, erythema migrans rash, and/or *Borrelia burgdorferi* IgG or IgM antibodies (which may or may not indicate active infection). About 90% had already received at least one course of antibiotics. The patients were randomized into one of three groups and given open-label intravenous ceftriaxone for 2 weeks. Then, the groups received an oral course of doxycycline (100 mg twice daily), clarithromycin-hydroxychloroquine (500 mg) combined with hydroxychloroquine (200 mg) twice daily, or placebo for 12 weeks. To assess treatment safety, researchers conducted physical exams, lab tests, and took medical histories during antibiotic treatment at weeks 2, 8, and 14. Participants completed the RAND-36 Health Status Inventory (RAND SF-36) at baseline, after completion of all antibiotic treatment (week 14), at 40 weeks, and at 52 weeks.

The researchers used the physical-component summary score of the RAND-SF 36 for the primary outcome. The physical component measures physical functioning, role limitations due to physical health problems, pain, and general health perceptions. By 14 weeks, the mean physical-component study score for all three groups had improved significantly from baseline, but the mean scores changed little thereafter. The amount of improvement did not significantly differ between the three groups. Despite the improvement, the mean scores were still well below that of the general population at the trial's end.

"Although we did not find a significant benefit of longer-term antibiotic therapy, we did find that there were side effects from the use of antibiotics," the authors write. "The majority of patients (68.6%) reported a drug-related adverse event." Diarrhea, rash, and/or allergic reactions were the most common events during the open-label ceftriaxone phase, affecting 131 patients (46.8%). A similar number experienced an adverse event during the 12-week randomized period. The most common adverse effects in the doxycycline group were photosensitivity and nausea. Adverse events in the other treatment group were nausea, diarrhea, and rash.

The authors state that one of the study's limitations is that "... our results cannot show whether our study may have included patients with undiagnosed active *B. burgdorferi* infection, who have benefited from ceftriaxone treatment." It would have been interesting to see if the RAND SF-36 scores improved after the initial 2-week antibiotic regimen and to mark further improvement (if any) after the additional treatment at 14 weeks.

Berende A, ter Hofstede HJM, Vos FJ, et al. Randomized trial of longer-term therapy for symptoms attributed to Lyme disease. *N Engl J Med.* March 31, 2016;374(13);1209–1220.

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Shorts

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New Lyme Test

C. S. Cheung and Maryland colleagues have found a way to detect *Borrelia burgdorferi* membrane proteins in human serum shortly after infection. *B. burgdorferi* membrane proteins are $\approx 10^7$ lower in abundance than serum proteins, according to their abstract. The new test permits early detection of Lyme disease. The researchers focused on a membrane protein that was easily differentiated from human serum proteins.

The researchers used a high-speed centrifuge to separate the serum proteins from the *B. burgdorferi* membrane proteins and identified the spirochete's proteins using multiple reaction monitoring mass spectrometry.

Cheung and colleagues detected the membrane protein in serum samples taken from three patients with unconfirmed *Borrelia* infection. The researchers were able to detect *Borrelia* infection in one patient 3 weeks before the standard blood test came back positive. Results from the new test and the standard test simultaneously confirmed infection in the other two patients. Although a characteristic bull's-eye rash is a defining symptom of *Borrelia* infection, 20% to 30% of people with Lyme never exhibit the rash. The standard blood test for Lyme measures accumulated antibodies to the infection. It takes 4 to 6 weeks before antibodies reach detectable levels. Because the new test measures bacteria membrane proteins, it can confirm diagnosis shortly after infection occurs, which means earlier treatment. The research team believes that its technique can be used for early detection in other bacterial infections as well.

Cheung CS, Anderson KW, Benitex KY, et al. Quantification of Borrelia burgdorferi membrane proteins in human serum: a new concept for detection of bacterial infection [abstract]. *Anal Chem.* November 17, 2015; 87(22):11383–11388.

New experimental test detects signs of Lyme disease near time of infection [press release]. National Institute of Standards and Technology (NIST). February 12, 2016.

Travel and Health Risks

Traveling to foreign lands, particularly tropical and subtropical nonindustrial regions, opens the possibility of infectious disease. Assessing health risk can be tricky because so many factors are involved. Incidence of many infectious illnesses vary seasonally and year to year. A traveler's exposure to high-risk settings via activities, accommodations, and length of stay are also factors. The environmental risks can be accentuated or lessened by the traveler's health status, past exposures/vaccination history, education level, finances, and adherence to preventive self-care.

In order to make informed decisions about mitigating disease risk during travel, practitioners and patients often depend upon epidemiological data that focus on the area's native inhabitants. Cohort studies involving travelers themselves are rare, as Karin Leder, MD, and colleagues explain in their 2015 article about risk data for pretravel advice. "Travelers are a very heterogeneous population, and most diseases are rare except for ... syndromes such as travelers' diarrhea and respiratory infections," they write. A large number of travelers would have to be recruited and tracked in order to determine the incidence of less common illnesses acquired during travel.

Traveler's diarrhea (TD) is "the most frequent infection acquired during travel to most destinations in the tropics and subtropics," according to Robert Steffen, MD, and colleagues. Influenza and hepatitis A are the other two relatively common vaccine-preventable illnesses. Estimated incidence of flu among travelers is 1 symptomatic case per 100 person-months, and estimated hepatitis A incidence is 12.8 cases per 100,000 travelers. TD, which has affected 20% to 60% of travelers over 2-week stays in various studies, usually lasts an average of four days. Steffen et al. state that an oral cholera vaccine has been licensed as protection against TD in some countries, but a 2013 Cochrane review found insufficient evidence to support its use in preventing TD caused by heat-labile enterotoxin producing enterotoxigenic *Escherichia coli*.

In his article for *Clinical Microbiology Reviews,* David J. Diemert discusses preventive measures for avoiding TD. The first is to avoid exposure to contaminated water (i.e., drinking, bathing, swimming) and not to eat raw vegetables, salads, unpeeled fruit, or food from street vendors. Total avoidance can be difficult in some regions. Bismuth subsalicylate (e.g., Pepto-Bismol), which has mild antimicrobial and anti-inflammatory properties, can also prevent TD and reduce symptom duration, according to studies. Diemert recommends two tablets, four times a day. *Lactobacillus* GG has also shown preventive effects but not as strong as bismuth subsalicylate. Products containing bismuth subsalicylate are contraindicated for pregnant women and people with aspirin allergy. Although Diemert does not mention it, the correct homeopathic remedy can also prevent TD or hurry symptoms along. People with achlorhydria or who take proton pump inhibitors (PPIs) for GERD have a greater risk of developing TD, so they would be wise to seek protective measures before traveling to tropical and subtropical regions.

Before taking a trip, patients, with the help of practitioners, need to weigh the consequences of possible illness against the effectiveness and potential harms of interventions. Leder and colleagues write, "The actual decision about whether a risk is unacceptably high or acceptably low and whether or not an intervention will be accepted rely not only on risk numbers or clinical severity of outcomes, but also heavily on risk communication and – presumably even more importantly – on risk perception of both the health provider and the traveler."

Diemert DJ. Prevention and self-treatment of traveler's diarrhea. *Clin Microbiol Rev.* July 2006;19(3):583–594.

Leder K, Steffen R, Cramer JP, Greenaway C. Risk assessment in travel medicine. how to obtain, interpret, and use risk data for informing pre-travel advice. *J Travel Med.* 2015;22(1):13–20.

Steffen R, Behrens RH, Hill DR, Greenaway C, Leder K. Vaccine-preventable travel health risks: what is the evidence – what are the gaps? *J Travel Med.* 2015;22(1):1–12.

Zika and Guillain-Barré

Serological evidence from a 2016 case-control study indicates that Zika virus can cause Guillain-Barré syndrome (GBS), a neuritis that can produce paralysis. Until recently, Zika infection had been considered a mild illness with clinical symptoms that include fever, maculopapular rash, joint and muscle pain, headache, and nonpurulent conjunctivitis. This case-control study, led by Van-Mai Cao-Lormeau, adds Zika

to the list of other infections known to cause Guillain-Barré, including influenza and pseudoinfluenza, *Campylobacter jejuni*, cytomegalovirus, Epstein-Barr, and dengue – a virus carried by the same species of mosquito that harbors Zika.

Cao-Lormeau and colleagues commenced the study after noticing a marked increase in Guillain-Barré incidence during a large Zika outbreak affecting an estimated 32,000 people between October 2013 and April 2014 in French Polynesia. Forty-two patients were diagnosed with Guillain-Barré between November 2013 and February 2014. Only 5 cases had been reported in 2009, 10 in 2010, 3 in 2011, and 3 in 2012. The researchers set up a case-control study using the 42 patients and 2 control groups. Group 1 consisted of age-, gender-, and residence-matched patients who came to the hospital during the same period with a nonfebrile illness (n = 98). The second control group consisted of age-matched patients with acute Zika and no neurological symptoms (n = 70).

Thirty-seven GBS patients (88%) had a transient illness shortly before Guillain-Barré symptoms arose. Forty-one patients (98%) with Guillain-Barré syndrome had anti-Zika virus IgM or IgG, and all had neutralizing antibodies against Zika virus. In comparison, 54 of 98 (56%) in control group 1 had neutralizing antibodies. RT-PCR results were positive for acute Zika infection in all patients in control group 2, but none of the patients with Guillain-Barré had positive RT-PCR results, which was consistent with the absence of a fever upon admission.

The researchers also checked for dengue viral involvement. They found an insignificant difference between patients with GBS and those in the control groups; 95% in the GBS group had a history of dengue compared with 89% and 83% in control groups 1 and 2. Serological evidence of anti-dengue IgM is difficult to interpret because of possible cross-reactivity with anti-Zika IgM.

The US Centers for Disease Control blames Zika virus for increased incidence of microcephaly in Brazil and other Central and South American countries. An Associated Press report (14 April 2016) from Bogotá, Columbia, allows for less certainty that Zika is the primary cause. Colombian authorities have reported 33 cases of newborns with microcephaly so far this year, which is similar to previous years. The country's National Institute of Health said that 2 of the 33 were caused by Zika and 16 have no connection to Zika infection. The remaining 15 were still being investigated. If Zika virus did not cause those 16 cases (48.5%), what did?

Associated Press Colombia confirms first two cases of Zika-linked microcephaly April 14, 2016.
Cao-Lormeau V-M, Blake A, Mons S et al Guillain-Barré Syndrome outbreak associated with Zika virus infection in French Polynesia: a case-control study. *Lancet*. 2016;387:1531–1539.
HealthDay News. U.S. health experts debate advice to women once Zika virus arrives. April 15, 2016.

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Optimizing Metabolism

by Ingrid Kohlstadt MD, MPH
www.INGRIDients.com

Emerging Global Changes in Rotavirus Epidemiology

Overview

The epidemiology of diarrheal disease is different than it was 20 years ago and even 2 years ago. The biggest factor leading to this change is immunization against rotavirus. In this *Townsend Letter* on gastroenteritis and travel health, I reflect on the Vaccine Day 2015–2016 keynote talk given by Roger Glass, MD, PhD, of NIH at Johns Hopkins Bloomberg School of Public Health. The column does not focus on the vaccine itself or the risks and benefits of vaccines, but on immunization's impact.

The Hospitals Have Fewer Admissions for Diarrhea

The FDA website states, "Background: Before the introduction of rotavirus vaccines, most children in the United States became infected with rotavirus before two years of age, causing an estimated 55,000-70,000 hospitalizations and 20-40 infant deaths in the United States each year."

For Glass, this statement holds a personal story. His wife, Barbara Stoll, MD, is a neonatologist who was chief of pediatrics at the time that he began researching rotavirus. While she was bringing patients to the hospital, he was working just as diligently at getting them discharged.

The Epidemic Curve Has Changed

Hospital admissions for diarrheal diseases peak in winter. Most of those cases were called "idiopathic," meaning that the cause was unknown. Now many of those winter hospital admissions have been attributed to rotavirus. Rotavirus immunization has been steadily flattening the winter peak for diarrheal disease admissions. In developing countries such as in Bangladesh, where Glass began his clinical study of diarrheal disease, the monsoon season was the peak of the epidemic curve. That, too, has flattened.

Herd Immunity Is Conferred

Herd immunity reduces the severity of disease even among those individuals who didn't get immunized. The infection doesn't spread in communities as quickly or extensively as it did prior to immunization.

Immunizing Against One Strain of Rotavirus Confers Protection Against All Strains

Unlike influenza and dengue, with rotavirus the immunization to one strain is cross-protective. Only one strain is needed for protection and exposure to another strain doesn't increase severity.

Intussusception As a Vaccine Risk

The first rotavirus vaccine was stopped because of intussusception. Intussusception remains a risk, and having had intussusception from any cause in the past contraindicates rotavirus vaccine.

Here's what the FDA notes on its website about intussusception risk:

> RotaShield (Wyeth Laboratories) was the first vaccine licensed for the prevention of rotavirus gastroenteritis in infants. RotaShield was voluntarily withdrawn from the market by the manufacturer after studies suggested an elevated risk of intussusception, estimated at approximately 1 case per 10,000 vaccine recipients. Prior to licensing RotaTeq and Rotarix, the risk of intussusception was assessed in large clinical trials of more than 60,000 children for each vaccine. No increased risk for intussusception was observed for either vaccine. However, several post-licensure studies conducted in other countries subsequently suggested potential increased risk of intussusception after both Rotarix and RotaTeq.

Maternal Antibodies Can Interfere with Vaccine Effectiveness

The rotavirus vaccines are more effective in the US than in India. From a scientific standpoint, this is an intriguing question for ongoing research. One hypothesis is that maternal antibodies may interfere with effectiveness.

From the lens of public health, oral vaccines have worked less well in the places that they are needed the most – where the disease morbidity and mortality are highest. India has put forward an innovative approach, which I describe in the next section.

Psychosocial Factors

In India, Bharat Biotech produced a vaccine from a rotavirus strain isolated in that country. The clinical trials have taken place in India and are of equal or greater effectiveness for the Indian population. They are making the vaccine available for $1 a dose. Immunization against rotavirus has become a matter of national pride, and vaccine uptake is very high. Disease mortality in India has decreased 8-fold.

Probiotics Can Influence Disease Response

Prior to the vaccines, probiotics reduced susceptibility for rotavirus among high-risk individuals. In 1993 Dr. Jose (Pepe) Saavedra proposed using a strain of probiotics in pediatric gastroenterology patients, and observed a reduction in diarrheal disease. Specifically, it reduced rotavirus infection. I think that Saavedra's study was the first clinical probiotics study at Johns Hopkins Hospital. Many have built on his work, including the study of probiotics in travelers. Probiotics may also reduce rotavirus incidence in travelers.

Summary

Immunization is changing the epidemiology of rotavirus worldwide. The rates and severity of diarrheal disease in young children and the community at large is changing in response to immunization. The immunization is enabling science to deepen its understanding of rotavirus disease. However, much remains unknown, such as how the lower rates of rotavirus in our population will influence the immune system in the future. To be vigilant about such unknowns, research into the gut microbiome and ongoing epidemiology will be important. In other words, alternative-medicine approaches to health and healing, which have long considered the gut–immune system connection, may be readily applicable to vaccine safety.

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Literature Review & Commentary

by Alan R. Gaby, MD
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Vitamin D for Juvenile Onset Systemic Lupus Erythematosus

Forty-five patients (mean age, 19 years) with juvenile-onset systemic lupus erythematosus (SLE) were randomly assigned to receive, in double-blind fashion, 50,000 IU of vitamin D3 or placebo once a week for 24 weeks. Medications remained stable throughout the study. At the end of the treatment period, compared with placebo, vitamin D significantly decreased disease activity, as determined by the SLE Disease Activity Index ($p = 0.01$) and by the European Consensus Lupus Activity Measurement ($p = 0.006$).

Comment: Serum concentrations of 25-hydroxyvitamin D (25[OH]D) have been found to be low in a high proportion of SLE patients. However, 25(OH)D levels decline in response to inflammation, and low 25(OH)D levels in patients with inflammatory diseases such as SLE may not necessarily indicate vitamin D deficiency. Nevertheless, the results of this study suggest that vitamin D supplementation is beneficial. In another double-blind trial, the proportion of SLE patients who had a disease flare was significantly lower among those who received 2000 IU per day of vitamin D for 12 months than among those who received placebo (10% vs. 24%; $p < 0.005$). Vitamin D also significantly decreased the mean erythrocyte sedimentation rate compared with placebo. In that study, 2% of the patients receiving vitamin D developed hypercalcemia and 2% developed hypercalciuria; these side effects were not seen in the placebo group (Abou-Raya A et al. The effect of vitamin D supplementation on inflammatory and hemostatic markers and disease activity in patients with systemic lupus erythematosus: a randomized placebo-controlled trial. *J Rheumatol*. 2013;40:265–272.) Therefore, it would be prudent to monitor serum and urinary calcium levels periodically in SLE patients who are being treated with 2000 IU per day or more of vitamin D.

Lima GL et al. A randomized double-blind placebo-controlled trial of vitamin D supplementation in adolescents and young adults with juvenile-onset SLE: improvement in disease activity and fatigue scores. *Arthritis Care Res*. 2016;68:91–98.

Magnesium for Insomnia

Forty-six individuals (mean age, 65 years) with moderate or severe insomnia and a mean dietary magnesium intake of 194 mg per day were randomly assigned to receive, in double-blind fashion, 250 mg of magnesium (as magnesium oxide) twice a day or placebo for 8 weeks. Compared with placebo, magnesium significantly increased mean sleep time ($p = 0.002$) and sleep efficiency ($p = 0.03$) and significantly improved the mean score on the Insomnia Severity Index ($p = 0.006$). Compared with baseline, magnesium supplementation improved the mean Insomnia Severity Index by 14.4% ($p < 0.001$).

Comment: Insomnia is one of the symptoms of magnesium deficiency. Dietary intake of magnesium is frequently less than the Recommended Dietary Allowance of 420 mg per day for men and 320 mg per day for women. For many people, dietary magnesium intake is less than the mean amount consumed in this study. Dietary magnesium tends to be particularly low in African Americans and young women. I have seen many patients with nonspecific symptoms such as fatigue, anxiety, and insomnia experience marked improvement simply by taking a magnesium supplement (usually 400 mg per day). Good food sources of magnesium include nuts, whole grains, legumes, leafy green vegetables, fish, meat, and dairy products. More than 80% of the magnesium is lost in the refining of whole wheat flour to white flour and brown rice to white rice. Some 50% to 75% of the magnesium is lost in the water when vegetables are boiled.

Abbasi B et al. The effect of magnesium supplementation on primary insomnia in elderly: a double-blind placebo-controlled clinical trial. *J Res Med Sci*. 2012;17:1161–1169.

Topical Vitamin B12 for Aphthous Ulcers

Forty-two patients with aphthous ulcers were randomly assigned to receive, in double-blind fashion, a topical ointment containing a glucocorticoid and vitamin B12 (250 µg/g according to a personal communication from the author)

or placebo (topical glucocorticoid alone) 4 times per day for 2 days. After 2 days, compared with baseline, mean pain severity had improved by 94% in the vitamin B12 group and by 65% in the placebo group. At that time, mean pain severity was significantly lower in the vitamin B12 group than in the placebo group ($p < 0.001$).

Comment: The results of this study suggest that topical application of vitamin B12, as an adjunct to a topical glucocorticoid, decreased pain in patients with aphthous ulcers. The mechanism of action is not known. Further research is needed to determine whether vitamin B12 alone (without a glucocorticoid) would be beneficial.

Liu HL, Chiu SC. The effectiveness of vitamin B12 for relieving pain in aphthous ulcers: a randomized, double-blind, placebo-controlled trial. *Pain Manag Nurs.* 2015;16:182–187.

N-Acetylcysteine for Tobacco Addiction

Thirty-four patients (mean age, 51 years) with therapy-resistant tobacco use disorder were randomly assigned to receive, in double-blind fashion, 1500 mg of N-acetylcysteine (NAC) twice a day (morning and evening) or placebo for 12 weeks. All patients received smoking-focused group behavioral therapy. The proportion of patients who quit smoking (defined as exhaled carbon monoxide concentration of less than 6 parts per million) was significantly higher in the NAC group than in the placebo group (47.1% vs. 21.4%; $p < 0.01$). In addition, compared with placebo, NAC significantly decreased the mean score on the Hamilton Depression Rating Scale.

Comment: There is evidence that a subnormal concentration of glutamate in the nucleus accumbens region of the brain increases compulsive or addictive behaviors. Administration of NAC has been shown to increase glutamate concentrations in the nucleus accumbens. NAC has been used with some success in the treatment of cannabis addiction and gambling addiction. The results of the present study suggest that NAC, as an adjunct to behavioral therapy, may also help some individuals to quit smoking.

Prado E et al. N-acetylcysteine for therapy-resistant tobacco use disorder: a pilot study. *Redox Rep.* 2015;20:215–222.

Thiamine for Parkinson's Disease

Fifty patients (mean age, 70.4 years) with Parkinson's disease (mean disease duration, 7.3 years) received 100 mg of thiamine intramuscularly twice a week for 3 months to 2.3 years. Significant improvement was seen in both motor and nonmotor symptoms. The mean score on the Unified Parkinson's Disease Rating Scale (parts I–IV) improved significantly by 53% within 3 months and remained stable thereafter. The mean motor score (Unified Parkinson's Disease Rating Scale part III) improved significantly by 55%. Some patients with milder disease had complete clinical recovery. The mean Fatigue Severity Scale score in 6 patients who had fatigue at baseline improved significantly by 55%. The authors hypothesized that a dysfunction of thiamine-dependent metabolic processes could cause selective neural damage in the centers typically affected by Parkinson's disease, and might be a fundamental molecular event provoking neurodegeneration. They also suggested that thiamine might have both restorative and neuroprotective action in Parkinson's disease.

Comment: It is certainly encouraging when a safe and inexpensive treatment is reported to produce substantial benefit in patients with a difficult-to-treat condition such as Parkinson's disease. However, the results should be viewed with caution, since the study did not include a control group. Thiamine has been available for many decades, and it has been used in large doses (both orally and parenterally) to treat a wide range of conditions, including some neurological disorders. If thiamine is indeed an effective treatment for Parkinson's disease, it would be surprising that no one has previously observed this effect. Although placebo-controlled trials are needed to confirm the present report, a therapeutic trial of thiamine would be reasonable for patients with Parkinson's disease. Clinicians who try this treatment are encouraged to report their findings in the *Townsend Letter* or elsewhere.

Costantini A et al. Long-term treatment with high-dose thiamine in Parkinson disease: an open-label pilot study. *J Altern Complement Med.* 2015;21:740–747.

Vitamin C and Athletic Performance

Plasma vitamin C levels were measured in 100 healthy males (mean age, 22 years). Compared with the 10 subjects with the highest levels (Group B), the 10 subjects with the lowest levels (Group A) had a significantly lower mean VO2 max value during the performance of aerobic exercise to ➤

exhaustion. All subjects were then randomly assigned to receive, in double-blind fashion, 1000 mg per day of vitamin C or placebo for 30 days. After a 60-day washout period, each person received the alternate treatment for an additional 30 days. At baseline, mean daily vitamin C intake was 33 mg in Group A and 166 mg in Group B. Compared with placebo, vitamin C supplementation increased VO2 max ($p < 0.08$) in Group A, whereas this value decreased nonsignificantly in Group B, such that the difference in VO2 max between groups was no longer significant.

Comment: In this study, a substantial minority of healthy young males consumed less than the Recommended Dietary Allowance (RDA) for vitamin C of 90 mg per day. Low vitamin C intake was associated with worse aerobic capacity, and this reduced aerobic capacity was corrected by vitamin C supplementation. Thus, adequate vitamin C intake is essential for optimal athletic performance. It is not clear whether vitamin C supplementation would improve athletic performance in people whose diet meets the RDA for vitamin C.

Paschalis V et al. Low vitamin C values are linked with decreased physical performance and increased oxidative stress: reversal by vitamin C supplementation. *Eur J Nutr*. 2016;55:45–53.

Magnesium for Chronic Postherpetic Neuralgia

Thirty patients with severe, intractable postherpetic neuralgia were randomly assigned to receive intravenous magnesium sulfate (30 mg per kg of body weight) or ketamine (1 mg per kg of body weight) every other day for a total of 3 treatments. The patients were given the infusions over a period of 1 hour, after being sedated with midazolam. Two weeks after the last infusion, the mean decrease in pain (as determined by a visual analogue scale) was 40% with magnesium and 51% with ketamine ($p = 0.4$ for the difference in the change between groups). Seven of the 15 patients in the magnesium group and 10 of the 15 patients in the ketamine group had at least a 50% reduction in pain 2 weeks after the end of the treatment.

Comment: Chronic postherpetic neuralgia is frequently refractory to treatment. The results of the present study suggest that intravenous magnesium can relieve pain in some patients with this condition. The beneficial effect persisted for at least 2 weeks after the treatment was discontinued. Ketamine is a drug used to start and maintain anesthesia and is also used in some cases to treat chronic pain. Side effects, sometimes severe, are relatively common in patients receiving this drug. While magnesium was somewhat less effective than ketamine, it is much less likely to cause adverse effects. Intravenous magnesium should therefore be considered as a treatment option for patients with chronic postherpetic neuralgia.

Kim YH et al. Is magnesium sulfate effective for pain in chronic postherpetic neuralgia patients comparing with ketamine infusion therapy? *J Clin Anesth*. 2015;27:296–300.

Adverse Effect of Intravenous Iron

Four patients developed severe and symptomatic hypophosphatemia after receiving intravenous iron (ferric carboxymaltose) for iron-deficiency anemia due to heavy menstrual bleeding. Three of the 4 patients had secondary hyperparathyroidism (due to vitamin D deficiency) or tertiary hyperparathyroidism (parathyroid hormone promotes urinary phosphorus excretion), but the other patient had no risk factors for abnormal phosphate homeostasis. Serum phosphate levels prior to intravenous iron administration were normal or near-normal in all cases. The nadir of serum phosphate typically occurs around 2 weeks after the start of intravenous iron administration, but the time course can be prolonged. In 1 of the 4 cases, hypophosphatemia persisted for up to 3 months.

Comment: Intravenous administration of iron is becoming increasingly popular, because it is more effective and causes fewer gastrointestinal side effects than oral iron. In previous studies, intravenous administration of ferric carboxymaltose induced hypophosphatemia (generally asymptomatic and transient) in 70% of women with iron-deficiency anemia due to gynecological conditions and in 3.8% of patients with non-dialysis-dependent chronic kidney disease. The decrease in serum phosphorus induced by intravenous ferric carboxymaltose appears to be mediated by an increase in serum levels of fibroblast growth factor 23 (FGF23). Since patients with chronic kidney disease have impaired renal excretion of phosphate and upregulated levels of FGF23, a further increase in FGF23 levels would be expected to have only a minimal effect on their renal phosphate excretion. In contrast, individuals with normal renal function are more likely to have a substantial increase in urinary phosphate excretion in response to intravenous iron.

In the treatment of hypophosphatemia, intravenous and oral phosphate should be administered with caution, because they have the potential to cause hypocalcemia, arrhythmias, ectopic calcification, and acute phosphate nephropathy. It is recommended that serum creatinine and serum phosphate be measured prior to treatment with intravenous iron. In patients with good renal function and low or low-normal phosphate levels, the authors of this report recommend measuring serum phosphate again 2 weeks after starting intravenous iron.

Blazevic A et al. Severe hypophosphataemia after intravenous iron administration. *Neth J Med*. 2014;72:49–53. ◆

Iowa Congressman Declared his Lyme Disease Cured by Bovine Colostrum and Helped Create the Law Guaranteeing Availability of Natural Remedies (DSHEA)

Not many dietary supplements can claim that they were instrumental in the passage of the Dietary Supplement Health and Education Act (DSHEA). Yet, that's precisely what happened.

Former Iowa Congressman Berkley Bedell (D-Iowa) suffered from Lyme disease and did not recover with multiple, long-term antibiotic use. Due to severe debilitation, Congressman Bedell eventually had to retire from Congress, but first, he paved the way to DSHEA. On the way to personal healing, Congressman Bedell discovered a farmer who was using cows to develop specific ("hyperimmunized") colostrum for specific diseases. Fortunately, the congressman experienced a full recovery from Lyme disease. Unfortunately, the farmer was arrested for practicing medicine without a license.

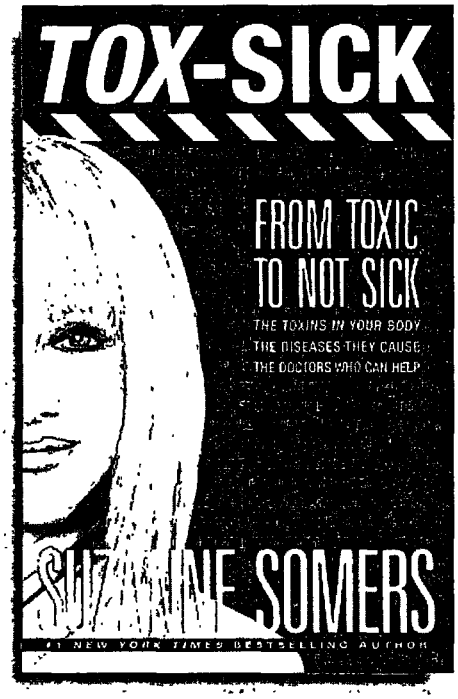
COURTESY OF DES MOINES REGISTER

It didn't seem right that an individual could be punished for supplying a safe, all-natural substance which promotes healing simply because it was overlooked by mainstream medicine, so Congressman Bedell joined forces with like-minded senators and in 1994, the Dietary Supplement Health and Education Act was signed into law by President Clinton. DSHEA was very important to the development of bovine colostrum as a health-enhancing supplement.

In the last 20 years, colostrum manufacturing for human consumption has undergone a tremendous transformation. We now know that hyperimmunization of cows is not a requirement for colostrum's broad spectrum capabilities and that fresh, raw colostrum can be made into supplements with an extended shelf-life. Better processing methods also allow for colostrum to contain a higher percentage of bioactives. Colostrum-LD® has been **perfected** to be effective against thousands of infections, something not possible in Congressman Bedell's day. Colostrum-LD®'s **unique broad spectrum profile** sets it apart from ordinary colostrum, and treating bacterial infections with Colostrum-LD® can be effective where antibiotics have failed.

Colostrum-LD® does not contain specific antibodies for Lyme. It doesn't need to. It helps the immune system successfully fight the pathogens within the body. Among the more than 280 bioactives known to affect the immune system by killing pathogens or modulating T-cell and macrophage production, the Proline-Rich Polypeptides (PRPs) are the most significant. In fact, PRPs can increase natural killer cell activity by up to forty times. Lyme disease is just one of thousands of bacterial and viral infections that Colostrum-LD® can effectively treat, including HIV, E-coli, C-difficile, Rotavirus and Cryptosporidium.

A major downside to conventional Lyme disease treatment with antibiotics is that it actually worsens a patient's prognosis. Antibiotics are never 100% effective; they leave resistant bacteria behind; and when taken for extended periods of time, cause destruction of the gut lining and increased gut permeability, or Leaky Gut Syndrome (LGS) which in turn, contributes to autoimmune conditions. Acknowledging the causal effect of antibiotics on LGS will help practitioners more fully understand why colostrum is so critical to a successful treatment program. Douglas Wyatt (Founder and Medical Director of the Center for Nutritional Research) recommends Colostrum-LD®, the only colostrum laboratory-certified to contain all of the growth factors clinically proven to heal LGS. Put your patients on the path to recovery, even after years of antibiotics have already taken their toll. If you have a patient with Lyme disease who is not recovering and may have subsequently developed another autoimmune condition, Mr. Wyatt is available for consultation. *To learn more about the bioactives in Colostrum-LD® responsible for immune health, please visit https://colostrumtherapy.com/blog/108-lyme.html*



The State of Our Wombs

'*Tox*-Sick': From Toxic to Not Sick

by Suzanne Somers

I started this project wondering if anyone had come up with a solution for the present massive toxic assault affecting virtually everyone in one way or another. I wondered if there was a quick fix, or a "recipe" to clear the body from these new invaders? Who was working with mold, MCS, brain conditions, Parkinson's, and Parkinson's-like symptoms? And what about cancer?

The older we become, the more time we've had to accumulate our individual toxic burdens; but when does it begin?

I have featured five of the top environmental doctors in the country: those professionals who have chosen to step out of a comfortable allopathic box and dissect the limitations of conventional medicine in order to find a way to deal with the new diseases and conditions clearly connected to the overwhelming environmental pollution of today.

Statistics have meaning, and there are several that jumped out at me in exploring the topic of "tox-sick." The first is from the Environmental Working Group (EWG), examining the cord blood of newborns across the economic spectrum – babies who have not yet even tasted breast milk. Researchers found that newborns begin their lives with exposure to as many as 287 of the 413 toxic chemicals that were being studied. An average of 200 toxins was found per baby and 101 toxins were found in all babies. The 287 toxins included 180 chemical compounds that have been shown to cause cancer in either animals or humans. (Incidentally, all chemicals that cause cancer in humans were initially found to cause it in animals).

We know at this point that toxicity degrades the immune system by "eating" (my term) through the gut barrier wall like a tire that has shredded on the freeway, leaving the "bad guys" free to "leak out" (i.e., leaky gut) into the bloodstream. It doesn't take much detective work to connect the dots from overwhelming toxicity to the present epidemic of ADD, ADHD, OCD, autism, asthma, bipolar, dyslexia, dyspraxia, and even schizophrenia. Throw in autoimmune diseases – lupus, fibromyalgia, MS – and then cancer, and the pathway is clear; toxins in the gut "leak out" through holes in the GI barrier wall and then invade the bloodstream, leaving them free to roam around and cause havoc wherever they choose to reside.

The cancer rate in children has risen 67.1% since 1950. The US has the fourth highest rate in the world. But have we considered this: toxins are passed from mother to child in utero, as does an imbalanced micro flora system. In other words, if the mother has a sick gut, then the baby is going to have a sicker one. Then factor in the rise of C-sections (approximately 1 million a year in this country), which deprives children of their very first microbial protection: that original journey through the mother's vaginal canal. Our first "swallow" is not of air but of our mother's vaginal flora. That is how we colonize. But what happens if we miss out on this natural birth function? If you are lucky and are working with a current-thinking doctor, they surely will understand that if this all-important step is missed,

then replacement of flora by way of probiotics is essential – but how often is this happening in the delivery room?

So you have a newborn who has spent 9 months in a toxic, sick, imbalanced womb; a child whose GI system and immune system are now compromised and imbalanced and left without natural protection from disease and the environment, and then this same child most likely will be fed toxic breast milk. Couple this with being born by C-section to guarantee gut imbalance, and, "Houston, we've got a problem."

And we wonder why our children are sick and brain disease is epidemic?

Holistically, we have to go to the source. Let's think about the womb. The womb is the first "room" where we begin our lives. It has been designed by nature to be our first and safest shelter in which our human being can grow and develop. Surely we deserve a clean environment in here, but is it? Is there a healthy womb left on the planet? How can a baby develop a healthy system of its own when grown in a womb that is already toxic, a "room" fueled by imbalanced gut flora, being fed inferior "fuel" in the form of processed food, nonorganic food, GMO food (creating a virtual insecticide factory in the GI tract), then add in chemical vapors emitting from a house laden with toxic household cleaners? The "baby gift" of lotions and baby powders given from the hospital has as its first ingredient "sodium laureth" code for chemicals, so let's add this to the stew – these lotions are the smell that we associate with babies, so we liberally and lovingly massage our newborns, but what is happening is more toxicity. The mothers of today are so accustomed to chemicals' making everyday lives easier and more beautiful that they themselves soak in chemical lotions, cleansers, and toxic makeup, the result being for all, new and old alike, a toxic river that makes its way through the bloodstream, polluting the liver and ending up in the gut, where they now begin the war on health!

What will these negative pathogens decide to attack? Organs and glands are sitting ducks, unprotected and weakened by the assault; but the big kahuna is the brain: fat city, 65% fat, a favorite happy playground for the bad guys. In time, these toxins need more room to "play," so the brain shrinks to accommodate, giving more room for the toxins to wreak havoc. Here's your "initials": ADD, ADHD, OCD.

Kids now wax poetic about their diseases: "I have ADD and OCD," and the next one says "I have ADHD"! They are proud of it. Summer camps now have to have medical staff to administer meds to the kids. Obese children are being given statins. What is going to happen to a brain not fully formed when it is bombarded with antibiotics, amphetamines, and dangerous statin drugs? Then add in pesticides and environmental pollutants, and you can see the disaster that is here and growing exponentially.

I've been invited to fund-raiser after fund-raiser by well-meaning people to raise money to cure brain disease, brain cancer, autoimmune disease, Alzheimer's. I always think, money for what? There's no drug cure, but when you give them the answer it sounds too simplistic: *change your diet, eliminate all chemicals that you can control.*

For instance, research has shown remarkable results for brain health with daily consumption of virgin, organic, coconut oil. It heals inflammation, whether it's the gut or the brain or the connection between both. But sadly, most people have been convinced that their only route to wellness is through the next miracle pill. TV advertising has us brainwashed, and as they read off the symptoms, there's hardly a person who doesn't associate with at least one or some of those symptoms; and so on the next visit to the doctor, the subject will come up and now the new "miracle pill" is added to your medical cocktail. It constantly amazes me; we go to our doctor like children, expecting a prescription, never asking questions and never making the connection to side effects until they are so in your face that another pill is added to that "cocktail" to take away the side effects ... and so on and so on.

Mothers-to-be have long ago gotten the message not to drink alcohol or smoke tobacco during pregnancy, and almost across the board this is accepted as dogma. But no one is considering the womb health. Much time is spent in prepping for the nursery, but how much time is spent prepping the womb? How many doctors are encouraging this? Womb health requires a complete rethinking of the health of the home you are living in, the food brought into that home, probiotics to balance gut ecology, the proper diet to build up a weak and damaged immune system in order to prepare the gut and then the uterus. If these changes are not done in today's world, you are not giving your baby a fighting chance.

You have to start at the beginning; at present, how toxic is your home? What outgassing is happening? How much plastic is part and parcel of your everyday life? We know from research that phthalates outgas from plastic bottles. An expectant mother understands the value of hydration and drinking lots of water, but if that water comes from plastic bottles outgassing dangerous phthalates, what are the effects on the developing fetus? Phthalates are a carcinogen, since they contain two benzene rings, known for starters to cause leukemia. Phthalates also bind thyroid receptors, adrenal, testicles, ovaries – in fact, any gland. Phthalates are also the No. 1 aggravator of breast cancer. So now you have breasts under attack, the same breasts that are going to be the place of comfort and food for the newborn.

What happens to an already toxic baby born in a toxic womb, drinking contaminated breast milk?

Doctors now need to be concerned and willing to educate expectant parents. There is an alarming rate of miscarriages as of late. Is this a form of compassion of nature, understanding that a womb so loaded with toxicity

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and contaminants is no place to house a developing human being? Perhaps it is the wisdom of nature in some circumstances to say that it would be better for this life not to take place at all than to grow in such an inhospitable place? Doctors today need to do more than deal with the circumstances of pregnancy; instead they must educate and prepare new parents long before the baby is conceived so that the child has a fighting chance to enter a planet that is already trying to work against them. GMO foods, nonorganic foods sprayed with poisons, are eventually going to end up in the GI tract and find their way to a developing fetus. Toxic hair products, toxic cosmetics, toxic makeup, lipsticks with lead: start putting it all together and you can see the responsibility that new parents must assume. You want a healthy baby, then do the proper prep work. A baby living in this polluted house doesn't have a chance at normal health. Our planet has changed and has become damaged. Never before has the mother's internal environment been so crucial in order to give birth to a healthy human.

To avoid a lifetime of prescribed amphetamines for children and adults unable to think due to brain fog, to avoid a lifetime of gut problems, antibiotics, unexplained weight gain, depression, aggression, and the accompanying shame, changes must be made.

According to the Columbia University School of Public Health: "95% of cancer is caused by diet and the environment"!

There it is. No joke. Pretty sobering.

So here's what you can do and here is what doctors can teach parents to prepare for a next generation of children to be born healthy:

- Go to a qualified doctor and test to find your toxicity levels. Take the 7-day candida test from Great Smokies Diagnostic Lab. There are other labs that your qualified doctor can request. The important thing is to know what is going on inside your body.
- Begin taking probiotics every day forever.
- Eliminate poor-quality and GMO foods, and switch to organic foods only.
- Eat a diet of healthful fats rich in omega-3s.
- Test for mineral and nutritional deficiencies and then supplement until you essentially "fill your tank."
- Protect yourself from EMFs (electromagnetic fields), Wi-Fi, and routers in your home.
- Get a Matrix 2 nanotechnology chip (suzannesomers.com; go to "Resources" and click on "LifeWave"). It offers protection from electromagnetic radiation from cell phones by up to 98%. There is documentation to back up the claims from SGS, the largest and most respected independent lab in the country.
- Stop using all plastics if possible.
- Sleep 8 hours.
- Think good thoughts.

Make these simple changes, and in time your body will be ready for the most magnificent experience that we humans are capable of creating. Making a person is our most important job. Procreation of the species is why we are here. Perpetuation of sick and sicker people is a monstrous thought. We have it in our power to turn this ship around.

Imagine wiping out the brain diseases. Imagine children not on drugs. The thought of it thrills me. ◆

A trusted health advocate, successful entrepreneur, and star of two hit television series, Suzanne Somers has written 25 books, including 14 *New York Times* best-sellers, 5 of which were at No. 1. Her most recent book, *TOX-SICK: From Toxic to Not Sick*, debuted at No. 3 on the *New York Times* best-seller list. There are currently more than 25 million copies of Suzanne's books in print. Suzanne hit the dance floor with ABC's *Dancing with the Stars*' 10th anniversary season in spring 2015, and received raves for her bawdy, fun, romantic show *Suzanne Sizzles* in residence at Westgate Las Vegas Resort & Casino. She received an Emmy nomination as Outstanding Host for *The Suzanne Show*, her weekly series of one-hour health specials on Lifetime. She is a founder of ForeverHealth.com, an online resource to connect patients with doctors specializing in natural hormone therapy, also on www.SuzanneSomers.com, and a partner and ambassador for LifeWave. For more information, visit SuzanneSomers.com. Follow her on Facebook and @SuzanneSomers.

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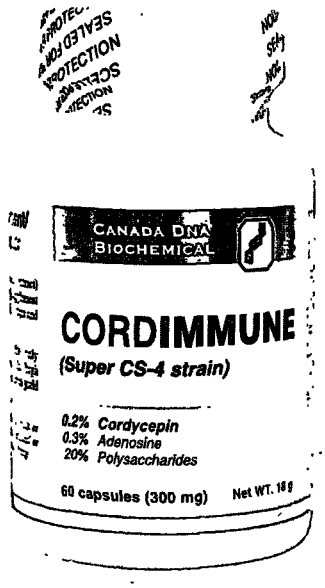

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Defining the Cannabis Revolution

by Stephen Holt, MD, DSc

Distinguished Professor of Medicine (Emeritus)
Consultant to the Cannabis Industry

The Evolving Use of Cannabis

The increasing availability and support for the use of cannabis present important issues of medical, economic, social, legal, and political significance. These challenging events form the basis of the "cannabis revolution" which has accelerated in its progression in recent times. As cannabis creeps toward the status of national legalization in the US, many people are attracted by its recreational use and medical treatment applications. As a consequence, a burgeoning cannabis industry is taking shape, but this industry is not always operating like the ethical pharmaceutical or nutraceutical industries.

Many people argue that the corporate culture of the cannabis industry will have to change and consolidation appears to be inevitable. Decisions to legalize or prohibit cannabis (marijuana) use in the US have triggered endless debates. These arguments are becoming somewhat futile as the US further evolves with the inevitable legalization and decriminalization of marijuana use. At the time of this writing, there has been legalization of cannabis for recreational use in the states of Colorado and Washington. This expanded use of marijuana has emerged with an increasing recognition of the medical benefits of cannabis.[1–6] These benefits are hard to dismiss and impossible to deny.[5,6]

Current federal laws regulating cannabis use amount to a circumstance of "prohibition." These federal regulations are increasingly perceived as "behind the times" due to their incorrect definition of cannabis as a drug without medical benefits. President Barack Obama has indicated that legislation and regulation of cannabis use should occur at the state level of government. Accusations have been made that these circumstances are a "cop-out" by the federal government. At the time of this writing, there are a couple of dozen states that have passed legislation for the use of medical marijuana. This circumstance is creating some degree of confusion as each state legalizes cannabis with some differences in legislation and certain parochial restrictions.

The absence of consensus opinions on precise indications for the medical applications of cannabis may lead to different future legislation and regulations in some states.[5,7] At present, there is room for the potential clash of state legislation and federal government policy. Regulatory agencies run by the federal government have found themselves between "a rock and a hard place." However, signs are developing that the federal government is "backing off" or acting like a "crocodile with no teeth." A solution to these pending problems would be widespread acceptance of revised federal legislation that could be defined for cannabis legalization. However, this potential approach has been the subject of much disagreement, and it is unlikely to occur in the near future.

The former widespread "prohibition" of cannabis (marijuana) use as a result of the 1937 Marijuana Tax Act has led to an unfortunate lack of scientific studies on the biological actions of the many components of the cannabis plant and their effects on health and well-being.[7] Up until about a decade ago, 90% of all cannabis research focused on the negative outcome of cannabis use.[5,7] Furthermore, a significant number of people have accused regulatory officials of "standing in the way of cannabis research," even in recent times. There are some anticipated needs for change in the ever-evolving regulations concerning marijuana use. Political and legal systems will be challenged by some of these changes. Arguably, politicians should not be making unaided "medical decisions" about indications for cannabis use. That said, widespread concerns exist about the current lack of knowledge about cannabis science among the health-care professions. This situation is compounded by shameful inertia in the planning of medical education on the science and application of cannabis.

The emerging landscape of the use of cannabis presents "information overload" for many people, including medical professionals.[8] Rapid political reforms have created some degrees of misunderstanding and confusion among the general public. Such misunderstandings could affect the responsible use of herbal cannabis and related products. Therefore, urgent and widespread education is required on how society should apply the psychoactive and medicinal effects of marijuana. This education is necessary to ensure cannabis use in a safe and responsible manner. It is clear that the

Internet is playing a role in shaping the use of cannabis, but a significant portion of on-line information about marijuana is inaccurate, biased, and sometimes incorrect. This situation hampers the broadcast of valid information to help guide the public on the use of cannabis. Moreover, illegal cannabislike products (synthetic pot) with major toxicity concerns are available for sale on the Internet.

The "cannabis revolution" has mounting support among the general public. For example, the Pew Research Center undertook a survey (March 2013) of the public support for medical cannabis legalization. This survey indicated that 52% of the public favored cannabis legalization versus 45% against legalization. It is apparent that there have been significant increases in the number of Americans who support marijuana legalization over the past few years, and current estimates are that 58% of the population of the US may favor medical cannabis legalization. While widespread support for medical cannabis use is growing fast, significant reluctance to support the legalization of cannabis for recreational purposes persists.

Pandora's Box Has Opened

When it comes to the recreational and medical use of cannabis (marijuana), Pandora's box has opened, or is opening, in many locations in the US. All that remains in the box is "hope." "Hoping" for positive consequences of these circumstances, many people seem to be satisfied with current legislative changes, but some have shown disinterest, and several groups have formed to protest and stop further approvals of its availability. With cannabis legalization there are changes in the frequency of cannabis use and its selected composition with preferred types of cannabis that favor the use of high potency cannabis (rich in THC [tetrahydrocannabinol]).

One need not be blessed with the talent of a visionary to appreciate that greater strides in legalization and decriminalization of marijuana are "around the corner." A principal feature of the "hope" that remains in Pandora's box is an overriding desire to create circumstances that satisfy the dictum of Hippocrates: "Above all, do no harm."[1] Harmful consequences of cannabis use do exist, even though many people have considered these risks to be low. That said, most young people think that cannabis is quite safe. Moreover, cannabis can contribute in specific circumstances to "harm reduction" or "harm production." A key issue is the presence of harm that can occur in adolescent and teenagers. Prevention strategies should be applied to these youngsters.

The Revolution

The cannabis revolution involves global advances and fundamental changes in the acceptance of marijuana use over the past decade and rather precipitous legislation in some places in the US to accept legalization of its use. Once subject to general prohibition, cannabis consumption has blossomed into circumstances of increasing acceptance and widespread consumption with a "dual status" (legal or illicit). Depending on where people live in the US, cannabis is still viewed in a confusing manner as a legal or illicit drug.

Cannabis use is accompanied by a fundamental change in how many people think about this complex natural drug concoction (produced by the plant *Cannabis sativa*). I reiterate that major factors in its increasing popularity are the perceptions that marijuana is safe or even innocuous. Safety issues remain the basis of occasional ferocious debates among some politicians and scientists, but general opinions of safety have emerged. Perhaps it is more relevant to think about degrees of safety of use that are context specific. Furthermore, the emotional index on cannabis use by consumers is often "high," especially for compassionate use in palliative care and for children with severe epilepsy. Like it or not, the electorate has tilted toward support for cannabis use.

The DEA's Position on Cannabis

The Drug Enforcement Agency of the US (DEA) makes it clear that it does not recognize marijuana smoke as a medicine. Its negative opinions focus on smoking cannabis, which it describes as unsafe and having "not withstood the rigors of science." The DEA has stated that it "will vigorously enforce the CSA (Controlled Substances Act) against individuals and organizations that possess, manufacture or distribute marijuana for recreational use, even if such activities are permitted under state law."

I conclude my position statements by emphasizing the current and growing enigma of disagreement between state and federal government laws. While medical legalization of cannabis proceeds without apparent federal opposition, the federal government stands firm on its antimarijuana opinions. In further articles, I shall summarize aspects of the ongoing cannabis revolution.[9]

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Darwin and His Stomach

by Andrew Kennedy

I am going to diagnose a celebrated case from history, the problem of Darwin's stomach as an illustration of the kind of analytical process that a shiatsu practitioner may go through, and how that kind of diagnosis can complement orthodox medical viewpoints.

Darwin famously suffered from a bad stomach, which limited his desire for social engagements. He passed gas and retched continuously, and is often thought to have contracted some exotic stomach bug on his travels. His mysterious ailment, never pinned to any specific physical cause, has stimulated a lot of speculation about exotic infections, his delicate constitution, his psychosomatic mental state, his relationship with his father, his relationship with his mother, his relationship with his wife, his struggle with religious orthodoxy, and so on.

The key to his suffering, however, may be found in his simple observation made in 1838 that "I find the noodle and the stomach are antagonistic powers." This immediately suggests to me that either he had a wheat or gluten intolerance or he had acquired celiac disease. His daughter Annie also had persistent indigestion and seemed to have died from stomach complications.

Darwin returned from his 5-year voyage on the *Beagle* in 1836 but manifested symptoms of his problems long before. As a child he was very sensitive to criticism and had bouts of stomach illness in stressful situations, often provoked by his father, a doctor, who was very dominant if not an actual bully, and who Darwin, in his

Charles Darwin

autobiography, claimed was unfair to him as a child. (Sensitivity to justice is a characteristic of the small intestine in Chinese medicine.) Darwin switched from medicine to natural history at Edinburgh because of his "sensitivities" to bloody surgery. He had heart palpitations and pains in his chest even at the thought of going on his long voyage, which he kept to himself for fear that he would not be allowed to go.

Darwin, however, lived relatively long for someone allegedly in the throes of an exotic illness (73 years). He had a happy childhood and was not fundamentally afraid of people and society. According to his autobiography, he was very happy as a student Cambridge, belonged to a partying set, was passionate about shooting, and spent extravagantly. He certainly enjoyed his scientific meetings in later life, though admitted that they made him too "excited." He complained that he had to give up dinner parties even though he enjoyed them ("... such parties always put me into high spirits." I know this feeling well. Living apart for long periods to write creates a form of sensibility such that social contact – even a telephone call – leaves me uncomfortably jazzed for hours afterwards and any group gathering leaves me uncomfortably high.)

Darwin enjoyed symptom-free times when he could get down to his work. A very telling episode occurred in 1838, only 2 years after he had returned from his voyage. Suffering badly from his symptoms and unable to work, he went on a geological field trip to Scotland, where, camping out in the wilderness and eating frugally, he felt fully cured. Later, in 1848, he tried a so-called water cure peddled by Dr. James Gully at Malvern, which seemed to have cured him temporarily and about which he enthused. One of the key elements of the cure was a strict diet – another important clue to his condition.

He married his cousin, Emma Wedgwood, in 1839, and although psychologists have written that the two of them had a distorted mother-child relationship (Darwin would write in very babyish language to his wife from time to time), and that Darwin was unhealthily reliant on Emma's presence (understandable given his affliction), they obviously had a busy sex life, since they managed to have 10 children between 1839 and 1856, the first 8 produced in the first 10 years of marriage.

From the Traditional Chinese Medicine (TCM) point of view, the seat of Darwin's problem was not in his stomach, his earth element, but in his small intestine (where celiac disease occurs). Earth is the place of social being, of practical solutions, of basic balance and contentedness in daily life, all of which Darwin possessed. Where the earth element fails to be nourished by fire (small intestine), problems arise such as anxiety, feelings of displacement, and lack of "rootedness" which inevitably lead to waves of feelings of agoraphobia and lack of "get-up-and-go."

In TCM philosophy, the earth element is where influences unite in their natural combinations. It is where our actions come to their conclusions. Born out of the mind, it is the strongly physical or visceral state that enables us to enjoy and make sense of life. The stomach is an organ strongly yang in energy; it is the component that literally *digests* the world, makes sense of it, and derives from it what we need to maintain our lives. The yin component of the earth element is the pancreas-spleen combination. This controls and moves the denser fraction of corporeal fluids that irrigate the tissues and organs and maintain their quality of function.

Earth types are sensitive to justice and to being treated fairly. When balanced, earth types are well "rooted," stable, and productive; know what they know; and are unlikely to shift easily from a course of action or a belief. They are also generally sweet tempered, kind, and sociable. People in whom earth is the dominant element are stable and calm, smell sweet, and tend to provoke in others a desire to manage and organize them. Darwin's earth was strong; he had found his place to be and to rest and was happy in it while his mind digested a great deal of facts and made sense of them.

Now, the earth element is produced and nourished by fire, which governs four organs – heart, small intestine, pericardium, and "triple heater." The triple heater, a mysterious energy channel unrelated to any particular organ or tissue, distributes the lighter fractions of the body's energy around the body and also governs the ear. The small intestine in particular governs the extraction of pure fluids derived from digestion and is connected to the health of the skin, but also to the origins of self-criticism and worries over imperfections. Some of the many symptoms of celiac disease are skin problems and a herpeslike skin disease. Darwin suffered from what he called eczema. In 1863 he had a particularly bad bout of it when his skin became too raw to suffer the water cure (part of which involved being wrapped in wet towels) that he believed would help.

The earth element (to which the stomach belongs) is managed by wood. Disorders in earth are connected to the liver, a wood organ, which supplies the blood and *chi* to the heart, which is the seat of the mind in TCM but also determines the levels of blood in the spleen/pancreas organ, the yin component of the earth element. Disorders of the liver show up in anger or depression, in overwork or lack of it, muddled thinking or lack of clarity, insomnia, and restlessness. If the spleen/pancreas does not have enough blood and yang energy to do its job in passing blood and nourishment to the body's organs, intestinal problems result.

Darwin was not an angry man, however. Although he was organized, he was not obsessive about it, and he was able to work steadily. Another point about the wood-earth connection is the how the excess control of wood leads to acid reflux and a need to vomit. The healthy earth energy of pancreas/spleen, being yin, descends into the lower torso and when deficient in yang tends to collect in the intestines, creating sensations of bloat or swellings, whereas the earth energy of the stomach, being yang, has a tendency to rise into the throat when not anchored by sufficient yin energy. When the liver is blocked from functioning, heat results, which attacks the yang component of the earth element (the stomach) and forces energy upwards. But Darwin did not vomit food (not all celiac disease sufferers have this symptom), though he did sometimes complain of acid in the mouth after meals, all of which suggests that his problem was not confined to the liver-stomach relationship but also involved his small intestine. This was most likely to have been caused by celiac disease or gluten sensitivities.

His skin problems and the similar sufferings of his daughter Anne, which began after an immune system attack, also suggest it. (Darwin did wonder about the closeness of his and his wife's common heritage – they were cousins – bearing on the health of his children, though at the time he knew nothing about genes and how they worked.) He died of what appeared to be coronary thrombosis, and certainly celiac disease is implicated in a higher risk of heart failure, through inflammation (in TCM, both heart and small intestine are grouped together under the fire element) and poor absorption of good fats.

Two years before, in 1849, Anne, who was, according to Darwin, a delightful and well-balanced child and taller than average (a trait not normally associated with celiac disease in children), had a serious bout of scarlet fever, and from then on her health declined. She was treated with the same water therapy as Darwin in Gully's Malvern clinic for several weeks but did not respond, and died in 1851, after seriously vomiting daily, of what was called "bilious fever of typhoid character." Celiac disease, being an immune system disease, can appear suddenly at any time and is often triggered by a stressful bout of illness. It is also has a heritable component, so Annie's death sadly may have confirmed her father's condition.

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Metabolic Correction: A Functional Biochemical Therapeutic Approach

by Michael J. Gonzalez and Jorge R. Miranda-Massari

Keywords: Metabolic Correction, chronic diseases, genetotrophic disease, biochemical individuality, nutrient insufficiency, genetic polymorphism

Abstract

Human development and physiology depend on myriad biochemical processes, many of which are codependent and interrelated. The rate and extent of many reactions depend on the enzymatic activity which, at the same time, depends on the bioavailability of micronutrient cofactors such as vitamins and minerals. To achieve a healthy physiological state, the organism needs biochemical reactions to occur at a certain rate and extent. This state is possible when the metabolic reactions reach full velocity and completion, which can be considered the optimal metabolic equilibrium. A combination of genetic makeup, erroneous dietary patterns, trauma, diseases, toxins, and environmental stressors will often elevate the demand of nutrients in order to attain the optimal metabolic equilibrium. Metabolic Correction is a functional biochemical/physiological concept that explains how improvements in cellular biochemistry help the body achieve metabolic or physiological optimization. Brilliant minds such as Roger J. Williams, Linus C. Pauling, Jeffrey Bland, and Bruce N. Ames have contributed in a fundamental way to our understanding of the importance of micronutrients to attain the healthy state. The Metabolic Correction concept becomes important since our food is decreasing in nutritional value; diseases increase the demand for certain nutrients and medications deplete many nutrients. These nutrient insufficiencies are causing enormous cost due to increased morbidity and mortality. In summary, Metabolic Correction increases enzymatic function that enhances biological functions contributing to health improvement and well-being.

Metabolism, Physiologic Function a Genetic Polymorphism

To achieve the best possible state of health, a particular metabolic equilibrium is necessary. The array of critical functions of vitamins, minerals, and other nutrients at the cellular level, and especially their role as cofactors in enzyme reactions is probably unrecognized or unappreciated by most health professionals. The whole significance of micronutrients in human metabolism has not been completely elucidated, simply due to the high complexity of cellular processes. Critical enzymes require metals such as copper, zinc, manganese, selenium, and vitamins such as the B-complex as an integral part of their molecular structure or mechanism of action. Enzymes play a critical role in regulating and orchestrating the velocity of the plethora of biochemical reactions that take place in living organisms.

Metabolic nutrition is generally recognized as the study of how diet and nutrition affect the body's metabolism. Nutrition in general is a very complex science, but its importance is relatively easy to understand. Aside from starvation there are three levels of nutrition: poor, fair, and good. Poor nutrition brings severe underdevelopment of the young as well as deficiency diseases such as beriberi, scurvy, pellagra, rickets, kwashiorkor, and all the ill-defined combinations and variations of these afflictions.[1] Fair nutrition is good enough to prevent the well defined deficiencies but not good enough to promote good health and proper development. This second-rate nutrition is unfortunately the kind that we have been taught to regard as satisfactory.[1] Good nutrition is the one that provides not only the needed energy but high-quality protein, carbohydrates, and fats, in addition to the necessary vitamins and minerals. The concept of a

balanced diet was developed to prevent deficiency diseases based on the knowledge that an appropriate mixture of food items will provide the minimum requirements of the nutrients needed by the body. We should be aware that this supposedly good nutrition may not be enough for physiological optimization leading to excellent health. We should acknowledge that food alone may not provide sufficient micronutrients for preventing deficiency.[2]

Inadequate dietary intakes of vitamins and minerals are widespread, most likely due to excessive consumption of calorie-rich, nutrient-poor, refined food (the hidden hunger concept). Suboptimal intake of micronutrients often accompanies caloric excess. These inadequate intakes may result in metabolic disruptions.[3] Episodic shortages of micronutrients were common during evolution. Natural selection favors short-term (emergency) survival at the expense of long-term health. Short term survival was achieved by allocating scarce micronutrients by triage.[3] As micronutrients become scarce, a triage mechanism for allocating scarce micronutrients is activated. This triage means, prioritization of the use of relatively scarce nutrients to the most fundamental life preserving functions. In metabolic reactions, enzymes involved in ATP synthesis would be favored over DNA repair enzymes, as well as production of immune system components and neurological chemicals. When there is a lack of synergistic components of the metabolic network, an array of negative metabolic repercussions arise, leading eventually to loss of healthy physiological equilibrium and the acceleration of degenerative diseases.

Metabolic Correction

The Metabolic Correction concept provides the biochemical explanation of the utilization of nutrients for preventive and therapeutic purposes against disease. Metabolic Correction is a functional biochemical/physiological concept that clarifies how improvements in cellular biochemistry help the body achieve metabolic or physiological optimization. Impaired or incomplete cellular biochemical reactions are amended with Metabolic Correction.

The History of Metabolic Correction

Brilliant and incredibly knowledgeable pioneers ("medical mavericks") provided the groundbreaking basis of what we call Metabolic Correction. Their innovative scientific contributions have substantially advanced our understanding of molecular nutritional biochemistry and especially how it can influence the pathological or disease state.

In 1947, Dr. Roger J Williams contributed to the evolution of the understanding of the molecular origin of disease with the development of the concept of biochemical individuality.[4] He described anatomical and physiological variations among people and how they related to their individual responses to the environment and their particular physiology. He coined and gained recognition for the term *biochemical individuality* and how this related to differing nutritional needs for optimal function among different people.

Molecular medicine was a term used by two-time Nobel laureate in chemistry and peace Dr. Linus C. Pauling, in his landmark article on the mechanism of the cause of sickle cell anemia published in 1949.[5] It defined a new perspective on the origin of disease based upon the recognition that specific mutations of the genes can create an altered molecular environment and therefore the modified physiological function associated with specific diseases.

In 1950, Williams also coined the term *genetotrophic disease* to describe diseases that resulted from genetically determined nutritional metabolic needs not being met by the individual and which result in poor gene expression.[6] Patients with genetotrophic conditions have increased needs of one or more nutrients in order to achieve normal physiologic functioning. These conditions respond dramatically when enough of the required nutrients are provided. Many chronic diseases can be conceived as subtle genetotrophic diseases, as long as a nutrient supplementation fills a metabolic need that improves the patient's condition. With this concept, Williams opened the eyes of the research and medical communities that expression of genes and therefore phenotypic function was modifiable through altered diet and nutritional status. He pointed out that human biochemical variation in function was much greater than nutrition and medicine recognized prior to his publications. We should also mention here that Dr. Henry Turkel was probably the first to clinically show that nutrition and supplementation can modify genetic programming with his work with Down syndrome.[7] Turkel was probably also the first clinician to use Metabolic Correction as therapy when he got rid of harmful gene expressions in retarded children by removing accumulated metabolic byproducts with nutrition and high-dose supplements improving cognition, physical health, and appearance of these children).[7]

The word *orthomolecular* was introduced by Pauling in "Orthomolecular Psychiatry," his seminal 1968 article published in the journal *Science*.[8] Pauling defined orthomolecular psychiatry as the treatment of mental disease by the provision of the optimum molecular environment for the mind, especially the optimum concentrations of substances normally present in the body. He later broadened this definition to other diseases to name it orthomolecular medicine, which he defined as the preservation of good health and the treatment of disease by varying the concentrations in the human body of substances that are normally present in the body and are required for health. The adjective orthomolecular is used to express the idea of the right molecule in the right concentration. The key idea in orthomolecular medicine is that genetic factors affect not only the physical characteristics of individuals, but also their biochemical milieu. Biochemical pathways of the body have significant genetic variability and diseases such as atherosclerosis, cancer, schizophrenia, or depression are associated with specific biochemical abnormalities that are causal or contributing factors in the illness. Several arguments support

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the thesis that the optimum molecular concentrations of substances may not be achieved solely by dietary means. The need for essential *nutrilites* (vitamins, essential amino acids, and essential fatty acids) may differ from the (average) daily amounts recommended for the general population.

Dr. Jeffrey S. Bland created the concept of functional medicine in 1991, a form of personalized medicine that deals with primary prevention and underlying causes of disease, instead of just the symptoms of serious chronic diseases. Functional medicine is anchored by an examination of core clinical imbalances that underlie various disease conditions. Those imbalances arise as environmental inputs such as diet, nutrients (including air and water), toxins, exercise, and trauma together with a unique set of genetic predispositions, attitudes, psychological stress, and beliefs. The core clinical imbalances that arise from malfunctions include hormonal and neurotransmitter, oxidation-reduction and mitochondropathy, detoxification and biotransformation, immune, inflammatory, digestive, absorptive, microbiological, and structural imbalances from cellular membrane function to the musculoskeletal system. Improving balance is the precursor to restoring health and it involves much more than treating the symptoms. Functional medicine is dedicated to improving the management of chronic disease by integrating the interventions at multiple levels to address these core clinical imbalances and to restore each patient's functionality and health. Functional medicine is not a unique and separate body of knowledge. It is grounded in scientific principles and information widely available in medicine today, combining research from various disciplines into highly detailed yet clinically relevant models of disease pathogenesis and effective clinical management. Bland published a landmark book in 1999 titled *Genetic Nutritioneering*, in which he explains how proper nutrition and supplementation can modify genetic expression to create the best possible health outcomes.[9]

Later, Dr. Bruce N. Ames presented his triage theory of optimal nutrition in 2006, which states that the human body prioritizes the use of vitamins and minerals when it is getting an insufficient amount of them in order to keep functioning.[3] Triage means deciding which patients to treat when faced with limited resources. When faced with limited nutritional resources, the human physiology must decide which biological functions to prioritize in order to give the total organism, and the species, the best chance to survive and reproduce. Under such a limited scenario, the body will always direct nutrients toward short-term health and survival capability and away from regulation and repair of cellular DNA and proteins that optimize health and increase longevity. Ames's research shows how bodily insults accumulate over time as a result of vitamin and mineral insufficiencies, and how this can lead directly to age-related diseases. The triage hypothesis states that the risk of degenerative diseases (associated with aging, including cancer, cognitive decline, and immune dysfunction) can be decreased by ensuring adequate intake of micronutrients.[3,10–13] While short-term deficiencies or insufficiencies are common, they are often not taken seriously by mainstream physicians.

Metabolic Correction is a functional term introduced by Dr. Michael J. Gonzalez and Dr. Jorge R. Miranda-Massari in 2011 to explain the mechanism of how nutrients can correct biochemical disruptions that promote the disease state.[14] Metabolic Correction embraces all these previously described biochemical/physiological concepts to explain how improvements in cellular biochemistry may help the body achieve metabolic or physiological optimization. Metabolic Correction intervenes with impaired biochemical reactions that are associated with a lack of well being. In other words, Metabolic Correction is a fine-tuning of the cellular physiology to improve function, therefore preserving health, preventing tissue damage, and reverting disease.

The 3 Main Reasons to Use Metabolic Correction

Inferior Nutritional Value of Food and Availability of Nutrient-Dense Foods

We must eat a wide variety of food to obtain the substances that we need. A big problem that we face is that the nutritional value of foods that people eat seems to be greatly inferior to the listed values given in food tables. A study looking into this issue showed declines in protein of 6%; calcium, 16%; phosphorus, 9%; iron, 15%; riboflavin, 38%; and vitamin C, 20%.[15] There is a dilution effect, in which yield-enhancing methods such as fertilization and irrigation may decrease nutrient concentrations, an environmental dilution effect. Recently, evidence has emerged that genetically based increases in yield may have the same result, a genetic dilution effect. Modern crops that grow larger and faster cannot necessarily acquire nutrients at the same, faster rate, whether by synthesis or from the soil. Today's foods are not as nutritious as those eaten in the past. US and UK governmental statistics show a decline in trace minerals of up to 76% in fruit and vegetables over the period 1940 to 1991.[16] The nutritional decline findings alone give reason to eat organic fruits and vegetables. In fact, for nearly all nutrients, organic fruits and vegetables remain the most nutrient-dense foods. This information makes the updated food pyramid not so much current as reflective of the need for an increase in fruits and vegetables in order to get the same nutritional benefits. Also, Americans on average do not even come close to the recommendations to limit added sugars, refined carbohydrates, and added fats and oils.

Adverse Side Effects of Medication and Iatrogenic Deaths

More than 100,000 deaths are reported annually due to medication properly prescribed and taken as

directed.[17,18] The incidence of serious and fatal adverse side effects in US hospitals is extremely high; these are frequent and more so than generally recognized. Fatal adverse side effects appear to be the fourth leading cause of death in the US. If medication is necessary, providing Metabolic Correction principles may reduce medication requirements, reduce adverse side effects, and improve therapeutic outcome.[14]

Compensate for the Increased Demand of Nutrients Due to the Disease State

Burns lead to loss of protein and essential nutrients.[19] Surgery increases the need for zinc, vitamin C, and other nutrients involved in cellular-tissue repair.[20] Broken bones need calcium, magnesium, and vitamin C for healing.[21] Infections challenge the immune system and place high demand on nutritional resources such as zinc, B-complex vitamins, and vitamin C.[22] The same nutritional demand is present when one is exposed to chemical, physical, and emotional stress. Chronic disease sufferers are at higher risk of interaction of drugs and nutrients. There are thousands of conceivable genetic defects (inborn or acquired), so it is likely that many people have higher genetic requirements for many micronutrients. We need a better understanding of the interrelationship between nutritional biochemistry and the disease-pathological state.

Biochemical Mechanism of Metabolic Correction: Molecular Concentrations and Rate of Reaction: Ames Km Concept

The majority of the chemical reactions that take place in living organisms are catalyzed by enzymes. The mechanisms of enzyme-catalyzed reactions in general involve (1) the formation of a complex between the enzyme and a substrate and (2) the breakdown of this complex to form the product of the reaction. The rate determining step is usually the breakdown of the complex to form the product. Under conditions such that the concentration of the complex corresponds to equilibrium with the enzyme and the substrate, the rate of the reaction is given by the Michaelis-Menten equation.[8]

The rate of an enzyme-catalyzed reaction is approximately proportional to the concentration of the reactant, until concentrations that largely saturate the enzyme are reached. The saturating concentration is larger for a defective enzyme with decreased combining power for the substrate than for the normal enzyme. For such a defective enzyme, the catalyzed reaction could be made to take place at or near its normal rate by an increase in the substrate concentration. This mechanism of action of gene mutation is only one of several that lead to disadvantageous manifestations that could be overcome by an increase in the concentration of enzymatic cofactors. These binding problems may result in metabolic inefficiency with the accumulation of metabolic byproducts. In general, this is the law of mass action: as the vitamin and mineral concentration increases, enzyme efficiency increases. These considerations obviously suggest a rationale for Metabolic Correction wherein you provide the required cofactors in the amount needed to improve function. This increased enzyme efficiency may allow a genetic defect to be overcome. This biochemical activity follows the chemical principle of Le Chatlier, which states that when stress is applied in an equilibrium situation, it will move in the direction that minimizes stress. In this case there is an unfavorable equilibrium of active enzyme that with the addition of the necessary nutrients will be moved toward a more physiologically favorable metabolic state.[23]

Many human genetic diseases due to defective enzymes can be remedied or ameliorated by the administration of high doses of the vitamin component of the corresponding coenzyme, which can partially restore the enzymatic activity.[10] Several single nucleotide polymorphisms in which the variant amino acid reduces coenzyme binding and thus enzymatic activity can be remedied by raising cellular concentrations of the cofactor through high-dose nutrient therapy.

Inadequate intakes of vitamins and minerals from food can lead to DNA damage, mitochondrial decay, and other pathologies. Ames suggests that evolutionary allocation of scarce micronutrients by enzyme triage is an explanation for why DNA damage is commonly found in micronutrient deficiency.[3] Motulsky has also argued that many of the common degenerative diseases are the result of imbalanced nutritional intake with genetically determined needs.[24,25]

As an example, folic acid and vitamin B12 have an important function in the maintenance of nuclear and mitochondrial genome integrity. Both in vivo and in vitro studies with human cells show that deficiency of these vitamins causes an array of problems in the nuclear and mitochondrial DNA that can be minimized with increased folate and cobalamin concentrations. In order to acquire the protective effect of these vitamins, they are needed in concentrations that are obtained at intake levels above the current recommended dietary intakes of folate (>400 µg/day) and vitamin B12 (>2µ/day).[26]

Chromosome breaks lead to mutations that precede tissue damage and disease. Many types of physiological impairments due to inadequacy of vitamins and minerals can lead to suboptimal organ-system function including poor drug metabolism, insufficient neurotransmitter production, and impaired immune defenses. Chronic vitamin-mineral undernutrition reduces immune competency and central nervous system efficiency, while increasing morbidity, which may lead to increases in degenerative diseases. This approach to optimizing health by improving enzyme efficiency and thereby metabolism and physiology is the basis of Metabolic Correction.

An example of Metabolic Correction is that high-dose B vitamins can counteract a poor Km. As many as

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one-third of mutations in a gene result in the corresponding enzyme having an increased Km (decreased binding affinity) for a coenzyme, causing a lower rate of reaction.[10,11] About 50 different human genetic diseases due to a poorer binding affinity of the mutant enzyme for its coenzyme can be remedied by feeding high-dose B vitamins, which raise levels of the corresponding coenzyme; many polymorphisms also result in a lowered affinity of enzyme for its coenzyme and thus may be in part remediable.[10]

To summarize, Metabolic Correction has two important biological actions: (1) optimization of cellular function by improving enzymatic efficiency and (2) producing a pharmacological effect to correct abnormal cell function due to a biochemical disarray occasioned by the disease process.

An optimum intake of micronutrients and metabolites, which varies with age, environmental factors, and genetics, should tune up metabolism and markedly increase health at a modest cost, particularly for the poor, obese, and elderly.[11]

Deficiency, Marginal Deficiency, Insufficiency

A nutrient deficiency is a physiological state in which a depletion of a nutrient is associated with the impairment of certain biochemical reactions and lack of well-being. A marginal deficiency or insufficiency refers to the early stage of the deficiency or an early shortage of the needed nutrient to cover all the necessary biochemical pathways to optimize physiology to be able to reach the healthy state.

Deficiencies have five important stages: (1) Depletion stage, or preliminary deficiency stage, in which the body stores are gradually depleted of the necessary cofactors; (2) biochemical stage, or secondary deficiency stage, in which the functional enzymes are decreased and the body manifests a decline in function due to the lack of necessary cofactors; (3) physiological stage, or tertiary deficiency stage, in which enzyme activity is sufficiently impaired to affect immune and behavioral parameters. Personality changes and decrease in the resistance of disease occur. This is accompanied by a variety of nonspecific symptoms such as loss of appetite, depression, irritability, anxiety, insomnia, and somnolence, in which the person may not be sufficiently ill to seek medical attention but his general health is far from optimal; (4) clinical stage, or semifinal deficiency stage, in which classical clinical deficiency disease is manifest; (5) anatomical stage, or final deficiency stage, in which death will occur without any nutritional intervention. Suboptimal intake of vitamins just barely above levels causing vitamin deficiency is a risk factor for chronic diseases and common in the general population, especially in the elderly.[27–29]

10 Principles That Identify the Concept of Metabolic Correction in Disease Therapy

1. Metabolic Correctors, along with proper nutrition, come first in medical treatment. Knowledge of the safe and effective use of the combination of nutrients, enzymes, hormones, and other naturally occurring molecules in their active forms is essential to assure an effective therapeutic outcome. However, some patients may need more acute treatment for their particular condition, for which pharmacological therapy is recommended.
2. Metabolic Correctors have a low risk of toxicity. Pharmacological drugs always carry a higher risk and therefore should be of second choice if there is a Metabolic Correction alternative treatment.
3. Some laboratory tests might be useful in identifying the nutritional needs of some patients but these tests may not be readily accessible to all patients or may present certain limitations. In addition, some laboratory tests do not necessarily reflect nutrient and enzyme levels within specific organs or tissues, particularly in the nervous system. For many patients therapeutic trial and dose titration is often the most practical therapy approach, especially when utilizing synergistic Metabolic Correction formulations.
4. Biochemical individuality is a central precept of Metabolic Correction. Hence, the search for optimal nutrient combination doses is a practical issue.

Dr. Michael J. Gonzalez is professor at the Nutrition Program, School of Public Health in the Medical Sciences Campus, University of Puerto Rico, and adjunct faculty at the University of Western States. Dr. Gonzalez is a Fellow of the American College of Nutrition and has authored over 200 scientific publications. He has served as a member on several scientific editorial boards. He has served as consultant for several companies where he has been responsible for designing formulations of nutritional supplements and pharmaceutical products. He has also been a consultant for the Center for the Improvement of Human Functioning (now Riordan Clinic), in Wichita, Kansas. He has obtained several research awards for his work on nutrition and cancer. He is currently codirector of RECNAC II project and research director of the InBioMed Project Initiative. Dr. Gonzalez also serves as a nutrition consultant to the Puerto Rican Basketball National Team and is part of the Medical Commission of the Puerto Rican Basketball Federation. He is part of the medical staff of the Vaqueros de Bayamon professional basketball team. He is in a part-time clinical practice with Dr. Miguel J. Berdiel in Ponce, PR. In December 2013, Dr Gonzalez was exalted as Distinguished Ponceño in Medicine. In 2015 he was selected as member to the prestigious Puerto Rican Academy of Arts and Sciences and to the Iberoamerican Academy of Culture and Sciences.

Drs. Gonzalez and Jorge Miranda-Massari, founders of InBioMed, are leaders in the development of nontoxic chemotherapy treatments for cancer. The findings of their work with intravenous vitamin C as an anticancer agent, published in 2002, were confirmed by the NIH in 2005. They published the first phase I clinical study utilizing intravenous vitamin C for treatment of terminal cancer patients in 2005, and also published in 2005 the most comprehensive review on vitamin C and cancer as a follow-up on the work of two-time Nobel laureate Dr. Linus C. Pauling. They have brought many new concepts into the scientific field, such as the bioenergetic theory of carcinogenesis, the systemic saturation phenomenon of intravenous vitamin C, and the metabolic correction concept for disease treatment and prevention. Dr. Gonzalez was inducted into the International Hall of fame of Orthomolecular Medicine in April 2016

Doses of nutrients and their combinations above the recommended daily allowances are often effective. Many patients tolerate megadoses and respond well; however, dose titration is indicated in otherwise unresponsive cases.

5. The Recommended Daily Allowance (RDA) of the United States Food and Nutrition Board is intended for normal, healthy people. By definition, diseased patients are not normal or healthy and not likely to be adequately served by the RDA. Practically every person is deficient or insufficient at some level of nutrients due to our poor diet.
6. Environmental pollution of air, water, and food is common. Diagnostic search for toxic pollutants is justified.
7. Optimal health is a lifetime challenge. Biochemical needs change and our Metabolic Correction prescriptions need to change based upon follow-up, repeated testing, and therapeutic trials to permit fine-tuning of each prescription and to provide a degree of the best possible health outcome.
8. Nutrient related disorders are always treatable and deficiencies and insufficiencies are curable. To ignore their existence is malpractice.
9. Genetic and hereditary disorders are often responsive to Metabolic Correction.
10. Inspire the patient to realize that health is not merely the absence of disease but the positive attainment of optimal function and well-being. This requires an active role of the individual in his lifestyle, a commitment to continuous education and a responsible attitude with his health.

Conclusion

To run your metabolism effectively, you need the basic macronutrients required for fuel, fat, protein, and carbohydrate. But you also need 15 or so vitamins that are coenzymes and 15 or so minerals that are required cofactors by enzymes, and then you need two essential fatty acids, omega-3 and omega-6, and also there are seven or eight essential amino acids. In addition other important nutrients, such as coenzyme Q10, acetyl-L-carnitine, lipoic acid, must be considered in our quest for physiological optimization. Virtually every metabolic pathway requires micronutrients.

What determines the optimal concentration of a nutrient is its physiological functionality. Many people do not function at 100% efficiency; nevertheless, they do not present any detectable disease or severe symptoms but can improve their functionality if supplied with the needed substances in the optimum concentrations. Certain individuals have a greater need than that provided by the diet (even a good dietary regime). Their needs may vary from 10 to 1000 times the physiological requirement. This could be caused by digestive problems, malabsorption, food sensitivities, difficulty in the metabolism of certain amino acids, fatty acids, complex carbohydrates, low levels in the precursors of neurotransmitters, and so on.

This lack of needed cofactors has the problem that it shows no specific symptoms. Some vague symptoms such as lethargy, irritability, insomnia, and difficulty in concentrating may be present. It also affects the body's ability to resist disease and infection; its ability to recover from exercise, surgery, disease; the ability of the brain to function at a high level. Detecting and treating disease at its earliest stages of cellular biochemical abnormality, rather than waiting for clear clinical symptoms, is cost effective and of benefit to the patient. We must have very clear in our minds that nutrient deficiency diseases are the end product of a long and complex series of nutrient depletion reactions.

It should also be addressed here that vitamins also have certain influences on metabolism that are not related to coenzyme effects. Vitamins can have effects upon a specific cellular organelle, hormone, or supramolecular structure within a cell that may optimize its function.

Deficiencies in these micronutrients may not be severe enough to create immediate clinical symptoms, but the long-range implications could lead to an increased risk of diseases.

We need to abandon outdated paradigms of nutrient intake merely to prevent deficiencies and expand them to prevent and treat chronic diseases and achieve optimal health with Metabolic Correction.

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Silver Nanoparticles as a Novel Approach to the Treatment of Chronic Lyme Disease and Associated Diseases

by Nooshin K. Darvish, ND, FICT

> At whatever time highly-skilled physicians shall ... prohibit humankind from living as slaves to their lustful appetites, it is certain that the incidence of chronic and diversified illnesses will abate, and the general health of all mankind will be much improved. This is destined to come about. ...
>
> – *Selections from the Writings of 'Abdu'l-Bahá*, sec. 134, pp. 152–156

Introduction

Chronic Lyme disease patients are often afflicted with more than just borreliosis. The symptomatology and diagnoses of such patients is complicated, often involving multiple infections affecting every organ system in many cases. Such patients often suffer from chronic viral infections, multiple bacterial, parasitic, and protozoal infections, as well as chronic fungal and mold infections. Immune dysregulation, including reduced white blood cells and decreased natural killer cell activity, along with elevated inflammatory cytokines, biofilms, neurotoxins, and biotoxins often complicate the disease process further, providing a toxic milieu for disease progression. Central to the current treatment approach is prescription antibiotic therapy, yet antibiotic therapy often causes bacterial resistance and may at best only suppress some of the bacterial infections while promoting the growth of biofilm formation, candida overgrowth, and disturbances in the gut microbiome, again contributing to the progression of the disease process. New resistant strains of bacteria, resulting from recurrent use of antibiotics, make antibiotic therapy less effective than previously thought.[2] Such treatment strategies do not address all of the disturbances produced by the multiple infections; often multiple antibiotics are required to address the complexity of the infectious syndrome. Hydrosol silver, specifically silver nanoparticles, provides a novel and effective approach to the treatment of chronic Lyme disease and its multiple infections without the complications of antibiotic therapy.

Chronic Lyme Disease, or Multiple Systemic Chronic Infection Syndrome (MSCIS)

Chronic Lyme disease, also known as multiple systemic chronic infection syndrome (MSCIS), involves multiple infections such as viruses, parasites, bacterial, spirochetes fungi, and mold. A combination of these infections and their toxins play a large role in furthering immune deficiency, increasing inflammation, damaging mitochondria, stimulating mTor and other pro-inflammatory protein enzymes, as well as causing endocrine, neurological, gastrointestinal, and psychoemotional disturbances.

Combination antibiotic therapy, to address the multitude of infection types, often leads to further inflammation, organ damage, extensive biofilm formation, neurotoxins, and biotoxins as well as promoting an acidic milieu perfect for the growth of mold, fungi, and parasitic infections. Silver nanoparticle therapy, on the other hand, provides a broad-spectrum antimicrobial therapy coupled with immune- and inflammation-modulating benefits as well as biofilm disruption capabilities, making it a more effective treatment for MSCIS.

History of Silver

Greeks, Romans, Phoenicians, and Egyptians used silver to preserve food and water, a household practice that continued until World War II. Persian kings, including Cyrus, consumed only drinking water carried in silver containers due to their ability to preserve its freshness. Hippocrates and Avicenna, the "father of modern medicine," applied silver to wounds for healing and silver fillings for blood purification.[10] For over six millennia, professionals and laypeople recognized the strong antimicrobial benefits of silver to eliminate a multitude of bacterial, parasitic, viral, and fungal infections. Topical dressings using silver nitrate to disinfect and heal open wounds, burns, and chronic ulcers continued to be utilized for centuries until the advent of antibiotics. Silver sulfadiazine was originally used for burn and wound victims during wars for its antibacterial and wound healing properties.[1] Robert O. Becker, MD, in the 1970s, discovered the bone-growing properties and bactericidal effects of silver ions. Silver exhibits strong antimicrobial activity against a wide range of microorganisms.[3]

Silver Nanoparticles vs. Colloidal Silver

With the advent of nanotechnology, scientists developed silver nanoparticles, recognizing its potential in medicine and technology. *Nano* means "dwarf"

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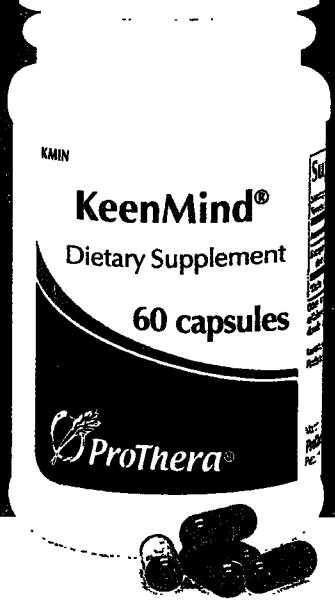

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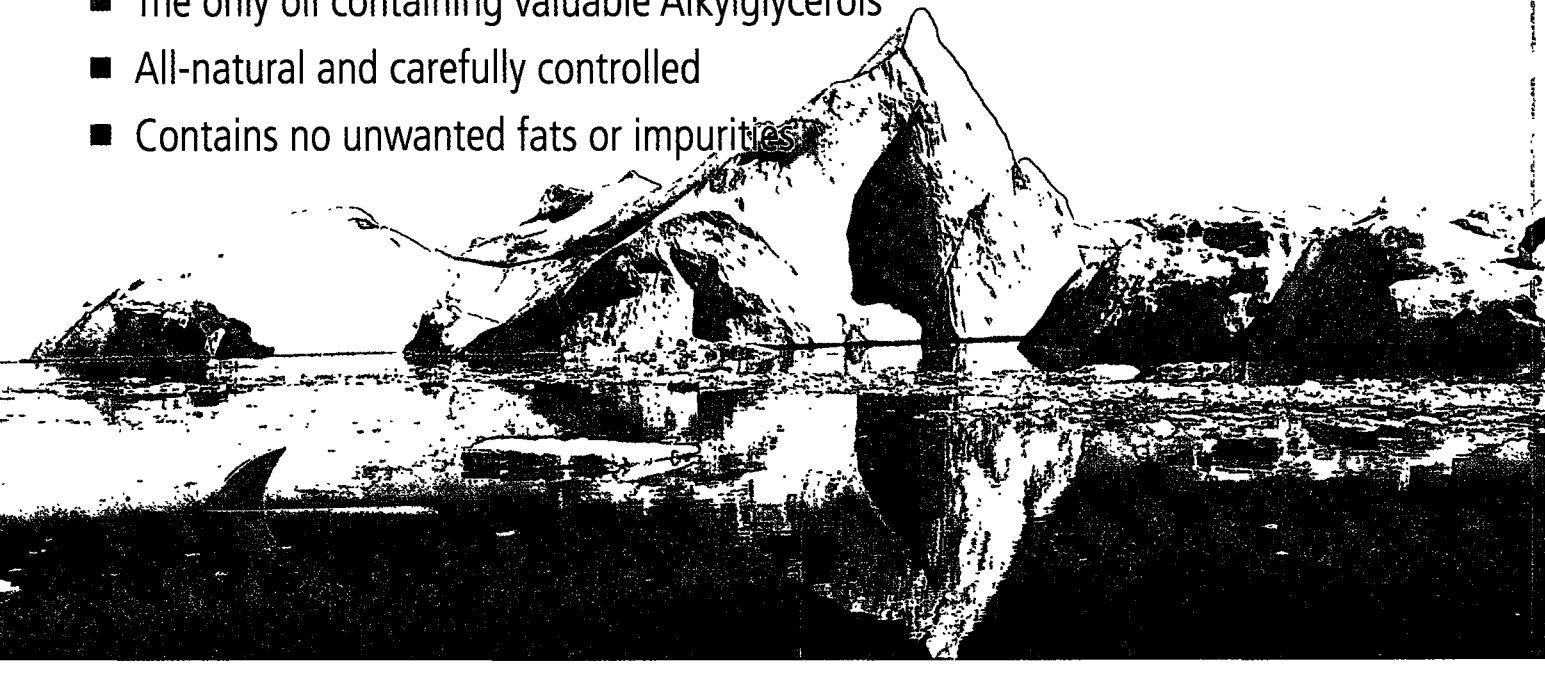

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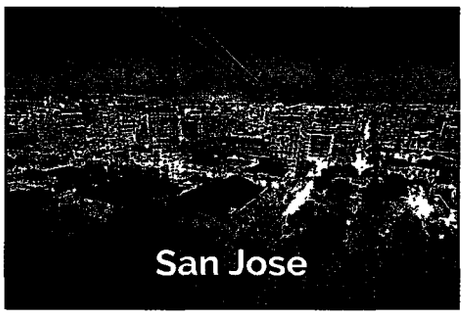

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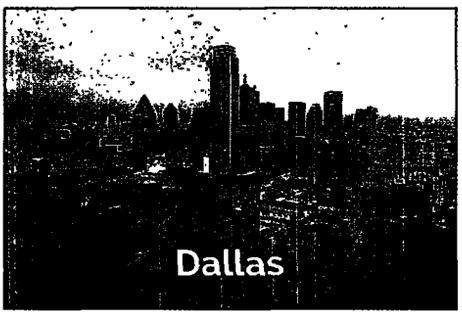
August 7
Genetic Testing & Toxic Chemical Testing Workshop



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November 6
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P51

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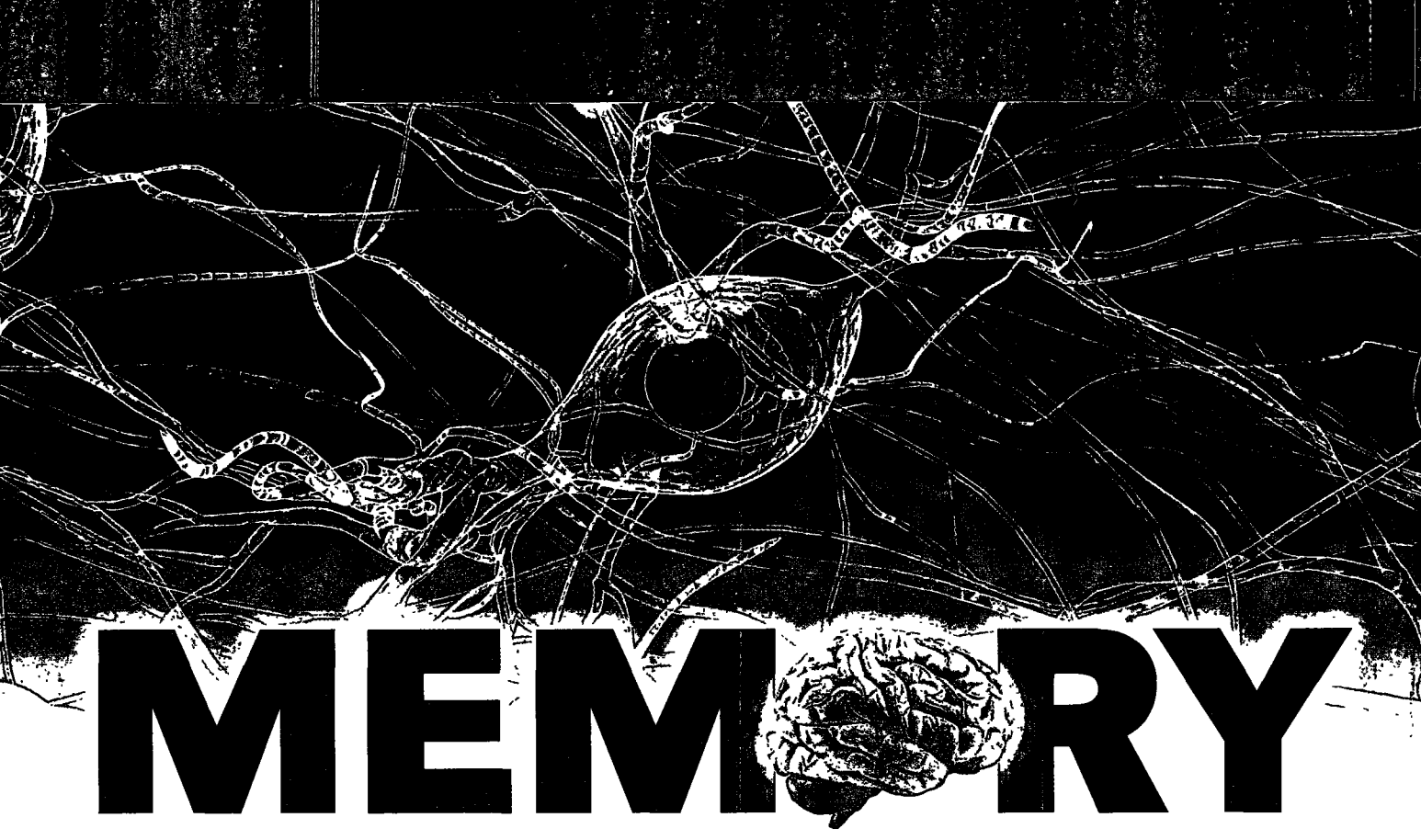

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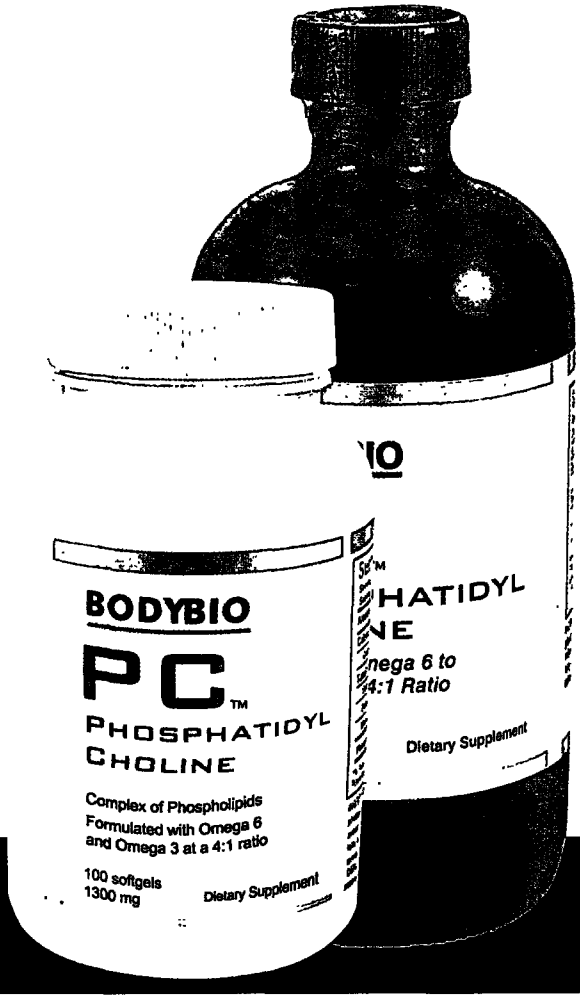

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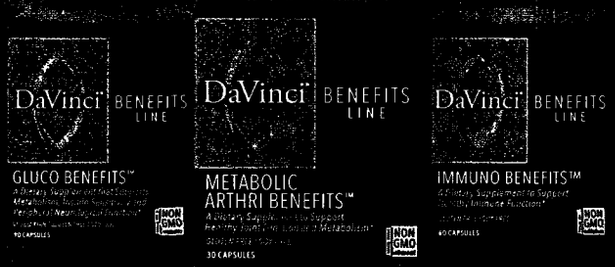

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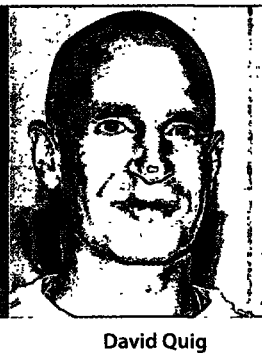

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➤ *continued from page 48*

in Greek and refers to the less than 100 nm atom size of the silver nanoparticles. Silver nanoparticles have a large surface area to volume ratio, making them more potent than colloidal or other forms of silver. Because of this large ratio, lower concentrations of silver nanoparticles exhibit potent antimicrobial activity against drug-resistant infections than higher concentrations of colloidal silver. Silver nanoparticles are bactericidal and bacteriostatic against multiple bacteria.[6] Historical and scientific documentation verifies silver to be antiseptic against 650 different organisms including parasitic, viral, fungi, and mold infections.

During World War I, the primary form of silver was colloidal silver, which was used for wound healing and as antiseptic. The utilization of intravenous colloidal silver to treat major infections proved erroneous, as high doses of colloidal silver intravenously caused convulsions and deaths. High doses of oral colloidal silver caused gastrointestinal symptoms, resulting in the loss of routine use of silver as a mainstream antimicrobial therapy after the 1940s.

The introduction of nanotechnology and the development of silver nanoparticles welcomed silver back into medicine during the last few decades, as silver nanoparticles exhibited a significant reduction in toxicity compared with that of colloidal silver. Thus, silver nanoparticles display a high level of safety because of their large surface area to volume ratio. The introduction of silver nanoparticles eliminated the concerns with colloidal silver, including argyria ("blue man syndrome"), convulsions, and gastrointestinal side effects. Silver nanoparticles prove to be a stronger and more effective antimicrobial agent than colloidal silver without the toxicity or side effects. No cases of convulsions with silver nanoparticles have been reported, and because silver nanoparticles do not contain the salts and proteins of colloidal silver, the gastrointestinal side effects are eliminated. Chemically, silver nanoparticles are extremely stable and nonvolatile.

Due to the small size and large surface area, much smaller doses of silver nanoparticles are necessary for medical efficacy, further increasing safety. Silver nanoparticles produce the highest electrical and thermal conductivity of all metals; therefore, these nanoparticles have not only chemical activity against microbes but also thermal and electric activity.

Action of Silver Nanoparticles

Silver nanoparticles penetrate bacterial cell walls, causing structural changes to them, increasing membrane permeability, which leads to bacterial cell death. Silver nanoparticles prevent cell division and DNA replication and possess inhibitory and bactericidal effects against gram negative and gram positive bacteria, including *Streptococcus pneumoniae*, *Staphylococcus aureus*, and *Enterococcus faecalis*.

Through modulating the phosphotyrosine profile and interfering with transduction signaling of bacteria, silver nanoparticles inhibit bacterial growth.[5] Inhibition of biofilm formation prevents drug-resistant bacteria, as silver nanoparticles disrupt the cytoskeleton of bacteria.[7] Biofilm formation of *Pseudomonas aeruginosa* and *Escherichia coli,* for example, and other gram negative bacteria are inhibited and disrupted by exposure to silver nanoparticles.[9] Brushing teeth with silver nanoparticles reduced the total and number of bacterial genome of supra- and subgingival more effectively than chlorhexidine.[20]

As an antifungal, silver nanoparticles cause die-off of multiple strains of *Candida,* including *C. albicans, C. glabrata, C. parapsilosis,* and *C. krusei,* as well as *Trichophyton*, which causes jock itch, ringworm, and toenail fungus. By disrupting cell membrane structure and inhibiting the normal budding process of fungi, silver nanoparticles destroy fungi habitation, healing fungal-related conditions. Through cell-wall disruption of the fungi, including *Candida albicans*, silver nanoparticles strongly inhibit their biofilm formations.[8]

Silver nanoparticles also have strong antiviral capabilities, lowering counts of viruses including HIV, herpes, RSV, hepatitis B, and multiple others. The mechanism of action of silver nanoparticles on viruses comprises glycoprotein binding, thereby inhibiting viral replication at early onset of the infection.[22]

As a potent tool against parasitic infections, silver nanoparticles have proved effective against *Entamoeba histolytica*, *Cryptosporidium parvum*, and *Plasmodium falciparum*, the intracellular parasite causing malaria.[11,12] *Babesia microti,* another intracellular parasite, behaves similarly to *Plasmodium falciparum*, is resistant to most antimicrobial therapy, and is regarded as a coinfection of chronic Lyme disease. Since silver nanoparticles destroy *Plasmodium falciparum*, which resembles *Babesia microti,* the possibility that silver nanoparticles may be also efficacious in the treatment of *Babesia microti* is plausible despite the lack of current research.

Biofilm and Silver Nanoparticles

Biofilm is the "cocoon" or gelatin that microbes create around themselves to prevent immunological attacks, providing self-protection. Microbes form complex networks of biofilm, such as dental plaques, which are difficult to eradicate, thus allowing the microbes to hide from both antibiotic therapy and the immune system, making diagnosis and treatment of intracellular infections such as babesiosis and borreliosis difficult.

Unlike antibiotic therapy, which encourages an increase in biofilm formation, silver nanoparticles interfere with biofilm development, reducing the virulence of infections.[18] Silver nanoparticles, furthermore, enhance drug or herbal transport to the infections, acting as delivery a system to the biofilm. For example, when silver nanoparticles merge with curcumin, an extract of turmeric, biofilm destruction is significantly potentiated.[11]

Many of the virulent bacteria, such as *Borrelia burgdorferi*, produce endotoxins and biotoxins that further damage joints, tissues, and organs, often causing pain and inflammation. Recent research by Lambadi et al. confirms not only the biofilm control but the removal of endotoxins by silver nanoparticles,

continued on page 57 ➤

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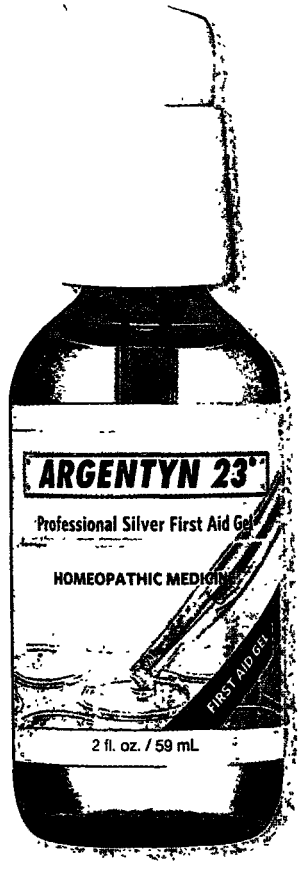

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➤ *continued from page 55*

illustrating further advantage of silver nanoparticles as a promising treatment for chronic Lyme disease and its associated infections.[18]

Other Effects of Silver Nanoparticles

Modulation of pro-inflammatory cytokines, such as IL-2, IL-6, TNF-α, by silver nanoparticles in cancer cells, specifically in leukemic cells and in infections, contributes further to potential benefits in patients with cancer and concurrent chronic Lyme disease.[17] Further studies are needed to assess silver nanoparticles' effect on pro-inflammation of monocytes, since they may also upregulate pro-inflammatory cytokines, as shown in one study.[19] Silver nanoparticles used in mice temporarily disturbed the intraendothelial junction of cells and induced mitochondrial stress, which was corrected with combination therapy with sodium selenite, or selenium supplementation.[14–16]

As the microbiome controls approximately 70% of the immune system, the role of oral silver nanoparticles in disturbing the gut microbiome must be considered. Fortunately, silver nanoparticles have a dose-dependent effect on the *Lactobacillus* genus and the *Firmicutes* population in rats, implying that careful oral dosing of silver nanoparticles becomes strategically important in protecting the microbiome.[21] Alternatively, the prudent use of a nutrition and dietary supplementation optimizing pre- and probiotics concomitantly with silver nanoparticle oral dosing is worthy in maintaining proper microbiome balance and protection.

Clinical Cases Observed

A 55-year-old female with chronic pain syndrome, fibromyalgia, neuropathy, and a diagnosis of chronic Lyme disease with multiple infections was treated with two rounds of intravenous and oral hydrosol silver for 4 weeks. Symptoms of chronic pain, neuropathy, and inflammation significantly reduced, and the patient was able to return to functional status.

A 46-year-old female with a diagnosis of interstitial cystitis caused by chronic Lyme disease was given two rounds of a moderate dose of intravenous and oral hydrosol silver. Her chronic interstitial cystitis resolved within a few weeks of initiating treatment.

A 52-year-old female with chronic Lyme disease with presenting symptoms of brain fog and chronic sinusitis had her chronic symptoms resolve upon nebulizing hydrosol silver.

Conclusion

Silver nanoparticles provide strong antimicrobial therapy against hundreds of microbes, including intracellular bacteria, parasites, fungi, and viruses. By disrupting biofilm formation, reducing endotoxins, and destroying microbial replication and virulence, silver nanoparticles play a powerful role in the complex treatment of chronic Lyme disease and associated infections, often reducing clinical symptoms and improving physical function. Though silver nanoparticles have clinically proved to be very safe, further research is needed to understand the immunological modulation of silver nanoparticle on humans fighting chronic infections. In the meantime, to minimize any possible adverse reactions from oral or intravenous use of hydrosol or silver nanoparticles, selenium or sodium selenite along with probiotics should be considered.

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◆

Nooshin K. Darvish, ND, FICT, is a licensed naturopathic physician, fellow in integrative cancer therapies, and Lyme-literate physician. She is one of the very few physicians who completed a two-year medical residency in naturopathic family medicine at Bastyr University. For over 20 years, she has specialized in diagnosing and treating chronic diseases including Lyme disease, cancer, and neurological disorders, using an integrative and noninvasive approach. Dr. Darvish blends the best of Western, Eastern, natural, bioenergy, functional, and anti-aging medicines to diagnose and create effective evidence-based individualized treatment plans. She trains medical and naturopathic doctors nationally and internationally in integrative and holistic medicine. She is the founder and medical director of Holistique Medical Center in Bellevue, Washington. For more info, please visit www.DrDarvish.com or e-mail info@DrDarvish.com.

Lyme and Lyme-Like Disease: The New Epidemic

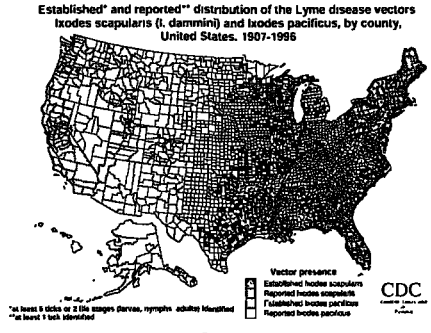
by Tracie Leonhardt, DO

According to the Centers for Disease Control, there are approximately 300,000 cases of Lyme disease documented, with 30,000 new cases reported each year. Those statistics are likely conservative, as many physicians have not tested for Lyme in the past, and testing results have not been totally reliable. Lyme borreliosis has a worldwide distribution and is the most common vector-borne disease is the US, according to the CDC. The CDC has now upgraded Lyme disease to official epidemic status in the US.

Lyme is caused by the *Borrelia burgdorferi* spirochete. The spirochete's life cycle begins when larval-stage ticks are infected via the bite of an infected *Ixodes* tick. These larvae then mature into nymphs, which are about the size of the a pinhead. These ticks feed upon small mammals such as white-footed field mice, catbirds, squirrels, and opossums. Whereas infection in these natural hosts does not lead to disease, infection of humans can result in Lyme disease.

In January 2016, it was reported by Harvard University that Lyme–disease carrying ticks are now in half of all US counties.[1] There are more than 20 species worldwide of *Borrelia*, with 7 identified species described in the US. The species so far identified in the US are *B. burgdorferi* (Bb), *B. americana, B. andersonii, B. bissettii, B. californiensis, B. kurtenbachii*, and most recently *B. mayonii* in the Midwest.[2] Of these, at least 5 have been associated with Lyme disease in the US: Bb sensu stricto, *B. americana, B. andersonii, B. bissettii,* and *B. mayonii*. The additional frustrations regarding proper diagnosis and coinfections arise, as very few ticks are carrying only one infectious vector. In addition to transmitting Bb into various animal hosts, the well-known black-legged tick (*Ixodes scapularis*) can also transmit strains of other infections such as *Anaplasma, Bartonella, Ehrlichia*, and *Babesia*. For example, *Ixodes scapularis* not only can carry the Lyme spirochete, but may also be carrying anaplasmosis, babesiosis and Powassan disease.[3] This makes diagnosis and identification much more difficult. According to the US Department of Health and Human Services, the black-legged tick, lone star tick, brown dog tick, groundhog tick, Gulf Coast tick, Rocky Mountain wood tick, soft tick, western black-legged tick, and American dog tick can carry tick-borne infections.

Dr. Richard Horowitz stopped calling this phenomenon Lyme disease and named it multiple systemic infectious disease syndrome (MSIDS).[4] This seems to fit the diagnosis much better, as very few chronic Lyme patients only have Lyme disease. These infections attack the immune system, stimulate an inflammatory cascade, and can attack multiple systems in the body, including the skin, brain, nervous tissue, and heart.



US Map of Lyme via CDC

Erythema Migrans

Lyme, the Infection

In 1988, Asbrink and Hovmark conceived of untreated Lyme disease as having three phases. Phase 1 represented early, localized infection, the hallmark of which was erythema migrans (EM) and its variations. This phase included fever, muscle aches, headache, nausea and fatigue. Phase 2 witnessed early dissemination of the infection with worsening of malaise and fatigue, as well as the appearance of new cardiac and arthritic signs and symptoms including AV heart block, myocarditis, migratory joint pains, and synovitis. Phase 3 saw late dissemination, with the appearance of polyneuropathy, neurocognitive and neuropsychiatric abnormalities, and meningitis, as well as chronic arthritis and debilitating fatigue.[5]

Lyme and the Inflammatory Pathways

Inflammation is the body's attempt at self-protection. Its goal is to remove harmful stimuli, including damaged cells, irritants, or pathogens so that the body can begin the healing process. Lyme and its coinfections incite a hyperresponse of cytokine formation.

Cytokines are proteins made of various types of white blood cells with their function being to make antibodies work more effectively, increase WBC activity, recruit other WBCs to the site of infection, and decrease viral and bacterial replication. Cytokines are produced when infection, oxidizing agents, cytokines, toxins, and other agents stimulate immune cells. Once the immune cells are stimulated, NF-KB causes genetic programming for the production of cytokines and the activation of the leukocytes. With Lyme and other related infections, there is an overproduction of cytokines, inducing an excessive inflammatory response that leads to chronic inflammation. This may manifest itself as a suppressed immune system, pain, reduced hormonal production from the thyroid and adrenal glands, sleep disturbances, cognitive decline, fatigue, myalgias, and depression.[6]

The dysregulation of cytokines and chemokines is a central feature in the development of neuroinflammation, neurodegeneration, and demyelination in both the central and peripheral nervous systems. This process can lead to activation of the microglia, which may mediate neuronal and glial cell injury and death through the production of the pro-inflammatory factors such as cytokines.

About 15% of the patients with Lyme disease develop peripheral and central nervous system symptoms and involvement. Research indicates that the activation of the inflammatory pathways plays a causal role in the often debilitating and painful symptoms.[7]

Lyme or Lyme-like diseases can cause arthritis, carditis, and neurologic deficits. When the nervous system is involved, it is called Lyme neuroborreliosis (LNB).[8] Microglia and astrocytes are key players in the immune responses within the central nervous system. Studies have shown that microglia and astrocytes express toll-like receptors that play a major role in innate immune responses against microbial pathogens.[9] Peripheral nervous system involvement can include facial nerve palsy (Bell's palsy), neurogenic pain radiating along the back into the legs and feet, limb pain, sensory loss, or muscle weakness. Central nervous system involvement may manifest as headache, fatigue, memory loss, learning disability, depression, meningitis, and encephalopathy. Significantly elevated levels of the inflammatory mediators interleukin-6 (IL-6), IL-8, CCL2, and CXCL13 were found as well as increased cell counts of white blood cells in the cerebral spinal fluid.[10]

Chemokines such as IL-8 and CCL2 are known to mediate the influx of immune cells in the central nervous system in the presence of bacterial meningitis. CXCL12 is known to be the major determinant of B cell recruitment into CSF during neuroinflammation.[11] In animal models, upon examination of the dorsal root ganglia, the ganglia showed inflammation with neurodegeneration, along with apoptosis of neuronal and satellite glial cells. Lyme, as a pathogen, also activates the coagulation system by directly turning on the clotting cascade to increase the formation of fibrin leading to hypoxia. This is why the fibrinogen levels may increase in Lyme patients. This process of the activated coagulation pathway is stimulated by the inflammatory cytokines. Some of the pathogens that will activate the inflammatory and coagulation pathway are HHV6, EBV, CMV, *Mycoplasma*, HS1 and HS2, *Chlamydia*, *Brucellosis*, *Babesia*, *Ehrlichia*, *Bartonella*, and *Borrelia*, many of which are coinfections of Lyme disease. This becomes important when talking about the difficulty in treating these infections and their resistance against treatment. Many bacteria and viruses use fibrin to form protective barriers around themselves, referred to as *biofilms* or *cyst formation*. The layer of fibrin covering the microbe makes it almost undetectable by the immune system.[12]

Biofilms and the Difficulty in Treatment

A biofilm is an accumulation of microbial cells that is irreversibly associated with a surface and enclosed in a matrix of primarily polysaccharide material.[13] I usually describe this to my patients as like the goo that is left over after pulling up duct tape. Biofilms are the predominant phenotypes in natural and pathogenic ecosystems. As a pathogenic mechanism, they serve as a population-level virulence factor to provide the infectious organism with virulence traits that a single organism cannot possess. These traits are protective to the invading organism and allow them to persist in the host despite the innate and adaptive immune systems. Biofilms usually are associated with chronicity or persistence – as opposed to acute virulence traits such as toxin production. Most chronic infectious disease processes are associated with biofilm production. The biofilm allows for the infection to attach to the host. The biofilm protects the organism from the host's adaptive immune response, along with being attacked by phagocytes. Biofilms also provide an ideal setting for elevated levels of gene transfer for the invading organism. The gene transfers occur since nearly all of the chronic pathogens that form biofilms contain inducible energy, requiring horizontal gene transfer mechanisms that serve a nonnutritive role, as opposed to using the DNA only as a food source. Horizontal gene transfer (HGT) is defined as the movement of genes between two unrelated cells usually in a unidirectional manner.[14] This allows bacteria to transmit genes vertically to daughter cells, or by HGT. Three forms of HGT have been classified: transformation, conjugation, and transduction.

Diagnosis of Lyme Disease

There is a lot of controversy on how to diagnose Lyme. The testing methods available are less than ideal, with low sensitivity levels. The standard of care has a two-tier serological test. First tier screening is performed by an ELISA, which should be done in all suspected

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patients who believe that they had a possible exposure 3 to 4 weeks prior. This is when Lyme-specific IGM serology is also detectable, followed months later by a Lyme-specific IGG response. The ELISA test has a low sensitivity, and therefore many physicians will check western blot. A study published in the *British Medical Journal* found that the overall sensitivity of the combined ELISA/western blot was only 56%.[15] The issues with western blot do occur with the strain that the lab uses, as there are multiple strains of *Borrelia* present in the US and over 300 strains worldwide. *Borrelia*-specific bands reflect outer surface proteins on the surface of the organism that are seen more often in Lyme disease than in other infections. These bands include 23kDa (outer surface protein C [OspC]), 31kDa (OspA), 34kDa (OspB), 39kDa, and 83-93kDa. It is thought that if any of these bands are present on western blot, there is a high likelihood that the patient may have been exposed to Lyme. The most commonly used strain for testing is the B31 strain; however, some think that the 297 strain is more reliable. There is also PCR (polymerase chain reaction) testing, a DNA test with the limitation that it may require multiple samples over time.[16,17] Most believe that Lyme is a clinical diagnosis, and that lab results serve to support the clinical diagnosis. There are the supporting tests such as complement 3A and 4A levels, and CD 57 counts. Complement split products are reportedly elevated in patients with acute Lyme disease. A study by Ray Stricker showed that patients with predominantly musculoskeletal symptoms of Lyme disease had significantly increased levels of C4a compared with controls. The study also showed that response to treatment with antibiotics was associated with a significant reduction in C4a levels. [18] Another study showed that patients with chronic Lyme disease had decreased levels of CD 57 lymphocytes over 10 years. This study concluded that chronic Lyme disease is associated with a persistent immunologic defect that prevents the infection from being cleared by the immune system.[19] CD 57 is a marker of nature killer cell differentiation and has been most widely explored as a marker of replicative senescence on T cells.[20] CD 57 is still not fully known and is not recommended for use by the CDC; however, many physicians who treat Lyme every day use the CD 57 count to monitor treatment. On the horizon in phase II trials is nanotrap technology. This will have a high sensitivity of over 90% and specificity. This test employs nanotrap particles to concentrate urinary OspA and use a high specific anti-OspA monoclonal antibody as a detector of the C-terminus peptides.[21]

Treatment Options for Lyme

There are a lot of theories of how to treat Lyme disease. Everyone agrees that for the acute case, treat with antibiotics for 2 to 4 weeks. But for chronic Lyme there is a lot of disagreement. Accepted therapy is long-term antibiotics, but do you use one or three to four? Do you use an intracellular antibiotic, a cyst buster, or an outer membrane antibiotic? The International Lyme and Associated Diseases Society (ILADS) recommends antibiotic therapy – although some physicians are advocating higher doses and combination therapies. It is recommended to start prophylaxis treatment for a black-legged tick bite. Treatment options for an EM rash include 20 days of azithromycin, cefuroxime, doxycycline or amoxicillin. Long-term treatment is sometimes required for patients with chronic Lyme. It is thought that Lyme spirochetes can penetrate into the bone marrow and this is one of the factors that make it difficult to kill.[22] A study done by Dr. Christa Muller-Sieberg found that some stem cells lived as little as 5 months and others lived longer than 3 years. If this is true and Lyme can penetrate stem cells, this may account for some of the relapses with shorter treatment.

Below is a table of antibiotic treatment options.

Alternative Therapies for Lyme

Many patients are against prolonged antibiotic usage – so what are their alternatives? There are several immune-supportive herbal medications such as cordyceps and reishi – although these are not curative. Byron White has several preparations for Lyme and the coinfections. These are herbal tinctures that are very potent and need to be used with a trained practitioner and in

Antibiotic Treatment Options

Cell Wall Form	Cystic Forms	Intracellular Location
Penicillins • Amoxicillin • Augmentin • Bicillin (IM)	Plaquenil	Macrolides • Zithromax • Biaxin
Cephalosporins • Ceftin • Omnicef • Cedax • Suprax	GSE	Quinolones • Cipro • Levaquin • Avelox • Factive
IV Cephalosporins • IV Rocephin • IV Claforan	Flagyl Tindamax	Rifampin Tetracyclines • Doxycycline • Minocycline • Tetracycline HCL
Other IV Medication • IV Vancomycin • IV Primaxin		Other IV medication • IV doxycycline • IV Zithromax • IV Levaquin/Avelox • IV Rifampin

small doses. Ozone therapy has been shown to be beneficial, as it increases the immune response. Ozone has also been shown to kill bacteria and viruses on contact, and it prevents viruses from adhering to the cell wall.

The most effective alternative treatment that we have found is IV silver hydrosol with Argentyn 23. Silver is well known to be a broad-spectrum antimicrobial agent, but it has also been reported that it has antiviral, anti-inflammatory, and antibiofilm activities and enhances wound healing.[23] Some studies suggest that the particle size, shape, surface charge, surface coating, solution chemistry, and solubility affect silver's toxicity.[24] Silver is considered virostatic – stopping the replication of the virus on contact.[25] Silver is processed by the liver, and the cofactor in the liver for silver elimination is selenium dependent. Therefore, it is suggested to make sure that the patient is taking selenium while taking silver.[26] When using silver, we usually start with oral doses to clear the spirochete and the stealth form (L-form). We use only 23 ppm silver hydrosol as an IV drip at a slow rate. In our practice, using silver in high doses has been very effective in not only having our patients symptom free but also their labs indicating that they are infection free. Our longest-term patient thus far has been symptom free for 4 years.

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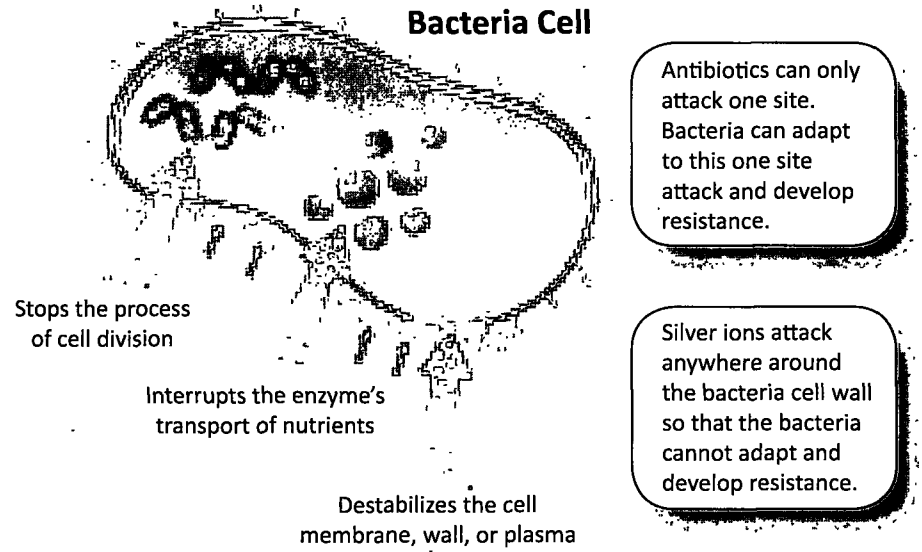
Dr. Tracie Leonhardt graduated from Southeastern University (now known as Nova University) in 1992, completed her internship at Suncoast Hospital in Largo, and completed her residency in emergency medicine at Midwestern University in Chicago, Illinois, in 1996. Dr. Leonhardt began her 14-year tenure in emergency medicine at Northside Hospital in St. Petersburg, Florida, in 1996, where she earned the titles of associate medical director of the Emergency Department, chairperson of the Emergency Department, and then medical director of the Emergency Department. During her tenure in the Emergency Department, Dr. Leonhardt also worked with medical control for over 10 years as an online medical control physician, in which she worked closely with our first responders in the field while enhancing their education. Dr. Leonhardt was honored to present a lecture to the American Osteopathic Society in New Orleans in 2010 on the subject of type 2 diabetes.

In 2003, Dr. Leonhardt was diagnosed with type 2 diabetes and went on a quest to improve her health. Despite optimal medical treatment for her diabetes, she worsened in her disease process, leading to 7 different medications, including high-dose insulin. Unhappy with the traditional standard of care, she started the search for new innovative methods of treatment. This journey led her to study bariatric medicine (weight loss). She proceeded to lose just under 100 pounds and stop taking her medications for diabetes – via diet control. Dr. Leonhardt has since extensively studied the metabolic and hormone systems, which has led her to the discovery that type 2 diabetes can be reversed in certain patients. This has led to her reversal of type 2 diabetes for the past 5 years. Since practicing bariatric medicine for the last 5 years, Dr Leonhardt decided to expand her practice to include the rest of the picture.

Dr. Leonhardt has recently completed her advanced fellowship, passing both the written and oral exams in Anti-Aging and Regenerative Medicine. She is currently enrolled in the master's program at USF medical school in metabolic and nutritional medicine. Dr. Leonhardt, while currently practicing and a leading expert in weight management, is branching out to the entire metabolic and nutritional spectrum of medicine, known as integrative and functional medicine.



Lyme Disease: Integrative Approaches to Treating Tick-Borne Disease

by CJ Puotinen

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Forty years ago, hardly anyone outside of Lyme, Connecticut, knew about the mysterious illness that affected local residents. Although its symptoms had been observed for hundreds of years, Lyme disease wasn't officially recognized until the mid-1970s, and its infectious agent, the tick-borne *Borrelia burgdorferi* spirochete (a spiral-shaped bacterium), was not identified until 1982.

Most Lyme disease patients shared a history of outdoor activities that exposed them to ticks, and many experienced a distinctive bull's-eye rash, flu-like symptoms, and arthritis pain. A simple antibiotic treatment plan was developed, and Lyme disease became a straightforward, easy-to-treat illness.

At least, that was the hope, and for many that approach worked well. But, for a variety of reasons, the treatment did not help everyone.

Challenges in Diagnosis

At first some patients with obvious Lyme disease symptoms were misdiagnosed because they didn't live in Connecticut, where the disease was discovered. The Northeast and northern Midwest regions of the US are now known as Lyme disease hot spots, and the Centers for Disease Control and Infection (CDC) estimates that over 300,000 Americans contract Lyme disease every year, with every state except Hawaii reporting cases. In its August 2015 *Emerging Infectious Diseases* report, the CDC says that a "geographic expansion of high-risk areas" is taking place.[1]

The accuracy of diagnostic blood tests has been another factor, with the standard enzyme-linked immunosorbent assay (ELISA) and western blot tests producing incorrect results 50% to 75% of the time. The International Lyme and Associated Diseases Society (ILADS) considers Lyme disease a clinical diagnosis because current testing methods are unreliable. According to Richard Horowitz, MD, who treats Lyme disease patients in New York, there are 100 different strains of *Borrelia* in the US and over 300 worldwide. "Blood tests often do not cross-react between these strains," he notes, "and consequently can lead to false negative results."[2] Although new and more accurate tests have been developed, most physicians continue to rely on the ELISA and western blot.

In addition, spirochetes don't behave the way other bacteria do. Lyme disease's closest relative, also caused by a spirochete, is syphilis. Both illnesses are known for their ability to survive treatment, evade detection, and recur. Syphilis is sexually transmitted, while Lyme disease is spread by ticks, but both have been called "great pretenders" because their symptoms mimic so many other illnesses.

Now add coinfections. Ticks inject their hosts with whatever pathogens they carry, and a 2014 survey of over 3000 patients with chronic Lyme disease found that more than 50% had coinfections, with 30% reporting two or more.[3] The most common coinfections were babesia (32%), bartonella (28%), ehrlichia (15%), mycoplasma (15%), Rocky Mountain spotted fever (6%), anaplasma (5%), and tularemia (1%). A Canadian study found similar rates

Homeopathy

Homeopathy, another branch of energy medicine, has treated many Lyme disease patients, including book author Katina Makris. One popular homeopathic blend said to reverse mitochondrial deficiency is BX Energy Catalyst, also known as the BX Protocol (bxprotocol.com). The Delta Institute, whose research has led to the development of the Bx Energy Catalyst, describes it as "a highly diluted homeopathic compound that elicits efficient fluorescent absorption of Bioelectric toxins through accelerated photocatalytic oxidation." *Well Being Journal* reader Sally Schutz, MD, now recovered from Lyme disease, says she benefited from and recommends the protocol (Schutz: Ibeatlyme.com and FlourishingFullyLymeSecrets.com).

of coinfection in patients with chronic Lyme disease.[4] According to experts at LymeDisease.org and similar organizations, Lyme disease patients have been incorrectly diagnosed with chronic fatigue syndrome, fibromyalgia, multiple sclerosis, amyotrophic lateral sclerosis or ALS (Lou Gehrig's disease), nonspecific autoimmune diseases, Parkinson's disease, depression, rheumatoid arthritis, and psychiatric disorders. Most late-stage or chronic Lyme disease patients complain of exhaustion, cognitive impairment (brain fog), joint pain, poor sleep, mood problems, and muscle pain, all of which can be incapacitating.

Treatment Considerations

Western medicine's initial approach to Lyme disease remains widely accepted. The Infectious Disease Society of America (ISDA) considers Lyme disease difficult to contract and easy to cure with short-term antibiotic use. If symptoms recur, further antibiotics are not recommended. Instead, patients are assumed to have an autoimmune disorder or a psychiatric problem, not a persistent infection. Medical insurance companies that follow ISDA guidelines deny coverage to patients whose physicians prescribe extended antibiotic therapy or a variety of drugs that attack the spirochetes in different ways.

According to Pat Smith, former president of the national nonprofit Lyme Disease Association, "Obsolete lab tests that pick up less than 50% of cases make it difficult for Lyme patients to get diagnosed. If lucky enough to be diagnosed, they have to fight for treatment. When IDSA protocols fail, they are denied further treatment. Physicians who try to help these patients may find themselves brought up on charges before medical boards. Parents who seek treatment for their sick children may find their children torn from their homes by state agencies."[5]

When conventional treatments fail, patients look elsewhere for answers, and the past 30 years have produced holistic protocols, Lyme disease support groups, Lyme research organizations, books, magazine articles, and other resources.

Reading Material

So many books and other materials have been written about Lyme disease by physicians, patients, advocacy groups, and medical associations that it's hard to know where to start, but here are some detailed, user-friendly books and websites. For more Lyme-related titles, visit BioMed Publishing Group (lymebook.com) or search for *Lyme disease* at Amazon.com.

Why Can't I Get Better? Solving the Mystery of Lyme and Chronic Disease, by Richard Horowitz, MD. St. Martin's Press; 2013; hardcover; 422 pp.; $29.99.

In New York's Hudson River Valley, where it is endemic, Horowitz has treated over 12,000 patients for Lyme disease. His approach combines up-to-date research and testing, conventional and alternative treatments, and a detailed review of Lyme disease and its ramifications. Horowitz created the term *multiple systemic infectious disease syndrome,* or MSIDS, to more accurately describe the condition. His 16-point Differential Diagnostic Map is an important diagnostic tool. See cangetbetter.com for resources, including Horowitz's Lyme-MSIDS questionnaire.

Healing Lyme: Natural Healing of Lyme Borreliosis and the Coinfections Chlamydia and Spotted Fever Rickettsiosis, by Stephen Harrod Buhner. 2nd ed. Raven Press; 2015; paperback; 520 pp.; $24.95.

Healing Lyme Disease Coinfections: Complementary and Holistic Treatments for Bartonella and Mycoplasma, by Stephen Harrod Buhner. Healing Arts Press; 2013; paperback; 512 pp.; $19.95.

Natural Treatments for Lyme Coinfections: Anaplasma, Babesia, and Ehrlichia, by Stephen Harrod Buhner. Healing Arts Press; 2015; paperback; 448 pp.; $19.95.

These three books by one of the world's leading experts on healing plants and herbal medicine explain how Lyme disease and its coinfections can be treated using conventional drugs and natural methods. Buhner defines his target audience as patients who suffer from these difficult-to-treat conditions and the clinicians who treat them. Visit buhnerhealinglyme.com for protocols, resources, Q&A reports, cautions, and other important information.

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Hyperbaric Oxygen

Hyperbaric oxygen therapy, an exotic-sounding treatment that involves lying in a pressurized chamber filled with air and supplemental oxygen, was developed to treat decompression sickness, the illness that results when deep sea divers return to the surface too quickly. But it does much more than that. In 1998, Texas A&M professor William Fife, PhD, presented a study to the Hyperbaric and Undersea Medical Society showing that the Lyme disease spirochete, which is anaerobic (lives without oxygen), is weakened or killed by oxygen exposure during hyperbaric treatment.

The study included 90 patients, all of whom had failed to improve on intravenous antibiotics, some for as long as 5 years, and were continuing to deteriorate. They received 1-hour hyperbaric oxygen treatments twice daily for 1 to 9 weeks. All showed Jarisch-Herxheimer reaction (symptoms of pathogen die-off) within 4 days of beginning treatment. All but 4 showed significant improvement after treatment ended. Approximately 70% continued to feel well after recovery, while others had some degree of relapse but showed further improvement with retreatment. Fife concluded, "It is clear that this treatment improves the quality of life after all other treatments have failed." For information, visit the Undersea & Hyperbaric Medical Society (uhms.org), Hyperbaric Link (hyperbariclink.com), and the International Hyperbarics Association Inc. (uhms.org).

Lyme Disease

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Out of the Woods: Healing from Lyme Disease for Body, Mind, and Spirit, by Katina Makris. Foreword by Richard Horowitz, MD. Helios Press; 2015; paperback; 304 pp.; $17.99.

Out of the Woods starts with the author's harrowing Lyme disease experience, then reviews the illness, its prevention, laboratory testing, treatment options, self-help remedies, and more. After antibiotics failed to cure her, Makris treated herself with alternative therapies – all without prescription drugs. It helped that she is a classically trained homeopath, and homeopathy was an important part of her recovery.

Her health restored, Makris is a full-time Lyme disease patient advocate who travels, lectures, and maintains a long list of resources at outofthewoodsbook.com.

About Ticks

Ticks, which are eight-legged parasites, live just about everywhere and spend most of their lives looking for mates and good hosts, the latter being animals whose blood they suck. The carriers of most tick-borne diseases in the US are the black-legged tick (*Ixodes scapularis*), formerly known as the deer tick; the American dog tick (*Dermacentor variabilis*); and the lone star tick (*Amblyomma americanum*).

The University of Rhode Island's TickEncounter Resource Center (tickencounter.org) promotes tick-bite protection and disease prevention through education. Its website identifies ticks through illustrations, physical descriptions; locality maps; and photographs of each species' larva, nymph, adult male, adult female, partially fed female, and fully fed female.

Also see the website for information about tick-repellent clothing; treating your yard with a perimeter insecticide spray (which reduces the amount of insecticide needed); yard maintenance (remove leaves and leaf litter, avoid ground covers that give ticks a place to hide, and keep grass mowed); and other methods for reducing your tick population.

Which tick repellents work best and which are safe? All of the chemical treatments that help (DEET on the skin, insecticides on clothing) have potentially adverse side effects. For those who want to try less toxic repellents, some work well, though they need more frequent application. Ticks dislike rose fragrance, so try blending 20 drops of rose geranium or palmarosa essential oil with enough vodka, neem tincture, or bay rum aftershave to dissolve the essential oil. Start with 2 tablespoons of alcohol or tincture and add more as needed. Do not use isopropyl (rubbing) alcohol. When there is no longer a thin film of oil on the surface, add enough water, herbal tea, or aloe vera juice or gel to make 1 cup (8 fluid ounces). Apply frequently, avoiding the eyes. Shake well and spray on clothing, footwear, and bare skin. Alternatively, you can look for natural products designed to repel ticks, and test them to see if they work for you.

One of the most effective tick-control methods involves mice. When black-legged ticks hatch from eggs, they are usually pathogen free. Ticks become infected with disease-causing pathogens when they feed on host animals. White-footed mice (*Peromyscus leucopus*) are the main reservoir host for Lyme disease spirochetes, babesia protozoa, and anaplasma bacteria.

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Hyperthermia

Elevated body temperatures – that is, high fevers – have long been known to activate the immune system, increase the white blood cell count, fight infections, and speed recovery. The spirochetes that cause syphilis and Lyme disease succumb to temperatures above 106 °F (41 °C). Clinics in Germany and Austria, where hyperthermia treatment is used in conventional medicine, prepare patients with nutritional therapies and detoxification support, then combine hyperthermia with targeted antibiotics. See lymeandcancerservices.com.

Cannabis

It isn't endorsed by mainstream medicine for the treatment of Lyme disease, but medical marijuana (*Cannabis sativa*) advocates claim that it can relieve nerve pain and even kill the spirochetes that cause Lyme disease. For details, see *Cannabis for Lyme Disease and Related Conditions*, by Shelley M. White (BioMed Publishing Group; 2015). For those who prefer not to smoke or ingest the herb, topical cannabidiol, or CBD oil, is said to provide nonpsychoactive relief from pain, stress, and sleep deprivation. CBD products are widely sold and, if made from industrial hemp (nonmedical marijuana) plants, are legal in all states.

Organizations

The fastest way to take a Lyme disease crash course is to study the websites, videos, and publications of Lyme disease advocacy organizations. There are many more than the five listed here, but these will get you off to a good start:

- International Lyme and Associated Diseases Society: ilads.org
- Lyme Disease Association Inc.: lymediseaseassociation.org
- Lyme Disease Foundation Inc.: lyme.org
- Lyme Disease Organization: lymedisease.org
- Canadian Lyme Disease Foundation: canlyme.com

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- ***Dr. Julie A. Griffith, MD, MS, CMT***

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An easy way to reduce a yard's tick population is to help rodents repel them. One mouse-targeted device is the Tick Tube (ticktubes.com), a cardboard tube containing cotton treated with the insecticide permethrin. Distributed throughout the yard in late summer and early spring for best results, the tubes provide nesting material that keeps mice and their young free from ticks. Another is the Tick Box (tickboxtcs.com), a child-proof bait container that applies the insecticide fipronil in low concentrations to mice, chipmunks, shrews, and other rodents that host ticks.

Dogs are as susceptible to tick-borne illnesses as humans are, and a well-maintained tick-free yard can be the family dog's best protection. Watch for ticks that ride in on pets and then attach themselves to humans. Use a pet-safe repellent, inspect your pets daily, and consult your veterinarian.

If You Are Bitten

Daily inspections, the use of tick repellents, and the wearing of tick-resistant clothing (long pants tucked into socks, long sleeves, and tucked-in shirts) help prevent tick bites, but they can still happen. According to the TickEncounter Resource Center, which has tested several methods, the best way to remove a tick is with pointy tweezers held just behind the tick's head. Watch the demonstration video on the center's website for clear instructions.

Then identify the tick with the help of online photos, your local county extension office, or other experts. To check for any of 11 tick-borne pathogens, send it to the University of Massachusetts Laboratory of Medical Zoology. See order forms at tickencounter.org or the University of Massachusetts' TickReport.com. Individual tick tests cost approximately $50.

The immediate application of a drop or two of tea tree oil (essential oil of *Melaleuca alternifolia*), repeated frequently on the bite site for an hour or two, may help prevent the spread of pathogens. Apply only once to dogs, as too much causes temporary paralysis. Tea tree oil should never be applied to cats, even if diluted. Consult your veterinarian about protecting your dog, cat, and other pets.

Most experts, including herbalist Stephen Harrod Buhner and homeopath Katina Makris, agree that the right antibiotics taken immediately after an infected tick bite or the development of a Lyme disease rash can be the most effective treatment. It is after an infected bite develops into a more advanced case that a simple course of antibiotics is less likely to effect a cure.

Supportive Therapies

Lyme disease experts often recommend a diet that avoids sugars and starches (favorite foods of spirochetes), herbs and supplements that support the immune system, acupuncture, massage therapy, emotional healing, detoxification, and other self-help and restorative treatments. There is no one-size-fits-all protocol for tick-borne illnesses because there are so many variables, but the protocols in the sidebars with this article have helped many Lyme disease patients improve or recover.

Notes

1. Kugeler KJ, Farley GM, Forrester JD, Mead PS. Geographic distribution and expansion of human Lyme disease, United States. *Emerg ing Infectious Dis.*eases, August 2015;Volume 21, Number (8—)August 2015., *Dispatch*, "Geographic Distribution and Expansion of Human Lyme Disease, United States," www.cdc.gov
2. Horowitz R *Why Can't I Get Better, ?*by Richard Horowitz, MD, page St. Martin's Press; 2013:62. See also Basic information about Lyme disease [Web page]. ILADS. http://www.ilads.org/lyme/about-lyme.phphttp://www ilads.org/lyme/about-lyme.php
3. There are 5 subspecies of *Borrelia bBurgdorferi*, over 100 strains in the USA, and 300 strains worldwide. This diversity is thought to contribute to the antigenic variability of the spirochete and its ability to evade the immune system and antibiotic therapy, leading to chronic infection.
4. News: IDSA ignores IOM recommendations for Lyme guidelines [online press release] LymeDisease.org. http://www.prnewswire.com/news-releases/idsa-ignores-iom-recommendations-in-lyme-disease-treatment-guidelines-development-according-to-the-lyme-disease-association--lymediseaseorg-300078777.html
5. See http://www.LymeDisease.org. ◆

CJ Puotinen is a journalist who has studied Lyme disease since 1993, when both she and her Labrador retriever were treated for it in New York. She now lives in Montana.

Clinical Insights from the Sophia Health Institute

by Dietrich Klinghardt, MD, PhD, and Dr. Christine Schaffner

Introduction

Sophia Health Institute (SHI) is located outside Seattle, Washington, and specializes in the treatment of complex chronic illness. Dr. Dietrich Klinghardt founded SHI. Dr. Schaffner is both leading physician and clinic director at SHI together with a team of physicians and practitioners on the front line in treating patients who have often failed in both conventional and alternative therapies. This patient population inspires innovative treatment approaches and drives us to continually reevaluate their current working diagnosis and therapy model.

The goal of this article is to share clinical pearls from the team at Sophia. We hope that it opens a dialogue among practitioners in the field, so that we can continue to share successes, failures, and resources – and provide the most elegant path to healing for our patients.

The Four Guiding Principles

Dr. Klinghardt has distilled his 40 years of clinical experience and digesting information from seminars and think tanks into four guiding principles in the treatment of any chronic condition:

Principle 1: Balance the Impaired Metabolism. The first step is to support the patient's biochemistry and imbalanced metabolism. Many of the epigenetic influences caused by trauma and toxic exposures two or three generations ago add to the stresses of modern day life, which together creates deficiencies in key nutrients that are important cofactors for many metabolic pathways. Past toxic exposures in our chronically ill patients lead to imbalances in the endocrine system. Many patients need thyroid, adrenal, and reproductive hormone support. Treatments on this level should also address kryptopyrroluria, methylation, hypothyroidism, adrenal fatigue, perimenopause, lipid disorders, and more.

Principle 2: Detoxification. It is imperative for patients to have open routes of elimination so that they not only address the exposure and impact of environmental toxicants (glyphosate, aluminum, mercury, lead, etc.) on the body, but also can tolerate treatment. The primary organs of elimination include the intestines, liver, kidneys, lungs, and skin. In addition, many patients have impaired bile secretion and elimination. It is important to introduce detoxification strategies that patients are able to tolerate as one of the first steps to any effective protocol. Treatments may include coffee enemas, colon hydrotherapy, sauna therapy, castor oil packs, lymphatic drainage, intestinal binders, and drainage remedies.

Principle 3: Immune Modulation. Immune modulation is a strategy to bring the immune system back in to balance. Patients with chronic illness often have chaotic immune systems with some aspects being upregulated (i.e., TGF beta 1 in mold, C3a in Lyme, etc.), others being downregulated (low WBC, low CD57 in Lyme, etc.). Treatments on this level include neural therapy, homeopathy, acupuncture, craniosacral therapy, sauna therapy, the use of many herbs and low-dose immunotherapy (LDI; a form of applied homeopathy).

Principle 4: Decreasing the Pathogen Load. The last step in an effective treatment requires a solid method to diagnose biofilm-dwelling pathogens and microbes hiding inside the neurons (herpes viruses, *Borrelia*), inside the cells of the immune system (*Mycoplasma, Borrelia*), and in body compartments other than the blood, where most physicians are searching in vain for the illness-causing microbes. Treatments may include herbs, different methods of intravenous therapy, or pharmaceuticals.

Provoked Urine PCR Lyme Panel

During a visit from the lab that is now called DNA Connexions, personnel shared with us their ability to do polymerase chain reaction (PCR) testing on a number of pathogens including Lyme and relevant coinfections. Samples that they can test include blood, root canals, urine, and jawbone. In that meeting, a lightbulb came on for Dr. Klinghardt. We know that many of the Lyme-related microbes live inside biofilm communities deeply embedded in the client's tissues. What if we had our patients do a deep tissue bodywork provocation test – a Rolfing session – followed by taking a urine sample? And so we did, and the results surprised us: out of over 100 samples, only 2 patients had no Lyme-related DNA in their urine. Most of our patients tested positive for *Babesia, Bartonella, Borrelia;* and others.

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Clinical Insights

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As clinicians who treat chronic illness, we all know the controversy and challenges of demonstrating a patient's diagnosis purely on lab work. We often have to use a detailed history, clinical signs and symptoms, and alternative diagnostic strategies to come up with an effective treatment plan.

PCR testing is a highly sensitive technique that demonstrates the presence of infectious agents. Another benefit of PCR is that it does not depend on the immune system to produce antibodies. Some of the challenges of PCR testing are that it does not distinguish between dead and alive pathogens. In addition, there can be false positives with amplified DNA. Traditionally PCR Lyme tests are often negative in symptomatic patients, because they are testing the blood and we know Lyme does not live in the blood.

One of the main areas where Lyme lives is in the connective tissue. By stimulating the connective tissue through deep bodywork, such as Rolfing, or vigorous movement, microbes travel from the connective tissue through the lymphatic system. The lymph is moved into the blood and then excreted through the urine. The first urine post Rolfing is the perfect lab sample.

The DNA Connexions Lyme Urine Panel tests the following pathogens:

Lab Resources

DNA Connexions
5082 List Drive
Colorado Springs, Colorado 80919
http://www.dnaconnexions.com
719-219-2826; fax: 888-843-5832, 719-548-8220
info@dnaconnexions.com

IGeneX Inc.
795 San Antonio Rd.
Palo Alto, California 94303
http://www.igenex.com
800-832-3200; 650-424-1191; fax 650-424-1196

Armin Labs
Zirbelstraße 58, 2nd floor
86154 Augsburg - GERMANY
http://www.arminlabs.com/en
0049 821 780 931 50
0049 821 780 931 53
0049 821 780 931 52
info@arminlabs.com

iSpot Lyme
http://ispotlyme.com

OligoScan
https://www.oligoscan.net

- 4 different genes associated with *Borrelia burgdorferi*;
- 8 coinfections: *Babesia microti, Babesia divergens, Babesia duncani, Bartonella bacilliformis, Bartonella henselae, Bartonella quintana, Borrelia miyamotoi, Borrelia recurrentis, Ehrlichia chaffeensis*, and *Anaplasma phagocytophilum*.

Some patients have added on the DNA Connexions Full View Panel. This test includes over 88 different pathogens, including bacteria, viruses, fungi, and parasites. It evaluates HPV 16, HPV 18, botulism, and tetanus.

Since we have been using this test, we have a few interesting clinical anecdotes. One patient had his neurologist send a sample of cerebrospinal fluid from a spinal tap to the lab. In his urine sample, he was positive for *Borrelia burgdorferi* OSP B and OSP C, plus *Babesia divergens*, while his CSF was positive for *Babesia divergens* and *Bartonella bacilliformis*. Another patient sent in synovial fluid from her inflamed knee joint. Her results showed elevated *Entamoeba* species, HPV 39, HPV 56, and HPV 58.

It is too early for us to share our conclusions on how to use this test to guide clinical treatment. So far we have used this test to confirm that the patient really does suffer from Lyme disease and that we are on the right track with treatment. It is also validating for patients who have not had a strong positive Lyme or coinfection test to see positive PCR results. We welcome other clinicians to start using this test in practice and share their observations.

With our current knowledge, the ideal Lyme workup would include the following lab tests:

The IgM and IgG western blot lab will demonstrate the presence of antibodies to Lyme and coinfections. The conventional teaching states that IgM may be positive from week one of initial infection up to 6 to 8 weeks later and IgG is typically positive a few months after initial infection. However, insiders know that IgG and IgM oscillate forth and back in chronic Lyme and IgM can be positive at any time during the course of illness.

Provoked Urine PCR Lyme Panel will demonstrate the presence of Lyme and coinfection DNA and is the most reliable test.

The CD57 is controversial among physicians; however, we find that it often correlates with how the patient feels and can be used to guide clinical treatment.

The LTT-ELISPOT lab test (lymphocyte transformation test) measures activity of T lymphocytes and can be used to monitor the effectiveness of treatment. The iSpot Lyme test measures T lymphocyte activity toward *Borrelia burgdorferi*. Armin labs also offers an ELISPOT lab for not only *Borrelia* but also coinfections, *Chlamydia trachomatis*, TB, and viruses.

Glymphatic System

The recent discovery of the glymphatic system seems to be a key piece in understanding our patient's symptoms and strategies for treatment.

The glymphatic system is named after the role of glial cells in removing fluid waste products from the brain. It is a brainwide pathway that facilitates the exchange of cerebrospinal fluid (CSF) along para-arterial channels to exchange with interstitial fluid (ISF) along paravenous pathways.

Glial cells, specifically astrocytes, play a key role in removing waste products from the brain. Astrocytes form a network of conduits using projections called *end-feet* that surround arteries and veins inside the brain. The end-feet have aquaporins (water channels) to move CSF in the brain through arteries and ISF out of the brain through veins.

Researchers have demonstrated that the space between brain cells increases during sleep because the brain cells are shrinking to only 40% of their daytime size. The increased space allows for increased removal of toxins from the brain. We often use liposomal melatonin as not only a sleep aid but also a strategy to detoxify the central nervous system. Melatonin has been shown to remove mercury, aluminum, cadmium, viruses, parasites and bacteria from the brain – at night during deep sleep. Melatonin –not glutathione – is also the most potent antioxidant the brain uses to heal itself.

If waste is not properly removed from the brain due to aging, injury, or lack of sleep via the glymphatics it accumulates and may be a cause of neurodegenerative disease.

The lymphatic pump action is created by the swallowing mechanism. We swallow about 3000 times per day. To swallow we have to close our lips and bring the teeth together. A loss of vertical height of our teeth – caused by aging and wear and tear – causes a significant loss of ability of the glymphatic system to drain metabolic waste from the brain and a decrease in acetylcholine production.

The lymph flows downstream from the brain through the cribriform plate to the adenoids, from there to the tonsils, from there along the anterior cervical blood vessels to the interior jugular vein and subclavicular large vessels. Any obstruction in this pathway will cause back-up of waste in the brain with severe consequences. At Sophia we use procaine injections to open blocked lymphatic vessels (tonsil and adenoid injections), manual treatment to the anterior neck vessels, occlusal dental splints, endothelial healing agents (Deep Purple from BioPure), and more.

Professor Marco Ruggiero introduced us to a technique using therapeutic ultrasound to help facilitate drainage of the glymphatic system. The ultrasound uses low-intensity, subthermal mechanical waves to target the deep cervical lymph nodes. By improving the lymph drainage in these nodes, the glymphatic system is better able to drain and remove waste from the brain. In addition, there are three acoustic target points on the brain that ultrasound can be used to help facilitate brain drainage. They include two temporal areas and the occipital foramen.

We also teach our patients a self-treatment of the glymphatic system consisting of rhythmic cranial compression done at night, a self-unblocking massage to the anterior neck vessels, and liver compressions to facilitate the breakdown and transport of mobilized toxic material. ➤

Case Study

Patient G. K. is a 28-year-old female who has been treated for chronic fatigue, constipation, nausea, and head pain and pressure, and made slow gradual improvements.

Below is her urine sample post Rolfing session:

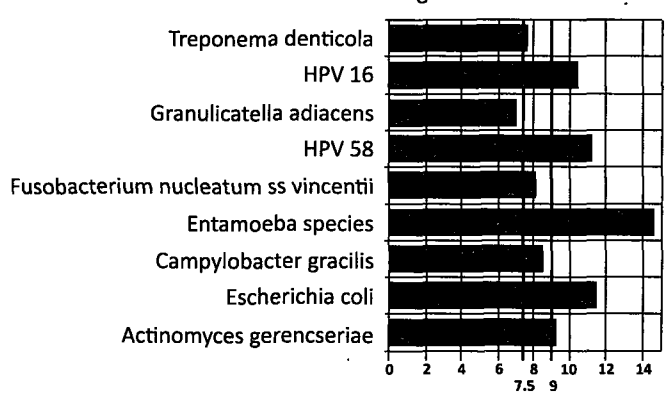
Lyme Panel

The underlined microbes were detected in the submitted sample:

Borrelia burgdorferi F7-NSA
B. burdorferi Osp A
B. burdorferi Osp B-NSA
B. burdorferi Osp C-NSA
Borrelia miyamotoi
Borrelia recurrentis
Anaplasma phagocytophilum
Babesia microti
Babesia divergens
Babesia duncani
Bartonella bacilliformis
Bartonella henselae-NSA
Bartonella quintana
Ehrlichia chaffeensis-SA

Full View Panel

The following bacteria were detected in the urine sample that was submitted for testing:



Her OligoScan demonstrated high aluminum:

Heavy Metal Test Report

		Result	Normal	High -	High +	Excess
Aluminum	(Al)	0.01573				
Antimony	(Sb)	0.00220				
Silver	(Ag)	0.00984				
Arsenic	(As)	0.00439				
Barium	(Ba)	0.00629				
Beryllium	(Be)	0.00495				
Bismuth	(Bi)	0.00778				
Cadmium	(Cd)	0.01211				
Mercury	(Hg)	0.00321				
Nickel	(Ni)	0.00354				
Platinum	(Pt)	0.00224				
Lead	(Pb)	0.00887				
Thallium	(Tl)	0.00152				
Thorium	(Th)	0.00094				

Heavy Metals Intoxication

Overall Intoxication

0% 78% ▲ 100%

While G.K.'s treatment plan already had strategies to treat chronic infections and support detoxification, these results highlighted some key priorities. We introduced regular injections of artesunate, an antimalarial drug that is a derivative of artemisia, to target *Entamoeba* and her underlying viral load. In addition, we added silica-based supplements to decrease aluminum. She has noticed a decrease in frequency and intensity of her head pain and pressure since the treatment protocol adjustments.

Clinical Insights

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Aluminum and Glyphosate

There is growing awareness of the increasing environmental exposure of aluminum and glyphosate, the active ingredient in the herbicide Roundup.

We have been tracking both of these toxicants in our patients and use several treatment strategies to decrease the body burden of both of these harmful substances.

Dr. Stephanie Seneff first opened our eyes to the biological impact of glyphosate. Her recent paper "Aluminum and Glyphosate Can Synergistically Induce Pineal Gland Pathology: Connection to Gut Dysbiosis and Neurological Disease" demonstrates the synergy of aluminum and glyphosate.[1]

In summary, through several mechanisms glyphosate increases the uptake of aluminum in the gut while blocking the uptake of a variety of needed trace minerals. The increased body burden of aluminum damages the pineal gland. Both aluminum and glyphosate disrupt the CYP450 enzymes, which have a role in melatonin production. In addition, glyphosate disrupts the production of tryptophan – a precursor to melatonin – by our beneficial bowel microbes. Both toxicants impair the body's production of melatonin. We just reviewed how sleep is imperative for the glymphatic system. Disrupted melatonin production directly impairs the brain's ability to detoxify.

It is difficult to demonstrate the body burden of aluminum using a traditional urine challenge test. Aluminum is firmly bound to tissue proteins and very hard to mobilize with any type of challenge test. We recently started using the OligoScan, a device that uses a technology called spectrophotometry to determine tissue trace element and heavy metal levels. The majority of our patients have overwhelmingly elevated aluminum. Aluminum is today the most prevalent toxic metal in our patients – ahead of lead, mercury, nickel, and tin.

Dietrich Klinghardt, MD, PhD, was born, raised and educated in West Germany, where he graduated from Freiburg Medical School/Albert Ludwigs University in 1975. He also studied psychology and completed a 3-year research project/PhD in angiology. He is internationally known for his successful treatment of chronic pain and illness. Dr. Klinghardt combines nonsurgical orthopedic medicine with immunology, endocrinology, toxicology, neural therapy, hypnotherapy, and energy psychology. He has been in practice for over 40 years and has been a pioneer in the diagnosis and treatment of Lyme disease, applying his 5 Levels of Healing model. Dr. Klinghardt founded Sophia Health Institute in Woodinville, Washington, where he sees patients.

Dr. Christine Schaffner is a board-certified naturopathic physician who graduated from Bastyr University. She completed her undergraduate studies in pre-medicine and psychology at the University of Virginia in Charlottesville, Virginia. Dr. Schaffner specializes in the treatment of chronic illness and is the clinic director of Sophia Health Institute in Woodinville, Washington.

It is also challenging to demonstrate the body burden of glyphosate. We look at PON1 gene status and exposure history to determine necessity of treatment. We support PON1 epigenetically with antioxidants such as açai, pomegranate, vitamin C, selenium, and vitamin E. We also use low-dose immunotherapy to facilitate the removal of glyphosate and other herbicides that typically are in the same cocktail. When we split-sampled patients' urine in the past, typically the US labs did not find any glyphosate, while the German labs found significantly elevated levels in the same urine. A new US-based urine glyphosate test is now available that we do not have clinical experience with yet.

Our current aluminum detoxification strategies include silica-based products. We commonly use liposomal silica, horsetail, and a silica-based binder called Enterosgel to decrease aluminum in our patients. The US-trained neurologist Margaritha Griess-Brisson (living in the UK) found that a cilantro tincture given 3 times per day combined with an ionic footbath used twice weekly increased the elimination of all toxic metals, especially the excretion of aluminum. Y. Omura, MD, also found that cilantro was effective in removing lead, mercury, and aluminum (study on mice).

Case Study

J.F. was an 8-year-old autistic boy who was mute. He had been through the biomedical approach for years and had improved largely. What was not addressed in his treatment was the intrauterine exposure to Lyme and glyphosate and the early exposure to aluminum (ambient air, vaccines) and ethylmercury. We added the strategies for these issues, included LDI treatment for mercury, Lyme, glyphosate, and aluminum. After a few initial crises, he started to make one-syllable words; within a few weeks, two-syllable words; and after 9 months (of the added treatment), he was completely age-appropriately fluent in English and near neurotypical.

Conclusion

Microbes evolve, toxins used in our environment have changed – and exposures to them, and with them illnesses evolve. What we see today in our medical offices is almost completely different from what Dr. Klinghardt saw when he started seeing patients 41 years ago. Lab methods are often hopelessly behind the times and we, the frontline physicians, have often to rely on other tools to help diagnose our clients. The current plague of Lyme disease, retroviral infections, and environmental toxins affecting us were not discovered in a university lab. These most pressing issues were discovered by us, the people. In this article, we point toward several illness-causing issues that are relevant to almost every person we see in the office. In a future article, we may highlight the other big one: exposure to microwaves and adverse electromagnetic fields and what we can do about it. When we know what is underneath our illnesses and causing them, we can still protect and heal others and ourselves and have fulfilling, joyful lives.

Notes

1. Seneff S, Swanson N, Li C. Aluminum and glyphosate can synergistically induce pineal gland pathology: connection to gut dysbiosis and neurological disease. *Agric Sci.* 2015,6:42–70.

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Field Control Therapy and Lyme: Isn't It About Time to Reconsider Just Killing Lyme?

by Savely Yurkovsky, MD

A number of years ago, I published what seemed a controversial article in this periodical, concerning the "petri dish mentality" or futility of trying to just kill chronic Lyme instead of outmaneuvering it into a non-issue state. Little has changed in this battlefield since, except that the number of means of killings, in all combinations possible, has substantially risen. So has the evidence of their failures and side effects, among these a recently published study in the *New England Journal of Medicine* concerning the failure of prolonged antibiotics treatment for this complex disease.[1,2] Other similar studies going back many years fared no better. Furthermore, even conventional infectious disease specialists, for whom antibiotics are bread and butter in bacterial killings, have finally accepted that these drugs have become a virtual 21st-century plague, as they have created ever more aggressive and mutated infections. The result: 23,000 deaths annually from antibiotic-resistant infections in the US alone; and no less than the director of the US Centers for Disease Control and Prevention, Thomas R. Friedan, MD, has recently warned that at this pace, the Americans will soon have no effective antibiotics left to survive serious infections.

My past articles on Lyme killings have also emphasized another vicious progeny of antibiotics – aggressive fungal infections – comparing these treatments to paying a mortgage with negative amortization, wherein the longer one pays, the more one owes. The just recently published book *Missing Microbes: How the Overuse of Antibiotics is Fueling our Modern Plagues,* by Martin J. Blaser, MD (professor of infectious diseases at NYU), presents an extensive account of harm of antibiotics and warns against their excessive use.

Below are my comments on common reasons that seemingly justify the use of antibiotics, supplements, and electrocution to kill Lyme and coinfections, and other related and allegedly protective or necessary measures.

- "To penetrate through bacterial biofilms and kill cyst forms."

  There is no reliable test to even prove that these are real problems in the majority of Lyme cases. Likewise, there is no reliable test to monitor to what extent this was achieved. Fungal-candida infections, which are increased by antibiotics, paradoxically are known to foster the growth of bacterial biofilms. How does one know exactly if chronic Lyme and coinfections persist because of biofilms, cyst forms, or just because these patients' immune systems are simply too suppressed and ineffective to effectively attack straight Lyme and coinfections? Is this why, in treating these in successful FCT practice, when the issue of the suppressed immune system has been sufficiently addressed, no special treatments for biofilms or cysts have ever been necessary or applied?

- "Antifungal drugs, herbs, and probiotics when used concurrently with antibiotics prevent candida infections."

  This is wishful thinking. Even if these are of some partial benefit, in my bioresonance testing experience, these patients have always been heavily infected by yeasts and often molds. There are dozens of candida species, and how sensitive these are to each antifungal drug, supplement, or probiotic is impossible to determine. Likewise there are no magic probiotic formulas, as these, like antibiotics, carry individual sensitivity and necessity factors for patients. In other words, one may become overloaded with unnecessary gut bacteria while receiving far fewer or none of the deficient ones. Current stool tests cannot well address this gap. Also, these measures cannot prevent mutation of even friendly bacterial flora into mutated and pathogenic. The injudicious use of antifungal treatments can lead to release of mercury and other toxic metals that candida species and worms are known to sequester.

- "We are addressing immune suppression in these patients by detoxifying from mercury and other heavy metals."

  This is a good goal, but attempting to detoxify and actually accomplishing it are not the same. As I have reflected on the issue before, without skillful bioresonance testing, how much detoxification from or reintoxication of toxic metals has actually taken place is not even roughly possible to tell. Yet a proper treatment of mercury is one of the key issues, as one research study has specifically pointed to a relationship between mercury-caused immunosuppression leading to the inability of the latter to clear Lyme bacteria.[3] That is why some treatments to stimulate T cells against Lyme did not perform well in a patient whom I saw.

- "Stimulating mitochondria, adrenals, thyroid, and other organs to help recovery."

  It is always better to remove chains from a horse to allow it to run on its own than stimulating it with adrenaline shots while keeping it

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chained. Poisoned organs and tissues do not respond well to stimulation, and heavy metal poisoning is virtually omnipresent in modern populations. Also, residues of antibiotics, when lodged in cells, can very likely severely damage mitochondria, given the fact that our mitochondria contain remnants of bacterial DNA. Years ago, I treated an autistic boy who had been treated with some special mitochondria activators at a prestigious research institute near Washington, DC, that specializes in mitochondrial disorders. He did not respond to this treatment; however, after I gave him homeopathics to remove antibiotics and mercury, the boy displayed dramatic progress.

Is This Critical Analysis of Deficiencies of These Lyme Treatments Biased?

Everything is possible; that is why science does not trust even scientists, even less doctors, but only facts. Here are a few interesting facts. Last year I placed on Amazon a similar and more detailed critique of a book written by a famed Lyme specialist: *Why Can't I Get Better? Solving the Mystery of Lyme and Chronic Disease*. Its title, as do most of the books on "healing," in my observations, promised to deliver something that the actual book was having a hernia from delivering; that is, it simply could not. There, I criticized his methods of "killing" Lyme, parasites, and candida, as well as detoxifying from mercury and alleging other benefits. My conclusion was that such treatments could not possibly succeed. The author did not issue any rebuttal to my critique, yet lo and behold, I happened to stop by his personal presentation at a local Lyme Connection annual meeting in Connecticut shortly thereafter. One patient had finally asked him a real meat-and-potatoes question: Can chronic Lyme disease be cured through this method? To his credit, the answer was no. He also chose not to respond to my written question: if and when he might respond to my critique of his book on Amazon. It is obvious that such methods cannot be defended, because these look good only on paper, not at a patient's bedside where it counts the most.

Adding to the issue of immune suppression, in my experience, EMF has been another mercury or, as EMF researchers coined it, "another cigarette," as the major immune suppressor in Lyme or any infection. Aside from houses, apartments, offices, cars, and computers, one Lyme patient reported severe aggravation of all of his Lyme symptoms just sitting at a Yankees game, occurring the second all of the projector lights came on.

Another edifying and recent real-life clinical trial was conducted on Lyme-killing treatments by a former patient of mine, a middle-aged man. He was treated by me for 9 months for chronic Lyme and other health-related problems that he had had prior for 8 years. By the time of my last treatment, his Lyme symptoms were gone, but symptoms related to a few remaining problems still continued. Perhaps these still lingered due to his computer addiction and delayed acquisition of Memon EMF-protective technology for his house, or simply that more treatments were necessary. Whatever the reasons, he found my recommendations related to EMF and its computer issue inconvenient for his retired lifestyle, decided to discontinue the treatment, and returned Memon, since he did not believe "my" EMF theory. Yet some 8 years later and just recently, he shared the following story concerning his pathetic ordeal while seeking more convenient treatments.

At some point when Lyme symptoms returned, whether due to excessive and unprotected computer usage or being rebitten by a tick, he decided to tour all of the best clinics and practitioners specializing in Lyme. Having sufficient means, he has literally gone coast to coast and tried all of the treatments and tests available. These included oral, IV, antibiotics and other agents, machines, homeopathics, and bioresonance testing. The end result was an unnecessary and potentially dangerous procedure of dilating his neck-brain blood vessels, the narrowing of which were alleged to be the cause of his Lyme in the brain; 2 years spent in bed due to deadly fatigue; and a slew of other medical problems. None of these practitioners knew how to get him out of the crisis. Fortunately, a classical homeopath gave him a single pellet, which pulled him out of bed, as it eased the fatigue. Unfortunately, further efforts failed, and the homeopath said that he could not help the patient further. Perhaps his abbreviated report, for privacy and space reasons listed below,

continued on page 76 ➤

Savely Yurkovsky, MD, has evolved a novel medical model that interfaces important knowledge from biology, medicine, toxicology, and physics. Its primary focus is on the most important aspect of chronic disease – its causes – along with the most effective diagnostic and therapeutic means to address these. This has transformed the often imprecise medical interventions into a far more effective, exact, and predictable science. He has founded a teaching organization, SYY Integrated Health Systems Ltd., which provides training in this medical system under the concept of FCT (Field Control Therapy). He has presented it at many professional symposia in both the US and Europe, including the annual bioterrorism 2005 conference, Unified Science & Technology for Reducing Biological Threats & Countering Terrorism, affiliated with the Department of Homeland Security and Harvard Medical School, among others. Dr. Yurkovsky was nominated for the prestigious Bravewell Leadership Award for "significant contributions to the field of medicine" and "compelling vision for the future of medicine," in 2005. He has authored numerous articles and the book *The Power of Digital Medicine*, which was endorsed by prominent scientists from MIT and Columbia and Stanford Universities, and contributed a chapter on homeopathy to the *Textbook of Integrative Gastroenterology*, edited by the Gerard Mullin, MD, chief of the Integrative Gastroenterology Department at Johns Hopkins University medical school. Dr. Yurkovsky maintains a private practice in Chappaqua, New York.

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FCT and Lyme

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further reflects on his state of Lyme and health, following these treatments.

From: ...
To: info info@yurkovsky.com
Sent: January 2016
Subject: Supplements

Hi Doc,
Here's the rundown on my daily supplement consumption.

Early Morning - 4:00-5:00 AM
(2 drugs and a supplement)

Before Breakfast (2 supplements)

With Breakfast (11 supplements)

Before Lunch (1 supplement)

At Lunch (8 supplements)

At Dinner: (11 supplements)

At Bedtime: (2 drugs, 14 supplements)

(Total Ingredients a day – 60 or more)

Ok! That's a wrap. I hope this will aid you in helping me become completely recovered from the effects of Lyme disease.

The last example, of many, concerns another recent new patient who had been treated for 7 years for chronic Lyme disease with countless oral and IV antibiotics, the same number of anti-Lyme supplements, HBO, and an electrocuting device. Among many doctors involved were "the best Lyme doctor in the US," according to a documentary film on Lyme, and another MD in a highly marketed "progressive" clinic in Florida. The latter allegedly even used a "secret recipe" called "kill drip." The initial results of most of these treatments were an improvement in the short run, but followed by the patient's becoming much sicker in the long run and suffering from severe muscle atrophy and weight loss, among other side effects of these treatments. Quite notably, his normal MRI brain scan, obtained just prior to one of his multimonth-long courses of IV and oral antibiotics, became abnormal right afterward. The cost of only 7 months of treatment in the "progressive clinic" was over $100,000.

Conclusion

There has never been a case in history of either science or medicine wherein addressing very complex problems but only touching the surface and using deficient means has amounted to any success. Chronic Lyme disease is certainly such a complex problem, which even conventional medicine specialists have called equivalent to cancer.[4] The time has come to realize that not only is it impossible to cure by just killing it, but these killing treatments have become a virtual disease in themselves for many desperate patients.

Notes

1. Berende A et al. Randomized trial of longer-term therapy for symptoms attributed to Lyme disease. *N Engl J Med*. March 31, 2016.
2. Melia MT, Auwaerter PG. Time for a different approach to Lyme disease and long-term symptoms. *New Engl J Med*. March 31, 2016.
3. Ekerfelt C, Andersson M, Olausson A, Bergström S, Hultman P. Mercury exposure as a model for deviation of cytokine responses in experimental Lyme arthritis: HgCl2 treatment decreases T helper cell type 1-like responses and arthritis severity but delays eradication of Borrelia burgdorferi in C3H/HeN mice. *Clin Exper Immunol*. 2007;150(1):189–197.
4. Parish D. Lyme: the infectious disease equivalent of cancer, says top Duke oncologist [online article]. Huffington Post. 19 February 2016.

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Voodoo Science: The Myth of Vaccine Efficacy

by Gary Null, PhD
Progressive Radio Network

The two pillars upon which the entire edifice of vaccinology rests are that vaccines are safe and effective. We are told by our medical and federal authorities, physicians, pharmacists, and health-care practitioners that vaccines work by stimulating the body's immune system to create specific antibodies. These antibodies in turn will protect us from the infectious disease specific to a given vaccine.

This central premise is virtually never challenged. Hundreds of millions of Americans simply accept that all vaccines are scientifically proven to confer immunity against disease. This report investigates the medical industry's claims that vaccines are effective. Moreover, the independent research presented for each major vaccine raises serious questions that challenge the concept of antibody generation as a reliable factor to assure viral and bacterial immunity.

Measuring Vaccine Efficacy: Junk Science at its Worst

Every flu season, millions of Americans visit their physician's office or local pharmacy to receive a flu shot. Recipients are given one of a handful of influenza vaccines on the market. The same vaccine will be injected into a 14-pound infant, teenage athlete weighing 200 pounds, and frail, immunocompromised elderly patient. Regardless of age, weight, medical history, previously compromised immune system, or any other health factor, they are all given the same exact chemical cocktail. Furthermore, we are told to accept that this one-size-fits-all approach will predictably result in the production of a number of protective antibodies that will ward off a flu infection.

Once the flu season concludes, vaccinated persons who made it through the season without contracting a diagnosed flu infection are categorized by our health officials as having been successfully immunized. And these statistics then stand as living proof of the vaccine's efficacy. Meanwhile, very little if any attention is paid to the numerous other factors that have been shown to influence immunity, including quality of diet; additional nutrient profile; vitamin D, A, and C status; exercise; stress management; exposure to environmental toxins; sleep patterns; and biochemical and genetic makeup.

A person who chooses to be vaccinated and follows a healthful lifestyle by eating a balanced wholesome diet, minimizing environmental toxins, engaging in regular exercise, and practicing destressing techniques is far less likely to fall sick. It is therefore impossible and completely unscientific to make any absolute claims that vaccines are the sole protective cause for not contracting an infectious illness. On the other hand, an unvaccinated individual who eats the standard American diet, suffers from multiple nutrient deficiencies, and leads a sedentary, high-stress lifestyle has a higher risk of developing a significantly compromised immune system condition. If such a person comes down with an illness, how can it be blamed on the absence of a vaccine and not the unhealthful lifestyle?

When assessing the impact of vaccines, removing the body's many other biomolecular principles and functions from the equation is completely unscientific. The claim that a vaccine can prevent disease, without looking at many other critical health factors in a person's life, is contrary to a scientific gold standard for assessing health and illness. It is no more scientific than the claim that if a person took vitamin C and subsequently didn't come down with a cold, it was exclusively the vitamin C intake that deserved all the credit.

There is very strong evidence suggesting that all clinical trials carried out by vaccine manufacturers fall short of demonstrating vaccines' efficacy accurately. And when they are shown to be efficacious, it is frequently in the short term and offer only partial protection. According to an article in the peer-reviewed *Journal of Infectious Diseases*, the only way to evaluate vaccines is to scrutinize the epidemiological data obtained from real-life conditions. In other words, researchers simply cannot – or will not – adequately test a vaccine's effectiveness and immunogenicity prior to its release onto an unsuspecting public.[1]

Based upon our research, a study has yet to be undertaken that evaluates the long-term progress of both fully vaccinated and unvaccinated children of comparable biochemistries, ages, and lifestyles. Since immunity hinges on more than vaccination status, it stands to reason that the only way to make a fair determination about the effectiveness of the current vaccine schedule would be to carry out such an analysis using gold-standard scientific methodology and protocol. Why has this never been done? To understand this unanswered question, we must look back at vaccinology's history and the scientific

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evidence that would implicate our national vaccine campaign as a dangerous and deceptive experiment upon the public.

The Polio Vaccine Nightmare

Almost everyone now believes that vaccines were responsible for the eradication of certain major epidemics in the US and around the world. However, this belief is largely propaganda overcoming fact. The story of Jonas Salk's polio vaccine is an example of how some vaccines not only fail to save lives but actually infect the patients with the very disease that they are supposed to protect against.

The polio vaccine is recognized as the fastest-approved drug in FDA history. In 1955, it only took two hours of review before its approval, licensure to be quickly released to the public. Owing to the fact that no significant research could ever have been carried out on the vaccine in such a short span of time, it was quickly administered without proper federal review. Known as the Cutter Incident, after the vaccine's manufacturer Cutter Laboratories, within days of vaccination, 40,000 children became infected with polio, 200 with severe paralysis and 10 deaths. Shortly thereafter the vaccine was quickly withdrawn from circulation and abandoned.[2]

The CDC's website still promulgates a blatant untruth that the Salk vaccine was a miracle in public health policy. To the contrary, officials at the National Institutes of Health were convinced that the vaccine was contributing to a rise in polio and paralysis cases in the 1950s. In 1957 Edward McBean documented in his book *The Poisoned Needle* that government officials stated that the vaccine was "worthless as a preventive and dangerous to take."[3]

Some US states, such as Idaho, where several people died after receiving the Salk vaccine, wanted to hold the vaccine makers legally liable. Salk himself testified in 1976 that his live virus vaccine, which continued to be distributed in the US until 2000, was the "principal if not sole cause" of all polio cases in the US since 1961. However, after much lobbying and political leveraging, the pharmaceutical industry pressured the US Public Health Service to proclaim the vaccine safe.[4]

Although this occurred in the 1950s, this same private industry game plan is to coerce and, through the use of lobbyists, consultants, and current and former government employees, influence government health agencies to do their bidding. Today, US authorities proudly claim that the US is polio free. Medical authorities and the advocates of mass vaccination rely upon the polio vaccine as an example of a vaccine that eradicated a virus and as proof of the unfounded "herd immune theory." Dr. Suzanne Humphries, a board-certified nephrologist who has spent more than 10,000 hours researching the safety and efficacy of vaccines, has thoroughly

documented that polio's disappearance was actually a game of smoke and mirrors. In her research, she has shown how the alleged eradication of polio coincided with the rise of "new" and strikingly similar ailments which have been classified as variations of a condition known as acute flaccid paralysis.[5] Thanks to Humphries's detailed study of the data, it's not difficult to connect the dots and see that the reported decline in cases of polio over the years has more to do with calling the disease by different names rather than eradicating it.

Another layer of treachery in the history of the polio vaccine is the story of Dr. Maurice Hilleman, a pioneer in the field of vaccine research at Merck in the 1950s who developed over 40 vaccines, including 5 of the 14 immunizations routinely given to children and adults today. He is considered the father of American vaccinology. In a candid interview, Hilleman explained that monkey DNA was used in some of the vaccines he developed, and it was impossible to screen out all the viruses carried by the monkeys. He discovered that the new Sabin polio vaccine contained Simian virus 40 (SV40), a DNA virus shown to be carcinogenic. During vaccine trials in hamsters, SV40 was shown to cause tumors. Hilleman said, "We knew it was in our seed stock from making vaccines. ... It was good science at the time because that was what you did. You didn't worry about these wild viruses."[6] The precise number of Americans exposed to vaccines contaminated with SV40 remains unknown, but estimates are as high as 100 million. As of 2001, Neil Miller, a vaccine research journalist, counted 62 peer-reviewed studies confirming the presence of SV40 in a variety of human tissues and different carcinomas.[7]

The Decline of Epidemic Diseases: Getting to the Truth

What has contributed historically to the decline of scourges such as smallpox, polio, tetanus, measles, and diphtheria? Although many attribute the decreased incidence of these diseases to the introduction of vaccines, a look at the epidemiological data indicates that many, if not most, infectious diseases started declining noticeably prior to the introduction of their vaccines due to significant improvements in the way we live. Sanitation, proper sewage disposal, clean water, improved nutrition, indoor plumbing, less-crowded living conditions, elimination of child labor, and better hygiene were the real reasons that infectious rates waned. For example, polio declined in the US in the 1920s, from 7229 cases in 1921 to 3826 cases in 1951. By the time the vaccine became widespread in 1961, the number of cases was already down to 1076.[8]

There is no scientifically sound evidence that mass inoculation can be credited with eliminating any infectious disease. Furthermore, if vaccination is responsible for the disappearance of these diseases in the US, why did they simultaneously disappear in Europe prior to mass vaccinations?

The following graphs show that large drops in disease death rates occurred long before vaccines were introduced. From 1900 to 1963, when the measles vaccine was introduced, death rates from measles had declined from 13.3 per 100,000 to 0.2 per 100,000 – a 98% decrease. From 1900 to 1949, death rates from whooping cough declined from 12.2 per 100,000 to 0.5 per 100,000 – a 96% decrease. From 1900 to 1949, death rates from diphtheria declined from 40.3 per 100,000 to 0.4 per 100,000 – a 99% decrease. These graphs demonstrate clear and major changes in the severity of diseases well before any vaccines were introduced.[9]

Figure 1: Death Rates from Measles

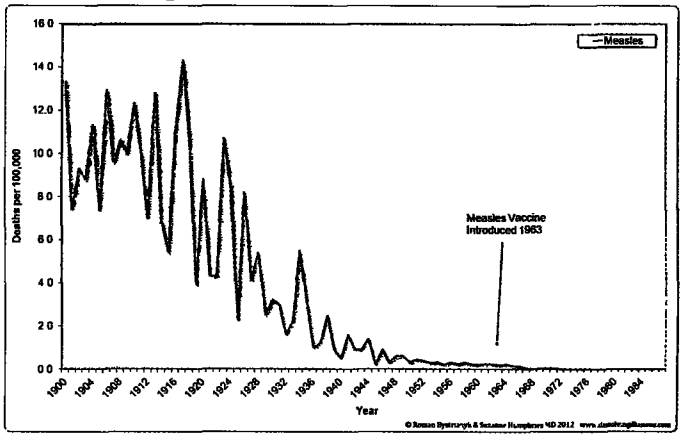


Figure 2: Death Rates from Diphtheria

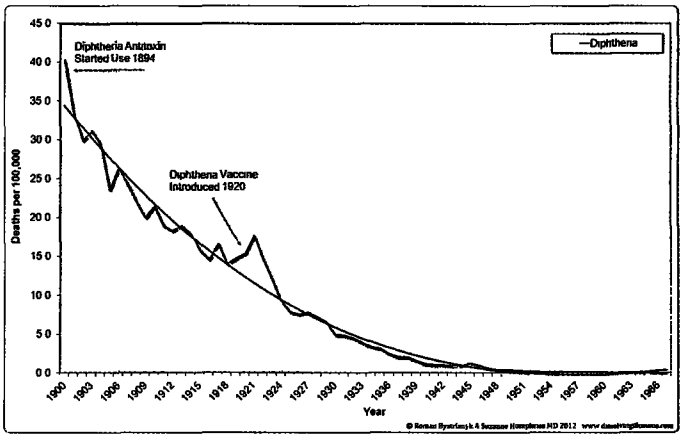
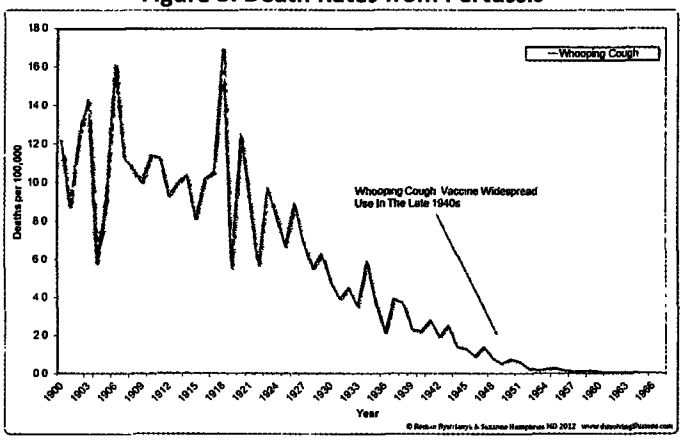


Figure 3: Death Rates from Pertussis



Source: Roman Bystrianyk. dissolvingillusions.com.

The data suggest that public health interventions, such as as improved hygiene, personal protection, and isolation, are more effective and less expensive measures to contain ➤

epidemics of respiratory viruses, with estimates of effect ranging from 55% to 91%.[10]

Although strong evidence supports good hygiene as a central factor of disease prevention, the press rarely recommends measures that people can adopt to best protect themselves against viral or bacterial disease, aside from vaccination.

Deconstructing the Science of Antibodies

The manufacturing methodology in vaccine development involves taking a disease agent and rendering it gradually weaker so that the body's own immune response is triggered and antibodies are generated (referred to as humoral immunity). However, the body's immune system is far greater than that targeted by a vaccine. In addition to humoral immunity, there is also cell-mediated immunity. Cell-mediated immunity activates macrophages, natural killer cells, antigen-specific cytotoxic T-lymphocytes, and the release of various cytokines in response to a viral antigen.

Current vaccine science lacks a way to stimulate the entire immune response instead of just a portion of it. Normal exposure to disease-causing agents always begins in the nasal, ear, throat, and respiratory passages – less so through injection. Once primary immunity has been established by infection, the antibody response follows. This allows the immune system to grow stronger and to bestow natural and permanent immunity to an ever-increasing number of pathogens. Vaccines injected into the body bypass cell-mediated immunity and overstimulate humoral immunity. This confuses normal immune response maturation and skews the functioning of the immune system. Humoral immunity becomes dominant and the crucial cell-mediated immunity is suppressed: the result can be autoimmune disease and frequent infections.

According to R. M. Zinkernagel at the University Hospital of Zurich Institute of Experimental Immunology: "We have not succeeded in generating truly protective vaccines against persisting infections because we cannot imitate 'infection immunity' that is long-lasting, generating protective T- and B-cell stimulation against variable infections without causing disease by either immunopathology or tolerance."[11]

The weak correlation between antibody count and immunity is not a new discovery. Walene James, author of *Immunizations: The Reality Beyond the Myth,* explains that increased antibody production may not be the most important aspect of the immune process:

Vaccines isolate antibody function, and allow it to substitute for the entire immune response. Scientific evidence questioning the role of antibodies in disease protection can be found in research performed by Dr. Alec Burton, published in a study by the British Medical Council in May 1950. The study investigates the relationship between the incidence of diphtheria and the presence of antibodies. Since diphtheria was epidemic at, or just prior to the time of the study, the researchers had a large number of cases to investigate. The purpose of the research

was to determine the existence or nonexistence of antibodies in people who developed diphtheria and in those who did not. It looked at patients and people who were in close proximity to them, such as physicians, nurses in hospitals, family, and friends. The conclusion was that there was no relation whatsoever between antibody count and incidence of disease. The researchers found people who were highly resistant with extremely low antibody counts, and people who developed the disease who had high antibody counts. Burton also discovered that children born with agamma globulinemia (an inability to produce antibodies) develop and recover from measles and other infectious or contagious disease almost as spontaneously as other children.[12]

One of the foremost issues surrounding vaccine-induced immunity is that infants are biologically incapable of producing antibodies, other than immature IgM antibodies, until 6 to 12 months of age. The antibodies that the infant acquires, such as immunoglobulins, are passed down from the mother through breast milk. Nevertheless, the current CDC schedule calls for more than a dozen injections during the first 6 months of life. If the immunological function of a fully grown adult is disrupted so significantly by vaccines, what sort of harm can we expect these same vaccines to inflict upon the delicate physiology of an infant?

Next we will examine some of the most compelling examples of vaccine failure among the most widely used vaccines in America today.

Influenza

The Cochrane Collaboration, the foremost group of unbiased researchers in the world, has done a series of meta-analyses on the effectiveness of the influenza vaccine with similar results. In 2014 they found that vaccinating adults against influenza did not affect the number of people hospitalized nor decrease lost work.[13] Cochrane researchers stated that their results might be overly optimistic due to the fact that 24 out of 90 studies were funded by the vaccine manufacturers, which tend to produce results favorable to their product.[14]

According to Dr. Tom Jefferson of the Cochrane Collaboration, it makes little sense to keep vaccinating against seasonal influenza based on the evidence.[15] Jefferson has also endorsed more cost-effective and scientifically proven means of minimizing the transmission of flu, including regular hand washing and wearing masks.

Jefferson's conclusions are backed by a 2013 piece written by Johns Hopkins University School of Medicine scientist Peter Doshi, PhD, published in the *British Journal of Medicine*. In his article, Doshi questions the flu vaccine paradigm, stating:

> Closer examination of influenza vaccine policies shows that although proponents employ the rhetoric of science, the studies underlying the policy are often of low quality, and do not substantiate officials' claims. The vaccine might be less beneficial and less safe than has been claimed, and the threat of influenza appears overstated.[16]

The CDC currently recommends that elderly Americans receive a flu shot, stating that "[v]accination is especially important for people 65 years and older because they are at high risk for complications from flu."[17] Unfortunately, this serious warning flies in the face of a significant body of research showing that receiving the flu shot does not reduce mortality among seniors.[18] One particularly compelling 2005 study was carried out by scientists at the federal National Institutes of Health (NIH) and published in the *Journal of the American Medical Association* (*JAMA*). The study indicated not only that the flu vaccine did nothing to prevent deaths from influenza among seniors, but also that flu mortality rates in fact increased as a greater percentage of seniors received the shot.[19]

After the release of the study, investigative journalist Sharyl Attkisson covered the findings in a CBS News segment. Attkisson revealed that she hoped to interview the study's lead author at NIH but was stonewalled by the agency. She eventually spoke to the only co-author of the study who was not affiliated with NIH, Dr. Tom Reichert, who stated that the research team revisited the data several times, but that no matter how they analyzed the "incendiary material," the conclusion was clear: flu shots don't improve mortality rates in the elderly population.[20]

Another important consideration in this discussion is that there are approximately 200 distinct viruses that constitute influenza and influenzalike illnesses. These organisms don't magically appear during fall and winter – they are always with us. Nevertheless we are more susceptible to flulike infections during the colder months when there are fewer daylight hours. Studies suggest that the origin of the so-called flu season may actually be the reduced amount of sunlight in the winter months, with the result that we become deprived of vitamin D.[21,22]

Gardasil

The history of the Gardasil vaccine illustrates clearly the concerning lack of oversight on the part of our federal health authorities when it comes to testing vaccines for efficacy. Before receiving FDA approval, the popular HPV vaccine Gardasil was tested on fewer than 1200 girls.[23] A major flaw in Merck's clinical trials was the number of girls enrolled in the trials who elected to take the prescribed three vaccine doses. Only 27% of all the girls tested were actually administered the complete three-vaccine series.[24] Another remarkable misstep in the trials was that no girls under age 15 participated, despite the fact that the vast majority of girls given the vaccine today are under 15 years old.[25] Nevertheless, the vaccine was approved by the FDA in 2006. In 2014, approximately 60% of all American girls and 42% of American boys aged 13 to 17 received at least one HPV shot. [26]

The remarkably unscientific methodology employed during Garadsil's pre- and postlicensure trials was reviewed in a 2012 analysis by scientists at the University of British Columbia and published in the journal *Current Pharmaceutical Design*. The

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research team didn't mince words in its assessment of the trials:

> We carried out a systematic review of HPV vaccine pre- and post-licensure trials to assess the evidence of their effectiveness and safety. We found that HPV vaccine clinical trials design, and data interpretation of both efficacy and safety outcomes, were largely inadequate.
>
> Additionally, we note evidence of selective reporting of results from clinical trials (i.e., exclusion of vaccine efficacy figures related to study subgroups in which efficacy might be lower or even negative from peer-reviewed publications).
>
> Given this, the widespread optimism regarding HPV vaccines long-term benefits appears to rest on a number of unproven assumptions (or such which are at odds with factual evidence) and significant misinterpretation of available data.[27]

More doubts about the FDA approval of Gardasil have come from an unlikely source, Dr. Diane Harper, a consultant for Merck and a chief scientist overseeing the licensure trials to evaluate Gardasil's safety and efficacy. After receiving FDA approval, Harper publicly questioned Gardasil's efficacy and public health value. Among her concerns is that no data show that Gardasil remains effective after 5 years. A truly effective HPV vaccine, on the other hand, would need to be efficacious for 15 years in order to prevent cervical cancer. In addition, she estimated that every American 11-year-old girl would have to be vaccinated for the next 60 years in order to have any measurable effect on rates of cervical cancer.[28,29]

Gardasil's efficacy in protecting against HPV infection has also been criticized due to the fact that it originally only targeted 4 of the more than 100 HPV strains in circulation. In 2014, the FDA approved Gardasil 9, which supposedly protects against nine strains. Scientists from the University of Texas presented research at the 2015 meeting of the American Association for Cancer Research revealing that vaccinated women were significantly at a higher risk to become infected with strains HPV not contained in the vaccine when compared with unvaccinated women.[30] This disturbing revelation is just the most recent piece of evidence demonstrating Gardasil's dubious effectiveness and potentially hazardous impact on human biochemistry.

Another study published in *JAMA* in 2007 demonstrates the ineffective nature of Gardasil in women with HPV. The authors concluded that Gardasil offers no benefit to women recovering from HPV during a 12-month period.[31] The researchers stated that they "see no reason to believe that there is therapeutic benefit of the vaccine elsewhere because the biological effect of vaccination among already infected women is not expected to vary by population."[32]

Given the high rate of recovery for people with HPV infections, the widespread use of the vaccine is highly suspect. Even the National Cancer Institute has stated that "[m]ost high-risk HPV infections occur without any symptoms, go away within 1 to 2 years, and do not cause cancer." [33] In fact, 90% of all cases of HPV disappear within 2 years. Cervical cancer is highly curable when detected early.

It's important to note that advances in medicine and the regular use of Pap smears have helped decrease the incidence of cervical cancer in the US by over 50% since the 1970s.[34] Examining health data from Finland and the UK, Harper and her colleagues concluded that HPV vaccinations give a false sense of security to many young women and girls who in turn opt out of regular Pap smear tests. According to Harper, this trend has resulted in exponential *increases* in recent HPV rates.[35]

Even more alarming, Gardasil has gained notoriety as one of the most dangerous vaccines for it serious life-threatening adverse effects. As of October 2015, the federal program known as Vaccine Adverse Event Reporting System (VAERS) has received over 41,000 cases of adverse reactions from the HPV vaccine, including 234 deaths.[36]

Whooping Cough (Pertussis)

The vaccine for pertussis, better known a whooping cough, is packaged together with diptheria and tetanus (DtaP) and given according to a robust vaccine schedule of 5 injections by age 6. It is the most administered vaccine in the childhood vaccination schedule: at 2 months, 4 months, 6 months, 15–18 months, and 4–6 years. [37]

Despite regular administration of booster shots, scientific evidence now suggests the vaccine does not effectively confer immunity against pertussis. As one recent study published in *Clinical Infectious Diseases* put it, "Pertussis is currently the least well-controlled vaccine-preventable disease despite excellent vaccination coverage and 6 vaccine doses recommended between 2 months of age and adolescence."[38]

The ineffective nature of the pertussis vaccine was brought into sharp focus in 2010 when California witnessed a dramatic rise in whooping cough cases, over 9100 people, many of them children. A study assessing the vaccine's efficacy discovered that an extraordinarily high 80% of all children who contracted the illness were fully vaccinated.[39]

One explanation for the pertussis vaccines remarkable lack of efficacy can be found in a 2010 study undertaken at Penn State's Center for Infectious Disease Dynamics. The team found that the whooping cough vaccine promotes the colonization of *Bordetella parapertussis*, pertussis's causal bacterial agent. Based on their findings, the researchers posited that the whooping cough vaccine itself may be contributing to the marked resurgence of whooping cough cases compared with the previous decade.[40]

Further evidence casting doubt on the whooping cough vaccine's usefulness was presented at a 2013 meeting of the CDC's Board of Scientific Counselors, Office of Infectious Diseases. During the meeting, CDC officials pointed out that the widespread use of the DtaP vaccine has given rise to more virulent pertussis strains. What is novel about these new emerging strains is that they lack pertactin (PRN), the antigen current that pertussis vaccines target. The meeting's participants noted that "vaccinated patients had significantly higher odds than unvaccinated patients of being infected with

PRN-deficient strains."[41] Another recent study surveyed the incidence of whooping cough in eight states. The survey found that fully vaccinated children were 2 to 4 times more likely to contract an PRN-deficient strain than the unvaccinated population.[42]

A further reason for the pertussis vaccine's failure to control communal infection is that vaccinated children may become asymptomatic carriers of the pathogen. There is strong evidence that vaccinated populations may be infected with the whooping cough but not present symptoms.[43] The serious downside to this is that asymptomatic carriers can transmit the disease to unvaccinated individuals, especially infants who run the highest risk of suffering complications from pertussis. It also lends credence to new research implicating vaccinated older siblings, not parents, as the primary source of infection for whooping cough among infants. This research runs counter to the entire notion of herd immunity, which states that older populations must be immunized in order to protect infants who are not old enough to receive the vaccine.[44]

Measles

The efficacy of the measles vaccine has also come under serious scrutiny in recent years. In, 2014, Dr. Gregory Poland, editor-in-chief of the journal *Vaccine* and founder of the Mayo Clinic's Vaccine Research Group, published an alarming statement that the measles vaccine has a poor efficacy record. Despite the high 95% measles vaccination compliance among children entering kindergarten, and the CDC's propaganda that the MMR vaccine has defeated the virus, measles outbreaks continue to increase. During the first half of 2014, there were 16 large measles outbreaks in the US. Poland does not believe that this is due to unvaccinated individuals, but because of the vaccine's failure to confer immunity.[45]

During the first 6 months of 2011, there were 118 cases of measles reported to the CDC from 23 states and New York City. There were no fatalities. Among the 118 cases, 105 were both "import-associated" and unvaccinated. Of the 87 US residents who came down with measles, 74 were unvaccinated: 39 under age 20, and 35 aged 20 and older.[46]

The CDC focused heavily on the unvaccinated measles victims while giving no time to the analysis of those vaccinated individuals who also became ill. In fact, 13 of the group (17.5%) had received the MMR vaccine but got measles anyway. While the CDC uses these incidents of disease outbreak to stress the need for vigilant adherence to the vaccine schedule, the real take-home message here is that 17.5% of a group of vaccinated individuals got sick despite the vaccine. One thing, however, is certain: all of the unvaccinated people who came down with

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measles now have a lifelong immunity against measles. For those who became infected despite having been vaccinated, we just don't know. Could the vaccine prevent these people from developing the normal lifetime immunity? No research has been undertaken to prove this point.

Likewise, a 1985 measles outbreak in a Texas community found that the 14 students out of 1806 who contracted measles were all vaccinated – no exceptions, and no reports of exposure from a foreign endemic area for any of the students.[47]

Chickenpox (Varicella)

The chickenpox vaccine is yet another example of a failed vaccine. The present vaccine was licensed in 1995. Following its release, an estimated 25% of children were still spreading the varicella virus or getting ill themselves. Anne Gershon, a chickenpox expert and director of pediatric infectious disease at Columbia University Medical Center, says, "We really need boosters of vaccines much more than we thought we ever would."[48]

This raises the question, how many boosters would be enough? Our vaccines do not confer lifelong immunity. Therefore to compensate for vaccines' limitations and steady decline in providing immunity, more and more boosters are required. Consequently, in 2006, the CDC recommended that a second chickenpox shot be added to the childhood vaccination schedule. Gershon says it "looks like" a second shot will keep children from getting sick.[49]

Research into the efficacy of the varicella inoculation, however, has increased skepticism about the vaccine. In 2005, South Korea mandated the chickenpox vaccine to all children under 15 months. Regardless of the country's 97% compliance – well above herd immunity's claims to eradicate infectious disease – chickenpox infections have not declined. Rather, between 2006 and 2011, there has been a threefold increase in chickenpox cases.[50] American research has also yielded proof of a significantly higher rate of vaccine failure despite its widespread administration.[51]

Mumps

Mumps is another virus frequently found in vaccinated populations. In 2006 the US experienced the largest nationwide mumps epidemic in 20 years, primarily infecting students on college campuses.[52] Authorities have attempted to blame these outbreaks on crowded dormitory conditions, instead of considering the obvious: the vaccine simply isn't effective for very long.

In 2009–2010, New York and New Jersey witnessed over 1500 mumps cases among highly vaccinated groups: 88% of infected children had received at least one vaccine and 75% had received the recommended two doses. According to Dr. Jane Zucker, New York City assistant commissioner of immunization, "We know that approximately 1 in every 20 people who are vaccinated may not develop antibodies." A Reuters reporter went even further, stating, "The mumps virus can mutate, so people who have had only one or even two doses of vaccine remain vulnerable."[53] How can a vaccine with such negligible immunity not only be recommended but required for school attendance?

Calling for Science-Based Vaccinology

It is certainly reasonable and responsible to suggest that if a vaccine were proved to be safe and effective by a gold standard of science, it would be an important health service for every child and adult. However, at this moment no such assurance can be made based upon quality science. At the very least we should require unbiased, independent, double-blind, placebo-controlled studies of every vaccine, both individually and collectively with no input from vaccine manufacturers or their colleagues, associates, or consultants. To ensure a healthier future, it is crucial that we stand up today and demand a new paradigm of vaccinology based on independent, science-based medicine.

Gary Null is the host of the nation's longest-running public radio program, the *Gary Null Show*, and founder of the web-based Progressive Radio Network. A journalist and *New York Times* best-selling author who has written over 70 books on nutrition, health, and sociopolitical issues, Gary has received critical acclaim as director and producer of multi-award-winning documentaries, most recently *Death by Medicine* (2011) and *Knocking on the Devil's Door* (2011).

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Nutrients for Improving Cognitive Function in Chronic Lyme Disease

by Connie Strasheim

When I first became ill with chronic Lyme disease in 2004, I could barely read books, never mind write them, as I do now. I left a fiction novel unfinished because I could no longer string two sentences together. And that was only the start of the cognitive problems that I would battle with chronic Lyme disease. I used to walk around in a daze, unaware of time and how long it would take me to do things. I would routinely lose my car in parking lots, and occasionally have to call a friend or family member to pick me up – from malls, movie theaters, and other places with large lots. I would "space out" for hours as I tried to recall the next thing on my to-do list. I got into two car accidents within a year of becoming sick, because I couldn't process what was happening on the road fast enough. I even once stood in an aisle of a retail store for three hours as I went back and forth trying to decide which coat to buy. I routinely made poor decisions, forgot the names of even my closest friends, and couldn't carry on a prolonged conversation, never mind remember one. I cringed whenever others launched into detailed stories and my brain shut down in any situation that required abstract reasoning.

My story isn't unusual. Many people with chronic Lyme disease battle cognitive dysfunction that creates debilitating symptoms, such as difficulties with focus, concentration, word finding, decision-making, reasoning, and analysis, as well as short-term memory loss. The dysfunction occurs for many reasons, such as the presence of Lyme neurotoxins in the brain, which cause inflammation; the destruction of neurons and dysfunctional firing between the neurons, damage to brain and other nervous system tissue, hormone and neurotransmitter dysfunction, reduced blood flow and oxygen to the brain, nutritional deficiencies, food allergies, blood-sugar imbalances, and more. Most of these problems are caused either directly or indirectly by Lyme disease-related infections such as *Borrelia, Babesia* and *Bartonella,* as well as by some of the common Lyme disease coconditions such as mold and yeast infections and heavy metal toxicity.

It is beyond the scope of this article to explain the details about why and how Lyme pathogens cause cognitive problems, and I'm not even sure that I or other researchers know all of the reasons. The good news is, there are ways to mitigate symptoms of cognitive dysfunction, and I will share some of those here.

The obvious first step is to remove the infections and toxins from the body, but this can take many months or years, and in the meantime, people with Lyme disease need to be able to function. When I discovered that I could no longer write well, I began to research nutrients that would restore my cognitive abilities, because, as a writer, I couldn't afford for my brain to not work. It took me years to find real solutions, but as I healed, I slowly began to recover many of the functions that I had lost, including my ability to read and write.

Today, 12 years after I first became ill, I still suffer from short-term memory loss and struggle at times to focus, organize, and concentrate, but my symptoms have greatly improved. I can read and write at least twice as fast as I did a decade ago, and have since written and published 9 medical and/or health-related books. (I'm currently working on the 10th, which is an updated doctor-interview book on Lyme disease that will be released in late 2016.) I get things done a lot more efficiently and effectively and no longer wander around in a fog most of the time. I don't have to labor as much to stay engaged in conversations, and I get lost less frequently whenever I drive or park my car. My mind still wanders if people launch into detailed stories about subjects that I know little about, but then again, I have never been a great listener anyway!

I have found all of the following nutrients and nutritional supplements to be instrumental for restoring my

cognitive function. Perhaps you or your clients will find them useful, too.

Phosphatidylcholine. This is a phospholipid that supports the function of many organs, such as the pancreas and liver, and which plays a major role in the transport and metabolism of fats, cell membrane synthesis, and inflammation reduction. It contains choline, which is used to make acetylcholine, a neurotransmitter largely responsible for learning, focus, decision-making, memory, comprehension, and creativity. It can also elevate mood.

Studies have linked acetylcholine deficiency with Alzheimer's disease, and research suggests that supplementing with choline can prevent Alzheimer's and other neurological conditions associated with toxicity, such as Lyme disease, by preserving neurological function.[1,2] Choline's metabolites are important for the structural integrity of cell membranes and for cholinergic transmission and signaling during the development of neuron cells.[3] I have personally found it to be the single most powerful nutrient for improving my memory, focus, concentration, and other cognitive functions.

Taking over-the-counter phosphatidylcholine supplements can be beneficial for restoring cognitive function, but I have found transdermal phosphatidylcholine in the form of a cream applied to the skin to be far more effective and to produce greater symptom reduction. (Transdermal phosphatidylcholine can be obtained at some compounding pharmacies.) The transdermal form of this nutrient may be especially beneficial for those who have gastrointestinal problems and/or who can't absorb capsules or powders.

Datis Kharrazian, DHSc, DC, MS, author of *Why Isn't My Brain Working?* also recommends alpha GPC (L-alpha-glycerylphosphorylcholine).[4] GPC is a phospholipid metabolite that comes from lecithin and also increases acetylcholine levels in the brain. GPC can be purchased at online retailers and at some health food stores.

5-HTP. The body makes the neurotransmitter serotonin from the amino acid 5-HTP. Serotonin has typically been known to enhance mood, energy, sleep, and digestion, but a lesser-known fact is that it also assists with memory and cognitive function. Serotonin levels are often low in people with chronic Lyme disease, so supplementing the body with 5-HTP can mitigate many symptoms of Lyme, including the cognitive ones.

A few studies confirm the role of serotonin in improving cognitive function. For example, one study, published in 2006 in *Current Pharmaceutical Design,* concluded serotonin to be a potential target for pharmacological cognition enhancement, particularly for restoring impaired cognitive performance due to 5-HT (5-hydroxytryptamine) dysfunction.[5]

People who have methylation problems, which is many of those with chronic Lyme disease, may need to take a methyl donor, such as SAM-e, pyridoxyl phosphate (P5P, or the bioactive form of vitamin B6), methylfolate, or methyl B12 to be able to effectively synthesize and utilize serotonin from 5-HTP. Most doctors whom I know advise against taking random amounts of amino acids and methyl donors, which can be dangerous, as too little or too much of a supplement, as well as the wrong kinds, can exacerbate symptoms. For this reason, it's best to do a complete amino acid and methylation lab panel to determine which supplements and amino acids the body needs, including 5-HTP.

L-tyrosine and L-DOPA. The body uses L-tyrosine and L-DOPA to make dopamine, another neurotransmitter that is used to treat low energy, depression, and cognitive dysfunction. Dopamine is also commonly found to be low in people with chronic Lyme disease. Parkinson's disease is also associated with dopamine deficiency, and L-DOPA is often given to mitigate symptoms of Parkinson's. Interestingly, some Lyme-literate experts believe some cases of Parkinson's to be caused by Lyme disease. For this reason, it makes sense that L-tyrosine or L-DOPA supplementation could also relieve cognitive symptoms of Lyme.

Many studies have also proved L-tyrosine and L-DOPA to be useful for restoring cognitive function in general. For instance, one research study, the results of which were published in 2007 in the *Journal of Psychiatry and Neuroscience,* showed that L-tyrosine prevents cognitive decline due to stress.[6] I have also personally found both L-tyrosine and L-DOPA to boost my mental function and particularly to help me to process information faster.

Both L-tyrosine and L-DOPA can be stimulatory, so as with 5-HTP, testing is necessary to determine how much the body needs. As with phosphatidylcholine, I have found powdered and transdermal forms of L-tyrosine and L-DOPA more effective than oral capsules. L-DOPA can be contraindicated in certain situations and cause detrimental side effects if overdosed and should therefore only be used under strict physician supervision. Some studies have suggested that L-DOPA causes oxidative stress in the brain, but more recent studies show that this stress can be counteracted by taking L-DOPA with certain antioxidants, especially epigallocatechin-3-gallate (EGCG), a compound found in green tea.[7]

L-acetylcarnitine. According to Kharrazian, the amino acid compound L-acetylcarnitine binds and activates acetylcholine receptors, so that they more readily utilize acetylcholine, and studies have shown L-acetylcarnitine to improve cognition and delay Alzheimer's progression.[8–10] According to Thomas

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Lewis, PhD, and author of *The End of Alzheimer's? A Differential Diagnosis Toward a Cure,* spirochetal infections such as *Borrelia* have been linked to Alzheimer's, so L-acetylcarnitine may produce similar effects in Lyme disease patients as in Alzheimer's patients.[11]

L-huperzine A. This compound preserves acetylcholine in the brain by preventing its breakdown. Studies have shown it to aid in memory and cognition, and according to Kharrazian, it is one of the best supplements to use for symptoms of acetylcholine imbalance.[12]

Vinpocetine. Vinpocetine increases oxygen and blood flow to the brain and protects it against the effects of glutamate, a neurotransmitter found in excess in people with chronic Lyme disease and which damages neurons and causes symptoms such as insomnia and cognitive dysfunction. An article published in *Neurochemistry International* in 2008 confirms the neuroprotective effects of vinpocetine against glutamate.[13] The authors of the study also report that glutamate toxicity leads to mitochondrial dysfunction and problems with neuronal metabolism. For this reason, vinpocetine may be a very helpful nutrient for restoring cognitive functions in Lyme disease.

There are likely many other nutrients out there that support cognitive function in chronic Lyme disease, but I haven't researched or tried them personally. Also, what works for one person may not work for another. People with Lyme disease and their doctors will need to experiment and test to find out what works best for them. Nonetheless, I highly recommend reading Kharrazian's book *Why Isn't My Brain Working?* for more general information on improving brain function.

Finally, cognitive function in Lyme disease can be improved by balancing the hormones, since hormones, particularly thyroid, play a crucial role in cognition. Restoring the health of the gastrointestinal tract is also important, as is oxygenating and increasing blood flow to the brain with exercise and other strategies such as EWOT (exercise with oxygen). In addition, stabilizing blood sugar levels in the brain by eating frequently and maintaining a high-fat, moderate-protein, and low-carbohydrate diet can be beneficial, since brain cells require glucose as their primary fuel and hypoglycemia is common in chronic Lyme.

People with chronic Lyme disease usually have many imbalances in their bodies, and many doctors and patients whom I know believe that an anti-inflammatory, blood–sugar stabilizing diet is essential for proper brain function, along with supplements to support the health of the gut. Incorporating these nutrients and strategies into a daily regimen can go a long way toward mitigating the symptoms of cognitive dysfunction in chronic Lyme disease, and in restoring optimal function to the mind and body.

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The Importance of Reverse T3

by Pamela W. Smith, MD, MPH, MS

For many years, functional medicine and anti-aging practitioners have promoted the importance of complete thyroid testing.

Complete thyroid studies include the following:

- TSH
- free T4
- free T3
- reverse T3
- thyroid antibodies
  - antithyroglobulin antibody
  - antimicrosomal antibody
  - antithyroperoxidase (anti-TPO) antibody

Other thyroid studies may also be needed to help optimize function in the patient, such as thyroid binding globulin (TBG), which is a measure of stored thyroid. It is produced by the liver and is affected by illness, liver disease, and some medications. For example, the use of exogenous estrogen can increase TBG. Another study that may be helpful in accessing thyroid function is thyrotropin-releasing hormone (TRH), also called thyrotropin-releasing factor (TRF). It is produced by the hypothalamus, and stimulates the release of TSH and prolactin from the pituitary.

One thyroid test that has not gotten as much attention as needed is reverse T3. Reverse T3 is a biologically inactive form of T3. When the liver coverts T4 to T3, it also produces some reverse T3. The body converts T4 to rT3 to help eliminate any T4 that is not needed. Likewise, elevated rT3 will further inhibit the conversion of T4 to T3. FT3 and rT3 occupy the same receptor sites. However, T3 will activate the receptor; rT3 will not. If rT3 is high, the patient may have symptoms of hypothyroidism, even if their labs are normal. High normal or elevated reverse T3 may be indicative of reduced thyroid transport. Kent Holtorf, MD, and others have suggested that this may be due to mitochondrial dysfunction. Consequently, any disease process associated with mitochondrial dysfunction may be associated with high normal or elevated reverse T3:

- insulin resistance
- diabetes mellitus
- obesity
- chronic and acute dieting
- depression
- anxiety
- bipolar depression
- neurodegenerative disorders
- aging
- chronic fatigue syndrome
- fibromyalgia
- migraines
- chronic infections
- cardiovascular disease
- inflammation and chronic illness
- hypercholesterolemia and hypertriglyceridemia

High normal or elevated reverse T3 levels are one of the best measurements of thyroid transport into the cell. How can high normal or elevated reverse T3 levels be optimized?

- Since rT3 is derived from T4, lower the T4 dose or take the patient off of T4.
- Give T3. It will lower the TSH and subsequent production of T4 by the thyroid gland and inappropriate conversion to rT3.
- Decrease stress. (Chronic stress elevates cortisol in the body, which decreases the conversion of T4 to T3 and may result in an elevation of rT3.)
- Treat selenium deficiency if present.
- Treat iodine deficiency if present.
- Replenish iron stores if iron levels are low. (Low iron levels may be associated with high rT3.)
- Treat infection if present.
- Decrease exposure to environmental toxins such as chemical pollutants, pesticides, mercury, or fluoride.
- Treat underlying mitochondrial problem. Refuel the mitochondria with nutrients. (Doses are for adult patients with normal renal and hepatic function.)
  - magnesium glycinate: 400–600 mg
  - D-ribose: 15–30 grams
  - L-carnitine: 2000 mg
  - coenzyme Q10: 200–400 mg
  - NADH: 10 mg b.i.d.
  - alpha-lipoic acid: 300–400 mg

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Reverse T3

Lastly, looking at the ratio of free T3 to reverse T3 may be helpful in determining how important abnormal reverse T3 is in influencing optimal thyroid function. The ratio should be greater than 20. Make sure when you are calculating the ratio that free T3 and reverse T3 are measured in the same units; otherwise you will have to convert them to units that are compatible.

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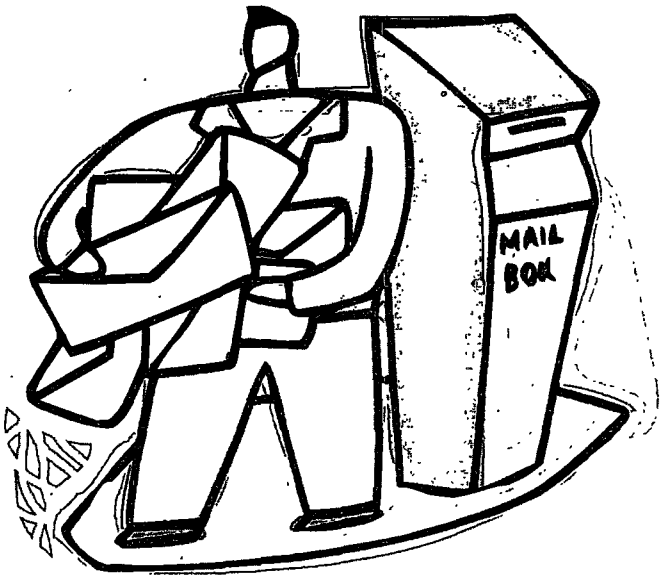

Letters to the Editor

Oxalate Article May Be Misleading

Kudos to the *Townsend Letter* for publishing the January 2015 piece by William Shaw titled "The Green Smoothie Fad: This Road to Health Hell is Paved with Toxic Oxalate Crystals."[1] This is a valuable and timely warning about serious problems caused by excessive oxalate consumption. Oxalates that are not excreted may accumulate in the body and cause systemic inflammation, oxidative stress, and a wide variety of potentially debilitating health problems.[2-6] A state of chronic (mild) poisoning by oxalates may negatively affect the health of a lot of people, yet it is generally unrecognized.

To remain credible, writers discussing this topic must strive to convey the most accurate knowledge available. Dr. Shaw's article included several potentially misleading assertions that merit clarification for readers interested in understanding this complex issue and in preventing or reducing excessive oxalate consumption.

Dr. Shaw states in his steps for the control of excessive oxalate that the body has "enzymes that degrade oxalate" and that B6 supports this process. The body does not degrade oxalate. Oxalate is a terminal metabolite that must be excreted, primarily by the kidneys. The only mechanism that mammals have to degrade oxalate is via the actions of a few varieties of microorganisms often present in healthy intestinal flora.[7] The body can excrete some oxalate into the intestinal tract (and skin), especially when the kidneys are not fully functioning.[8] Unfortunately, the gut microorganisms that degrade oxalate are easily destroyed by antibiotic drugs (such as erythromycin, doxycycline, or flagyl), other pharmaceutical drugs, and by excessive oxalate consumption.[9,10] Thus, this microbial protection is lacking in many people. Antifungal drugs may cause additional microflora disruption and further strain the kidneys, whose job it is to excrete oxalate, and prudence suggests that they be used with caution only when fungal infection is clearly evident. Gut health is indeed critical to reducing susceptibility to oxalate, as absorption of oxalate is higher when the gut is inflamed or otherwise disturbed.[11,12] Dietary and accumulated oxalates exacerbate the difficulties of restoring gut health.

Although vitamin B6 does not help the body degrade oxalate, Dr. Shaw is correct in asserting that B6 (pyridoxine) supplementation is an important therapy for reducing internal oxalate production. The body produces oxalate from glyoxylate, especially so when vitamin B6 is deficient.[13] B6 is a coenzyme that, among its many other metabolic functions, helps the AGT enzyme to detoxify glyoxylate by converting it to glycine rather than oxalate. Oxalate overload can also cause B6 deficiency, leading to a vicious cycle of overproduction of oxalate by the body. Pharmacologic doses of vitamin B6 reduce internal production of oxalate.[14] Simply taking vitamin B6 will not in itself lower health risks from excessive oxalate consumption in the diet, or from insufficient excretion of oxalate.[15]

There is no direct evidence that the body's ability to handle oxalate is improved by increased water intake, although dilute urine is easier on the urinary tract generally. Drinking copious amounts of water may improve oxalate elimination for kidney–stone forming patients, but water taken with food may increase the intestinal absorption of oxalate from foods, regardless of kidney function.[16]

Dr. Shaw's article also adds to the widespread confusion over what foods are truly high in oxalate. For instance the article states that arugula is high in

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oxalate. Yet according to expert testing done on behalf of the VP Foundation, 1 cup of arugula contains less than 2 mg total oxalate and about 0.5 mg of soluble oxalate, which is quite low.[17] Compare that with raw baby spinach, which contains 320 mg total oxalate and 230 mg of soluble oxalate per cup.[18] Foods with *less than* 5.0 mg of oxalate per serving are considered low in oxalate, while foods over 10 (Harvard University) or 14.9 (VP Foundation) are considered high in oxalate.[19,20] The resource offered by Dr. Shaw for learning about oxalate content of foods (UPMC) is of limited value, as are many similar online lists hosted by academic medical centers.[19,21] Like other lists, it is not fully up to date, is limited in the number of foods listed, ignores supplements completely, and contains errors.

To date, no mainstream nutrition, public health, or medical agency has compiled a comprehensive and up-to-date database of the oxalate content of foods in a consumer-accessible form. However, there are two peer-to-peer educational organizations that are helping people obtain accurate information about oxalates in foods, the VP Foundation (http://www.thevpfoundation.org) and the Autism Oxalate Project, (http://www.lowoxalate.info). Since 2002, the VP Foundation has engaged Michael Liebman, PhD, as scientific adviser and head of the foundation's food testing program. Dr. Liebman is an international expert on the methodology for measuring food oxalate and oxalate bioavailability, and the VP Foundation is an established leader helping low-oxalate dieters obtain accurate data about oxalates in food. Unfortunately, due to a lack of funds, its carefully compiled data have not been issued in one convenient reference document, but are scattered throughout its newsletters. Dr. Shaw, like low-oxalate dieters, is understandably confused about what foods and supplements are low in oxalate.

Current estimates of how much oxalate people are eating and how much of it is absorbed are not reliable, nor are they reflective of current dietary trends. However, recent studies found that dietary oxalate contributes 24% to 67% to urinary oxalate excretion.[22,23] Oxalate intake has been underestimated because of inaccurate techniques used to assay food oxalate, and absorption has also been difficult to assess.[24] Our rudimentary understanding of how the body stores oxalate in tissues and metabolic conditions that favor mobilization and excretion of sequestered oxalates complicate estimates of oxalate absorbtion.[22]

To fully make sense of this complex and fascinating topic we need a lot more research. Still, the low-oxalate, adequate-calcium diet, combined with appropriate supplements, offers a powerful therapeutic option for willing clinicians and patients.[25] I found this diet to be the only way for me to recover from a sleep disorder, arthritis, muscle pains, headaches, and fatigue. I have assisted a number of clients in reversing their chronic health problems including irritable bowel syndrome, hand and wrist pain, pain of incomplete healing from injury, back pain, poor-quality sleep, and other brain function issues using the low-oxalate diet and supportive supplements. Anyone interested in trying this therapy should seek guidance from qualified persons who have experience with the diet and be sure to obtain accurate information about the oxalate content of foods. The VP Foundation and the Autism Oxalate Project have both helped thousands improve their health and well-being with the low-oxalate diet.

Thank you for raising awareness of the problems with dietary oxalate. I hope you will continue to cover this topic and help to clear up the confusion and generate more demand for and interest in filling the gaps in our knowledge about oxalates and health.

Respectfully,
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Both Spiritual and Psychosocial Issues Can Affect Health

I read the article "Spirit and Healing" in the June issue with great interest and consider it a courageous attempt at a difficult subject. Spiritual influences on well-being are so important and much more difficult to pin down compared with physical disease. Yet most people are unaware of the extent of these influences. I think it is important to distinguish spiritual discord from psychosocial problems. Psychosocial issues often result from an important and highly stressful life event such as a divorce, the loss of money, or a death in the family. Most people understand the significance that this can have for well-being, especially if coping mechanisms are low.

Spiritual discord, however, can be thought of as a different domain. These issues are more fundamental, deeper, and more amorphous, so they are harder to define. Nevertheless they are present. This discord tends to reflect an underlying comfort or discomfort. It is the patient's place in the world, or not. It is a general underlying sense of well-being, or not. It is the patient's place in the universe, or not.

If that is intact, many things can be managed. If it is not intact, little things become big and, at times, fatal. I have often sensed spiritual discord in others and sometimes in myself, but have no idea how to address it, so I attempt to reduce it to psychosocial terms or physical problems or symptoms. This is where the SOAP method fails, as it attempts to reduce a complex integrated phenomenon into components, so the practitioner can tick them off one by one. Although the SOAP method can be useful in simplifying issues, it is not consistent with reality.

Spiritual well-being is at the root of psychosocial well-being, which in turn is at the root of physical well-being. Even that is an oversimplification, but in general makes the point. What are the causes of spiritual well-being? There are many and that discussion is beyond the scope of this letter, but at least this article makes a good beginning at pointing out this important, fundamental issue.

Ira Goodman, MD

Response to Dr. Goodman

The challenge that I have undertaken is to expand the discussion within our science-oriented culture to our relationship with all that there is (spirituality) through "reductionistic holism," an oxymoron that makes my head spin! It is, nonetheless, my attempt to use language that is familiar to science to explore how I believe the universe works from both a scientific and holistic perspective that requires logic, as well as trust and faith. I also realize the limitations in this approach.

You rightfully point out the difference between spiritual discord and psychosocial issues. Yet I don't mean to imply that there's something "wrong" at the spiritual level when I mention spiritual dis-ease. I look at both psychosocial issues and physical disabilities as lessons offered by the soul to enhance spiritual growth. It is merely a way of saying that we have unique souls launched on spiritual paths that are created by our particular physical and psychosocial challenges. Perhaps spiritual well-being is a process rather than a destination. ...

Warm regards,
Len Saputo, MD

Response to Drs. Goodman and Saputo

These issues seem to play out across a spectrum of intensity, in multiple dimensions. Both spiritual and psychosocial issues seem likely to impede major healing and may have a role in chronic illness, reflected in issues like:

- Unresolved trauma.
- Presence or lack of meaningful purpose in life (an issue Len Saputo explores in his writing).
- The question "What do I deserve?" (Marty Rossman has discussed that skillfully in his books.)
- Amorphous spiritual angst (nicely explored by Dr. Goodman!).

It would be lovely to see a section of the functional medicine matrix build out in this direction, though clearly not every provider will find this a match for their communication style. And there is always the possibility that some practitioners, unable to discern the underlying cause of the physical, psychosocial, or spiritual dysfunction, might chalk the illness up to a "psychosomatic" disorder, which occurred in the mainstream for decades. However, if one of these issues is at play and remains unresolved, the patient may not heal, with great psychological and monetary cost to the individual, their family, and society.

Nancy Faass, MSW, MPH

Licort Cream: A Blend of Licorice and Cortisol

Over the years, as a naturopathic family physician, I have seen a wide variety of skin conditions, including eczema and psoriasis and many things in between. I have experimented with a wide variety of "natural" creams, ointments and lotions. They almost always are made from different herbs, botanicals, and oils. The results have been inconsistent at best. Years ago I stumbled across a study about the use of glycyrrhetinic acid potentiating the action of hydrocortisone in the skin. I found this study intriguing and began formulating a skin cream that is a blend of licorice and cortisol. The results have been amazing, and I urge you to try this blend in your own practice.

Licorice, or *Glycyrrhiza glabra*, is a perennial plant that grows 1 to 2 meters in height and is native to Asia, Europe, and parts of the Middle East. Licorice, primarily its roots and rhizomes, is widely used as a condiment to flavour foods and candies. The root contains glycyrrhizin, which is 50 times sweeter

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than licorice. Licorice has been used in herbal medicine as a demulcent, expectorant, estrogenic, laxative, and adrenal mimetic. The active ingredients in licorice include triterpenoid glycosides known mainly as glycyrrhizin or glycyrrhetinic acid. The glycyrrhizin content of licorice root ranges from 1% to 27%, averaging about 10% to 16%. Licorice root also contains flavonoids, isoflavonoids, sterols, volatile oils, tannins, saponins, and sugars.

Topical corticosteroids are one of the oldest and most useful treatments in a wide variety of inflammatory dermatological conditions. There are many types of corticosteroids available that differ in potency and formulation. Cortisol, also known as hydrocortisone, is available in OTC (over-the-counter) potency of 0.5% strength. It is also available by prescription in 1.0% and 2.5%. It is considered to be the mildest of all the corticosteroids available for topical application and is rated as low potency. Conversely, betamethasone cream is considered medium potency and clobetasol is classified as high potency. Generally, the stronger the potency, the more risks of side effects. Skin thinning and atrophy are considered the most common side effects of chronic steroid use. They occur because the steroid inhibits collagen, hyaluronic acid, and keratin synthesis in cells of the dermis and epidermis. Also, the layer of skin cells decreases with long-term steroid use. The stronger the corticosteroid, the more that is applied, and the longer that it is used all contribute to skin atrophy.

Glycyrrhetinic acid inhibits the enzyme 11-Beta-hydroxysteroid dehydrogenase (11B-OHDH). 11B-OHDH is the enzyme largely responsible for breaking down cortisol or hydrocortisone into inactive metabolites. The dermis can break down corticosteroids because of the presence of 11B-OHDH enzymes there. It logically follows that applying glycyrrhetinic acid from licorice to the skin would prevent the breakdown of a topical steroid. Several studies in human volunteers and laboratory mice and rats seem to confirm this.

After reading these studies about use of glycyrrhizin from licorice inhibiting the breakdown of hydrocortisone, I began mixing the two ingredients. The blend of licorice and hydrocortisone has yielded positive results for most inflammatory skin conditions. I generally use licorice solid extract blended to make a potency of 2% to 5% and hydrocortisone at 0.25% to 0.5%, which is less than OTC strength available, mixed in a basic white cold cream. I have also mixed other botanicals, including marigold (*Calendula officinalis*), comfrey (*Symphytum officinale*), and purple coneflower (*Echinacea purpurea* and *E. angustifolia*) for their skin-healing and anti-inflammatory properties. The herbal blend plus a minimal amount of hydrocortisone produces a synergistic effect greater than the sum of the individual ingredients. And because the hydrocortisone is less than OTC strength, the risk of side effects, mainly as skin thinning and atrophy, is minimal. Of course, the cream is medicated and should be used as prescribed, as needed, and in the minimal amounts, frequency, and duration that provide the best relief of symptoms. Try this simple blend, and you will be amazed by the results for many inflammatory skin conditions that you might see in clinical practice.

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The New Paradigm for Treating Depression

review by Ira L. Goodman, MD, FACS, ABIHM, FAARM

A Mind of Your Own: The Truth About Depression and How Women Can Heal Their Bodies to Reclaim Their Lives
by Kelly Brogan, MD, with Kristin Loberg
Harper Collins, New York
© 2016; hardcover; $26.99; 337 pp.

A revolutionary approach to treating depression in this new book by one of the few functional medicine psychiatrists in the world. The dangers of pharmaceuticals, the epidemiology of depression, and predisposing factors are highlighted.

Kelly Brogan, MD, has taken a bold stance against the prevailing community standards in regard to the diagnosis and treatment of depression, which has become the leading cause of disability in America and the world. She has impressive credentials from MIT and Cornell medical school. She practices in Manhattan.

Seven percent of all visits to a primary care physician result in a prescription for antidepressants, and most of this advice is given without a specific diagnosis! Depression is strongly associated with obesity, as well as many inflammatory diseases and is intimately related to the microbiome, immune system, and endocrine system. According to a recent *BMJ* article, researchers from the Cochrane Nordic center claim that over 500,000 people over 65 in the West die from antidepressants per year. Dr. Peter Gotzsche of the Cochrane Collaboration said, "Our citizens would be far better off if we removed all psychotropic drugs from the market, as doctors are unable to handle them." Robert Whitaker's recent book about corruption at the institutional level in psychiatry, *Psychiatry Under the Influence*, eloquently points this out. His first book, *Anatomy of an Epidemic*, clearly influenced Brogan as did Irving Kirsch's book *The Emperor's New Drugs*, which proves that psychotropic drugs are about equivalent to placebos. The reason that these drugs have gained such wide popularity is because there is a lot of depression and suffering, especially among women, whose rates for this malady are twice those of men. This is the perfect setting for Pharma to come to the rescue – a prevalent chronic disease that usually is not fatal, creates customers for life who never get better, and is easily marketed to "providers." What could be simpler? You have depression, we have an antidepressant. The only problem is that these drugs do not work and are extremely dangerous.

Brogan does a nice job of pointing out the relationship of diet, meditation, sleep, exercise, environmental toxins, supplements, and hormonal balance in depression. There are detailed descriptions of each of these, consistent with the functional medicine paradigm. She outlines a detailed 30-day program to heal depression that is quite good. The serotonin myth is definitively debunked, as it should be. This was an absurd attempt by Pharma to have something to hang their hats on in marketing these drugs. Why has it taken so long for most physicians to realize this? Very simple: it's easier to write a prescription in 30 seconds than to take hours explaining how to really treat this disease, especially in a 7-minute exam. The direct-to-consumer advertising allowed in this country, combined with the ghostwritten articles, conflicts of interest, and media blitz that would make Coca-Cola jealous, have all combined to make antidepressants so popular. The fact that there were over 40,000 reports of adverse effects for Prozac alone (no other drug comes close) did not even dent patients' appetites for this drug, as proved by the $11 billion/year spent on them courtesy of the 600 lobbyists and Pharma's funding of 70% of the FDA trials. It's dirty, real dirty. It's bad enough if a drug does not work. We have had plenty of those. When this is combined with making the underlying disease worse in the long term, causing thousands of deaths and addicting millions of people, we are getting far from being just bad – it is downright evil.

Brogan has some unique comments on statins, PPIs, beta blockers, and Tylenol. However, the best section in my opinion, is the one on vaccines, fluoride, and other environmental toxins. Although much has been written recently on all these subjects, her comments are a fresh look and alone worth the price of the book. Her recommendation for liver powder and resistant starch is something that I was introduced to and am curious about. Her comments on diet are generally good, although I disagree about animal products' being healthful.

Brogan is an extremely courageous woman to take the controversial stance that she has in this book. Although there are others such as Whitaker, Kirsch, and Gonzales with similar positions, she is the only practicing psychiatrist who appears to be willing to take on the powerful forces of Big Pharma, the psychiatry industrial complex, the government, and the vast majority of practicing physicians in such a high-profile manner. She is a beacon of light in a sea of insanity. I support her 100%.

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The Vaccination Debate: A Naturopathic Perspective

review by Thomas A. Kruzel, ND

Vaccination and Naturopathic Medicine: In Their Own Words, edited by Sussanna Czeranko, ND, BBE
NCNM Press; 49 SW Porter St. Portland, Oregon 97201; ncnm-press.com
© 2016; $27.95; 400 pp

The issues regarding vaccinations in the modern era are many and varied but still have their roots embedded in the philosophical differences spawned by the germ and terrain theories from over a century ago. One would think, over the past almost two centuries of an often heated and passionate debate, that some amount of rational thinking, science, and clinical outcomes based compromise would have been reached. But as we have most recently witnessed, no such rational compromise or civility exists.

This is where *Vaccination and Naturopathic Medicine: In Their Own Words* helps one to understand that the roots of this debate, especially in naturopathic medicine, go very deep. Not only are the differences philosophical in nature but as well based on science, common sense, and issues of personal choice and right of self-determination. Czeranko's writing, as well as her selection of the voices of the forefathers and -mothers of the antivaccination movement from its inception, allow the reader to understand that this movement was never just about adverse reactions to vaccinations, but aslo a reaction against the scientific community's inability to assess the evidence of harm, as well as comprehend a political and pharmaceutical industry dogma that at times defied reason.

These are the issues still seen in the modern era, as the pharmaceutical industry, bolstered by government policies and mass media hysteria, continues to fan the flames of fear and ignorance in order to maintain profits at the expense of our children and public health.

Reading Czeranko's book took me back to my scientific, political, and humanistic roots and reminded me why naturopaths, as well as many medical and osteopathic doctors, have over the years vigorously opposed mandatory vaccination. I highly recommend this book to anyone who has not yet settled the vaccination question for themselves.

Often we become immune to the mind-numbing cacophony of incessant dialog aimed at convincing all of us that scientific evidence and rational thinking are not to be believed with regard to the ill effects of vaccination, only to be reminded again that it is very real when we see the damage done to children and their families. ◆

Are Stem Cells Over?

In 2003, I did my first stem cell case, and it was, as far as I know, the first time that the Feds investigated a physician for the clinical use of stem cells. Mitch Ghen had treated a couple of dozen ALS patients with umbilical cord blood. He obtained the material from a Florida cord blood bank. The Feds found out and were not happy. So a half-dozen agents raided his clinic in 2003. After the raid, they threatened to indict the Florida cord blood bank unless it stopped selling Mitch cord blood. It did, and that pretty much put Mitch out of the stem cell business. The Feds kept investigating Mitch, calling his patients and former employees, all to try to build a case against him. They wanted him to plead to a few minor felonies with probably only a scant few years of actual jail time. I made my arguments and we went round and round. In law, sometimes you have to know when to hold them and when to fold them. I advised Mitch not to plead guilty to anything. He followed my advice. After more saber rattling, the Feds backed down and moved on to some easier targets. Mitch learned his lesson, and his next forays into allogeneic (other people's) stem cell therapy were done abroad. Since that time, it has been clear that allogeneic stem cell transplants can only be performed under FDA-approved clinical trials. (My book, *Galileo's Lawyer*, contains a chapter on Mitch Ghen and his run-in with the FDA.[1])

However, the allure of stem cells was irresistible to many medical mavericks and they started thinking about autologous stem cell transplants. This had been done legally for decades as part of oncology procedures (bone marrow/stem cell recovery as part of high dose chemotherapy) and other reasons. They focused on the extraction of mesenchymal cells from fat, maybe because it was relatively easy to remove belly fat, and liposuction was common and safe. There were various techniques for separating the mesenchymal stem cells from the fat, some chemical and some mechanical via centrifuge.

I believe that I wrote the first opinion clearing the use of these cells for transplant in US patients. But there was a rub, or a couple of rubs. First, the removal and reinjection of the material have to take place during the "same surgical procedure." But back then, there were no guidelines as to what that meant. The use of the cells had to be "homologous," meaning for the same type of thing that the cell was made for. But that was also vague (or vague enough for me).

Finally, the cells couldn't be materially altered or, in FDA parlance, "more than minimally manipulated." Back then, separation either by physical or chemical means was not considered "more than minimally manipulated," at least by me, because there was no specific language so indicating.[2]

On the other hand, it seemed pretty clear to me (and I assume to others knowledgeable in the field) that the one thing which stem cell transplanters couldn't do was culture stem cells because of two of the above FDA restrictions: First, expanding the original cells over many days or weeks sure seemed like the original cells were being "more than minimally manipulated." Second, it would be hard to argue that reinjecting all those expanded cells a week or two after removal was during the same surgical procedure.

By the late mid to late 2000s, stem cells became a big thing. Of course, there were many clinical studies, but the private clinical practice of stem cells really took off. Organizations like A4M were doing modules and training on clinical stem cell use. All kinds of physicians were offering stem cell treatment for many medical conditions, especially muscle, joint, and ligament problems. Even Texas then-Governor Rick Perry received stem cell treatment; illegally, I might add, as his cells were expanded.

And the clinics kept pushing the envelope. The folks who (in my view) pushed it too far were the Colorado clinic (Regenerative Sciences) that treated orthopedic patients with cultured stem cells.

That was a bridge too far. The FDA had enough of the Wild West stem cell medicine business. The proponents made too many unsubstantiated claims and were using stem cells as therapeutic drugs without going through the FDA drug testing program (INDs [Investigational New Drug Applications]).

In 2008 the FDA sent Regenerative Sciences a warning letter telling the company that what it was doing was illegal. Specifically, it was violating the FDA drug trifecta: the material was an unapproved new drug, it was misbranded and adulterated. The Feds also had problems with the company's noncompliance with cGMP standards.[3]

Yes, the material started out and ended up as the person's own stem cells (the new ones were daughter cells), and yes the original cells were originally part of the person's body. So how could that material be a drug? Logic is logic, and fair is fair, but FDA law and regulations have a logic unto themselves, and as unintuitive as it seemed, under FDA law, something that was literally removed from a person's body could be converted by regulatory definitional magic into an adulterated, misbranded, unapproved, and legally dangerous new drug.

The company had two arguments. First, the FDA didn't have jurisdiction over the practice of medicine because only the states can regulate medical practice. Second, the company argued that there was no jurisdiction because the treatment was given in Colorado, so there was no interstate commerce, which is a requisite for the FDA to act.

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After receiving the warning letter which told the company to stop violating federal law, it followed the usually wise precept that the best defense is offense. The company sued the FDA in Colorado federal court for declaratory and injunctive relief using the two arguments.

What did the court say about these arguments? Nothing. The court only decided that the company didn't have a right to bring a lawsuit. And herein lies the unfair federal government sleight-of-hand. Even though the FDA told the company that what it were doing was illegal, the Feds did it via a "warning letter." In a move that only a regulator would have the temerity to concoct, the Feds argued that a warning letter is not "final agency action" and "confers no rights." It's just the agency's current informal thinking on the matter, and the agency's thinking could change. The federal courts have accepted this nonsense before, and the Colorado district court did so in this case. So like in other cases, the judge dismissed the company's lawsuit on jurisdictional grounds.

But the FDA didn't change its mind, it just wanted to have the case heard in the DC circuit. It didn't take the FDA long to file an action against the company in DC federal court, seeking basically the opposite of what the company sought, a declaration that what the company was doing was illegal and an injunction stopping the treatment. But this time the FDA was the plaintiff and the case was in the court which spends much of its time on administrative law cases.

Litigating in court against an administrative agency is sometimes a frustrating exercise. In a regular civil or criminal case, the judge decides the law and how it is interpreted. This gives both parties an equal shot at convincing the judge what a law means. It doesn't work that way when one of the parties is an administrative agency. Both federal and state courts stack the deck in the agency's favor in a variety of ways. One way is that when an agency is a party and the case involves the interpretation of a statute or regulation which the agency oversees or enforces, the judge does not have the latitude to make independent and neutral rulings concerning the meaning or interpretation of the statutes or rules. Instead, an administrative agency's interpretation of its own statute and rules is given deference (The Feds call it the *Chevron doctrine*). Unless an agency's interpretation is self contradictory, makes no sense, or is irrational, the agency's interpretation of its laws and rules will be followed by the court.

This sort of takes the desire out of litigating against an agency, which is probably the point or goal. Long story short, the district court agreed with the FDA on basically everything and entered an injunction against the clinic barring it from doing the procedure. The judge's decision was affirmed on appeal by the DC Court of Appeals.[4]

Enough Is Enough

The FDA had enough of the autologous clinical stem cell transplanters, so it did what comes naturally to regulators, it (belatedly) asserted jurisdiction and regulated the stem cell clinics, which in all practicality means the Feds are trying to put a stop to the therapeutic use of autologous stem cell transplant outside of clinical trials. It did it (or is in the process of doing it) via two administrative vehicles, warning letters and industry guidance documents.

In 2012, the FDA sent a warning letter to a New York company extracting stem cells (stromal vascular fraction) from fat and promoting their use for a wide variety of medical conditions.[5]

In December 2015, the FDA sent a similar warning letter to a physician doing the same things in California and Florida.[6]

Same basic contention/finding in both instances: the cells were an unapproved new drug because the use was not homologous, the cells were more than manipulated ("your processing alters the original relevant characteristics of the adipose tissue" yada, yada), and of course the obligatory cGMP (current good manufacturing procedures) violations relating to the manufacture of the material.

Apart from lobbing warning letters at the unlucky who hit its radar screen, between late 2014 and 2015, the FDA also circulated specific draft industry guideline documents on the key regulatory points, basically making formal the principles and interpretations of the regulations set forth in the warning letters. Thus, there are draft guidelines on:

- What constitutes the same surgical procedure.[7]
- What is a homologous use of stem cells (not much).[8]
- And most importantly, what constitutes more than minimal manipulation. This was the biggest blow, since the FDA is taking the position (or trying to) that separating the stem cell from its fat structure is more than minimal manipulation, and this pretty much kills the whole therapeutic use of stem cells outside of clinical trials.[9]
- And in case the adipose stem cell transplanters had any doubts that the FDA was serious about stopping all the fat-based stem cell therapeutics, the agency even put out a draft guidance specifically on HCT/P's from adipose tissue.[10]

Note, these are just "draft" guidelines ("guidance documents"). Under the arcane rules of administrative agencies, the agency publishes draft guidances and the public gets to comment on them. Then there is public hearing where stakeholders can comment to the agency face to face. The public hearing on these guidance documents was set for April 2016, but the FDA adjourned the hearing because of the intense public reaction to the guidelines. Supposedly the FDA wanted to give more time for stakeholders to

comment. We'll see, and we'll also see if the public hearing will be longer than the one day previously scheduled. The FDA received over 70 written comments about these guidelines so far. But don't count on the FDA changing its mind, on any of the big issues anyway. Is it still worth submitting public comments? For sure. You never know. Maybe some congressional muscle might help as well. Ditto for a public groundswell, if such could be managed.

What can stakeholders do if the FDA adopts the draft guidance documents? Not much. But more of that once the guidelines are in final form. More to come.

Rick Jaffe, Esq.

Notes

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Treating Disease: The Exclusive Domain of Pharmaceutical Drugs Is It Rational?

Restricting the treatment of disease to approved drugs is not logically justified, since it contradicts the obvious fact that other treatment methods have been successfully applied for centuries. The established universal doctrine of treating disease *only with approved pharmaceutical drugs* cannot be justified on scientific grounds. Traditionally, food has been regarded as a functional treatment for disease in general and for specific remedies in particular, wherein traditional usage has been historically successful. If present-day statistical methods could have been applied to centuries of established use, "food" would likely be recognized as a safe and effective treatment for disease and more particularly in the prevention of disease. The application of foods as both nourishment and medicines is summarily denied, even though solvent extracts from plants comprise the "active ingredients" of some approved drugs. Long before the emergence of the pharmaceutical industry, the obvious medicinal properties of foods were recognized in treatments of disease prior to being replaced by *single-molecule pharmaceutical products exclusively*. Understanding the physical and chemical reactions involved in multicompound natural products was hindered in the past by practical limitations in analytical chemistry. Today, the means exist to redress this limitation. The organic chemistry of plants and the physiological biochemistry in humans are *interdependent through evolutionary synergy,* involving millions or even trillions of metabolic pathways with numerous complex impacts both potentially beneficial and harmful. Hypothetically, the physiological/molecular reactions involved would require a naturally designed or adapted process to ensure that the biochemical reactions are balanced and chaotic pathway occurrences are avoided such that conditions of homeostasis are maintained. Such balance would appear to be inherent in the complementary functions of both food and human physiology. Pharmaceutical products emerged as simpler single compounds, much less complex in composition and postulating the single-ingredient, single-pathway remedy designed to inhibit the progress of disease. Dependence on the immune system for its purposeful existence was relegated to second choice in favor of a *single-pathway approach*. Single-pathway methods of impeding the progress of disease are both viable and desirable if physiological activity is controlled to prevent activity along other pathways distinct from the intentionally designed ones. The time/concentration effects of single-pathway remedies are neither known nor controllable in the multicomponent complex of physiological processes. It constitutes risks of unintended and unforeseen circumstances of drug activity along malfunctioning biological pathways in a time/concentration process. However, it would be reasonable to postulate that the natural functions and chemical compatibility of plant materials and the human cellular system provide an

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adequate control mechanism against the occurrence of harmful pathway effects. The occurrence of drug "side effects" evidences the migration of single compounds into additional unintended pathways. Issues of drug safety beyond clinical test experiences verify the time/concentration postulate of uncontrolled multipathway activities. The logical inference is that approved drugs have not been scientifically established as completely safe, despite hundreds of millions of dollars being expended for the purpose.

The best outcome is that the negative effects of additional unintended pathways are infrequent and generally offset by the fast-track benefits of treating the target disease effectively. Unfortunately, the time/concentration effects of single-compound remedies predominantly affect older patients, who consume several prescription drugs over a lifetime. Consequently, the attendant risks become significantly greater and there is no regulatory limit on the number of drugs that physicians may prescribe to an individual patient. Such an imposed limitation would reduce the risk of unintended consequences.

Establishing and exclusively securing this "single-compound" system commercially for the cure, treatment, mitigation, and prevention of disease required specific definitions of several medical and physiological terms. Disease has been traditionally recognized as the physiological effects of external agents such as bacteria, viruses, fungi, and some environmental causes. For regulatory enforcement purposes the definition of *disease* has been revised as follows:

Disease is "any deviation from, impairment of, or interruption of the normal structure or function of any part, organ or system (or combination thereof) of the body that is manifested by a characteristic set of one or more signs or symptoms, including laboratory or clinical measurements that are characteristic of the disease."

The very occurrence of approved drug side effects ("signs") means that prescription drugs cause disease (as defined above) in addition to curing or treating the specified one. Consequently, pharmaceutical drugs themselves become *both cures and causes of disease,* if the regulatory definition continues to apply.

The symptoms listed with respect to diseases in medical literature and *pharmaceutical drug inserts* are identical to the "side effects" acknowledged as accompanying specific prescription drug usage. In the purposeful defense of the negative outcomes associated with prescription drugs, "symptoms" and "side effects" are classified differently even though their physiological characteristics are essentially identical.

Within the regulatory definition of disease "the side effects" cause deviation from, impairment of, or interruption of normal structure ... of a "disease." Physiologically, the observation and effects of both "symptoms" and "side effects" lead to the conclusion that prescription drugs may be both "cure and cause" of disease in an exchange process of one disease condition for another. The risks of occurrence of such deleterious exchanges relate to a time/concentration dependent phenomena. A cure for the target disease may be achieved relatively quickly but it may be followed by "signs" of some other physiological disorder either simultaneously or sometime later. The "overencompassing" definition has rather condemned specific pharmaceutical products as causes of physiological disorder (disease) in the same context as claiming curative propensity for them. This results in a self-defeating justification if its purpose is to maintain the *exclusive use* of pharmaceutical drugs in the remedial aspects of public health.

Food provides the fuel and cellular mass replacement needs as well as the absorption of necessary nutrients to be metabolized into physiological remedies. To exclude food as a treatment for disease is therefore *not logical*. The adoption and promotion of pharmaceutical remedies to the exclusion of the medicinal function of food requires some rational justification, which is not being addressed. Recognition and acceptance of food in the general dietary context without recognition of curative or treatment applications is insufficient justification for its exclusion from *an equivalent approved drug categorization.*

The mandatory establishment of approved drugs as the only legal treatments for disease is managed by purposeful regulatory definitions of disease, medicines, symptoms, side effects, supplements, active ingredients, drug safety, efficacy, clinical test protocols, effective concentrations, and several other relevant parameters constituting or associated with medicines.

In the interest of a rational evaluation of the regulatory aspects of medicines, amendments should be made to acknowledge the following:

1. Foods (plants and herbs) should be accepted as "treatments" for disease as distinct from actual "cures" and available to the public without commercial restraint.
2. Manufacturers should be allowed to promote such treatment options without imposition of an "illegal drug" status. Specific claims of "cure" should be backed by clinical test verification by food science protocols as distinct from pharmaceutical clinical test standards, which have been designed for single-compound products.
3. Treatment of *acute diseases* should continue as the exclusive domain of pharmaceutical drugs approved by the FDA. This follows logically since no established alternative remedies can be relied upon to act within the time constraints of probable acute disease outcomes. However, chronic diseases may be treated (a) by pharmaceutical drugs with adequate risk controls through improved monitoring and *limits on extended use*, (b) alternative plant and herbal remedies naturally derived should be recognized as potential treatments, or (c) *a complementary combination of both*. Major savings in the medicinal aspects of health care can be immediately achieved by this approach.

Jerry Norton, PhD Applied Science

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Ask Dr. J

by Jim Cross, ND, LAc
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Wilderness Healing

One of the themes for this month's *Townsend Letter* is travel health/wilderness medicine. I would like to slightly alter this concept to "wilderness healing." Many of my patients, friends, and students will remark at how strong my energetic being is. There are multiple factors that contribute to this energy. One is that my parents gave me great genes (thanks, Mother and Dad!), to which I have overall been a good steward for the vast majority of my life. Another is that I eat about 98% photon-rich food. In other words, I consume food that still has qi/life force contained within it. I eat almost entirely fresh fruit, veggies, yogurt, and meat from my local farmers market that still has that feeling and taste of freshness. I have also found that the act of buying food from the farmers market is also energizing because the vendors there have such positive energy about their products. Finally, I expose myself to the earth's energy every day. This is easy to do because two of my neighbors are national forests. The wild animals (bears, mountain lions, coyotes, bucks, etc.) come onto my property on a fairly regular basis. My daily hikes involve direct exposure with this magical energy. My interactions with wild beings, the thousands of trees in my vicinity, and the rocks/minerals in the soil feed and nourish my core being in a way that is recognizable by the people above in this paragraph.

In the US, this exposure to nature has been called Earthing. In Japan, they know it by *Shinrin-yoku*, or forest-bathing. Basically, you are bathing in the atmosphere of the forest. Now what is this atmosphere of the forest? I found a new word: *phytoncides*! We apparently are not responding to a particular tree or flower or organism per se in nature, but are undergoing an active interaction with these phytoncides that are aromatically given off by plants. These phytoncides are antimicrobial, alleochemic, volatile organic compounds that plants use to ward off attacks by bacteria, viruses, fungi, and insects. We not only drink or eat our phytochemicals but also breathe them directly into our lungs, absorbing them through our skin. Taken together, the lungs and skin have a phenomenally large surface area available for absorption of these lovely phytoncides!

In addition, there is an interesting study from the underread *Journal of Immunopharmacology and Immunotoxicology* titled "Phytoncides (wood essential oils) Induce Human Killer Cell Activity."[1] The authors found that wood essential oils emitted into the air not only significantly increased natural killer cell activity but also increased surface markers in the complement cascade. This study shows that the wilderness can aromatically have positive physiological effects on our bodies.

Where else can we find information on physiological effects of the earth on humans? One place is the Schumann resonances. At any given moment, about 2000 thunderstorms roll over the earth and produce about 50 flashes of lightning per second. These lightning bursts create waves of low-frequency electromagnetic energy that circle the earth between its surface and about 60 miles up in the lower edge of the ionosphere. This space between the surface of the earth and the conductive ionosphere becomes a resonant cavity for this low-frequency electromagnetic energy. Schumann resonances are the principal background electromagnetic energy in this space, beginning at 3 Hz and extending to 60 Hz, and appear as distinct peaks at extremely low frequencies around 7.83 (fundamental), 14.3, 20.8, 27.3, and 33.8 Hz.[2]

Our ancestors, of course, intuitively understood what was happening around them and documented this in their rituals and on artifacts. Or perhaps they just trusted the universe rather than needed to understand it.

Magnetic waves are carriers of information which influence all living systems on this earth. Basically, every cell of each living organism on earth is bathed in this external, fluctuating, invisible electromagnetic force. Most unfortunately, we are also being bathed in a human-made series of electromagnetic frequencies that are not entrained with our various organ systems and which are raising havoc in our bodies at this

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very instant. For as long as humans have been on earth, our physiological rhythms have been synchronized with these naturally occurring electromagnetic forces that are being exerted on us. It would make sense then that unnatural fluctuations in these fields might have pathological effects on the various systems of our bodies. From the other side, it would also make perfect sense that exposure to these natural fields would have a positive effect on our organ systems, which has been shown to be true.

There also is a similarity between the frequencies, to which we are being exposed from the earth, to the brain waves and to the heart rhythms of human beings. Changes in the earth's magnetic field have been shown to affect human heart/brain rhythms and have been associated with the following: positive changes in athletic performance, memory, and other tasks, synthesis of nutrients in plants and algae, the number of reported traffic violations and accidents, mortality from heart attacks and strokes, and incidence of depression and suicide.[3]

Nature then contains an incredibly complex exchange of energy. Just as it is impossible to separate individual nutrients in a whole food or herb, it is basically impossible to know the total amount of exchanges taking place between us and them, *them* being the entirety of the natural environment. It's the classic "forest for the trees" comment. We see nature all of the time, but how many of us really experience nature and really understand what this experience nourishes inside of us? We miss the obviously larger picture of inclusiveness that exists between all living beings on earth and with the earth itself. A lovely example of this exchange taking place is the Peace Garden Project, which has a lovely video that succinctly gives the most beautiful environmentally inclusive message in about 90 seconds.[4] It's all about just getting along with each other and with the earth; so easy to say and so many distractions and desires that prevent us from doing so.

Finally, I would like to leave you with a real-life example of this possible energetic interchange. Twenty-four years ago, I was driving home to Quincy (California) from Chico, the nearest city. It was a very cold February night around 12 a.m.; there was a full moon. In my favorite TV show of all time, *Northern Exposure*, Dr. Joel Fleischmann describes the location of Cicely, Alaska, when queried by a tourist one day: " It lies somewhere between the end of the line and the middle of nowhere." This describes Quincy also. You must drive 50 miles up the North Fork of the Feather River canyon to get there. I was only a few miles above the bottom of the canyon when I drove around a 45 mph right-hand turn. As I did so, I saw an incredible sight in the middle of my lane. A male and female mountain lion had just taken a deer. I wondered, should I ask for a three-way on the liver? I decided to move into the other lane and just keep on going. As I approached this truly cinematic event, going as slow as I could, the male jumped up to stand guard over the female lion who was finishing off the deer as I could still see it futilely struggling. As I passed, I looked to the right and the male leapt parallel to me. For about a second, our eyes met and our gazes locked. I saw in those eyes an energy force that was so powerful and intimate that I can still feel it to this day. This was the real deal.

It took about two years for me to have the sudden realization that this encounter had actually been a wonderful gift to me in that moment. (Of course this lightbulb went on in my brain as I was walking in the woods!) The male lion had given me a bit of his core strength. Along with my positive lifestyle choices, this has allowed me to presently be 64 and still have an energetic presence that allows me to work from dawn to dusk. This example of mine is an extreme one. If any of you are lucky enough to have experienced something along these lines, good for you! The point which I want to really make here is that our mundane, daily choices really determine how successfully we and our patients age. If you can make simple, positive daily choices (photon-rich food, monitor your stress levels, move your body, spend an hour in real nature every day), you will be writing your own extremely successful anti-aging guidelines. What is tough for our patients and for us is to be consistent on a daily basis. As Peter Tosh so wonderfully sings on his powerful album *Equal Rights*: "Everybody wants to go to heaven but nobody wants to die." We all want to feel physically/mentally/emotionally/spiritually great. Are we willing, though, to put forth the daily effort to achieve this lofty goal?

Finally, just remember to remind yourself and your patients that true contact with the earth and the physiological benefits that come with it are all about location, location, location!

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Healing with Homeopathy

by Judyth Reichenberg-Ullman, ND, DHANP, LCSW, and Robert Ullman, ND

www.healthyhomeopathy.com

Homeopathy for ITP (Idiopathic Thrombocytopenia Purpura)

What Is ITP and How Do I Know If I Have It?

Idiopathic thrombocytopenia purpura (ITP) is a blood disorder associated with unusually low levels of platelets, the cells that help blood to clot. In adults, the disorder often becomes chronic. Although there may be no symptoms at all, the two patients we have treated have presented with:

- excessive bruising (purpura)
- superficial bleeding into the skin that appears as pinpoint-sized reddish purple spots (petechiae), generally on the lower legs
- spontaneous nosebleeds
- purplish spots inside the mouth
- fatigue

The condition is called "idiopathic" because the exact cause is unknown. This is perfect for homeopathic treatment, since we treat the underlying imbalance and return equilibrium to the vital force, of which the immune system is a part. Common medical wisdom explains that in ITP, the immune system malfunctions and begins attacking the platelets as if they were a foreign substance. The spleen, which helps your body fight infection, then removes the platelets from your system. Your normal platelet count is over 150,000 compared with those with ITP, in whom the count can fall to 20,000 or, more dangerously, 10,000. At this point, you would be at risk of internal bleeding, especially to the brain, which could be fatal. The first line of treatment with conventional medicine is corticosteroids, which can cause long-term side effects of bone loss, cataracts, and elevated blood sugar. In some cases, when the steroids are not effective, the spleen is removed, making the person more vulnerable to infection.

Carlos's case, presented below, is only the second ITP instance we have seen in our practice. In both cases, the patients responded extremely well to the same homeopathic medicine. So, although our experience with ITP is limited, the case seems worthwhile to share.

Carlos: Life-Threatening ITP

Carlos, 44 years old, was from the Southwest:

> They say this is about my platelets, but I have come to realize that I have felt under siege my whole life. Hypervigilant. I am a wilderness guide. I have intense tracking capacity. A month ago I was headed out to meet with a shamanic teacher. I found purplish, black hematomas inside my mouth. They lasted a day, cleared up, then they returned. Soon after I found a big clot two-thirds up my lower leg. Then I began seeing small bruises on my arms and legs. An MD sent me to the ER, and I was diagnosed with ITP. They prescribed prednisone. My platelets were around 3000. My symptoms worsened to the point that even sleeping with my legs together would cause them to turn purple. Especially my calves. A transfusion bumped the platelets to 23,000, but they had plummeted to 9,000 by the next day. I called the after-hours oncologist, and he told me to "wait until I stroked out" to go back to the ER.I trusted my instincts and went back anyway. My platelets had fallen again to 3,000. They changed the prednisone to dexamethasone. A bone marrow biopsy led them to hospitalize me and treat me IV. That boosted the platelets to 70,000, but I developed migraines, massive vomiting, massive pressure in my brain, inflammation in my heart, and two days of hallucinations. A very severe response. I could feel the vascular activity.
>
> I received an urgent mail that night informing me that the platelets had again fallen below 3000 and were still at critical levels. The doctors became quite nervous. It looked like I had a life-threatening or life-chronic form of ITP.

At the time of Carlos's first homeopathic appointment, he was on prednisone 70 mg/day and Amicar 500 mg 4 times a day. The doctors were seriously considering prescribing Rituxan (rituxamab) to suppress his B cells.

A Tracker of Death

As a practitioner of shamanism, Carlos had considerable insight into his state, his tendencies, health, and healing.

> I know I have boundary issues. This even has been as much of a mystical as a physical experience. I have had terrifying visions of my own apocalypse. The horizon literally flipped upside down. ➤

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> The natural world is one of revelation, understanding, exquisite experiences, and unfolding. Animals frequently appear to me. I was fearless even as a small child. No matter what jobs I've done, I've always had a reputation for pushing myself to the highest standards under incredible duress. I'm drawn by darkness, the underbelly of society, the mystery. The unknown, risk. There is always an element of danger.
>
> I'm kind of a tracker of death. I can sense, even smell, when something or someone wants to die. It is like an animal instinct. That is why I can guide people into the underworld ... I can even track animals when there are no prints.

It was clear that Carlos needed a homeopathic medicine from the animal kingdom because his issues were survival, vigilance, territoriality, strength and weakness, dominator and dominated, and instinct.

Which Animal Medicine?

We asked Carlos to tell us more about animals. To summarize: "Cougar, coyote, deer, and owl are allies. Snakes have shown up in altered states and I have become them. Tics, alligators, rattlesnakes ... a constant state of fight or flight. Spiritual pursuit. The world is a dangerous place."

Carlos commented that he couldn't handle tight clothing. It felt like a restriction. And that he had experienced situations of betrayal in his life. These symptoms are typical of snakes in homeopathy. Homeopathic snake medicines are also commonly know to treat hemorrhagic (blood) disorders.

We asked if Carlos had any issues with snakes. "I have a fascination with them. They way they move. The way they shed their skin. They have an incredible sensing body. No wasted energy. Close to the ground. Belly to the earth. ... They know when it is time to sit in the sun, to rest, to nourish. Their entire bodies are in conversation with the environment. I long for that."

Suspecting that Carlos needed a homeopathic snake medicine, we inquired about any previous problems with bleeding. "I've had so many different lacerations with bleeding. But my blood tends to be a little thick and pools. It just doesn't run ... I've had several injuries where I almost bled to death. Once a severed vein in my arm."

A Clear Homeopathic Prescription

We knew that Carlos needed a homeopathic medicine from the animal kingdom and, more specifically, a snake. We had prescribed *Crotalus horridus* (North American rattlesnake) for our previous ITP patient, with rapid success. The homeopathic literature for *Crotalus horridus* says: "Sudden onset, especially of septic states. Blood poisoning with hemorrhages. Bleeding from all orifices in the body. Blood is fluid or partly clotted ... Prostration with general collapse. Ulceration and bleeding in the mouth."

The characteristics of those needing homeopathic medicines prepared from snake venoms are:

- intensity
- clairvoyance
- fascination with the supernatural, the mystical worlds, and the underworld
- vivid descriptions
- charisma
- issues of suddenness, attack, disguise, concealment, ambush, ability

The rattlesnake medicines are *Crotalus cascavella* (Brazilian rattlesnake) and *Crotalus horridus*. There are very similar, and it can often be difficult to differentiate which one is better for the patient. In Carlos's case, he mentioned his thick blood, which is a keynote for *Crotalus horridus* (literally thick, stringy, clotted blood). In addition, *Crotalus horridus* is more prominently indicated for hemorrhagic conditions. There are a number of other subtle distinctions between the two medicines that are beyond the scope of this column. We felt quite confident in the prescription of *Crotalus horridus* 30C liquid daily. It would have been fine to start with a dose of 200C or 1M first, especially considering Carlos's intense nature, but we did not do that. We requested a report in one week.

Carlos's Response

Carlos is quite an intense fellow and has a mind of his own. He did not respond in a week. In fact, he next contacted us 4 months later. This was his report:

> My platelets have been within the normal range for the past two months. In addition to taking the remedy, I rested and underwent an inner transformation. My platelets started going up almost the day I started the remedy. First to 19,000, then 60,000, 111,000, then up to 160,000. My doctors were quite curious to see this. I had quit all of the other conventional treatments except for the steroids. They were initially quite worried because my levels were 2000 to 3000. I could feel the changed vascularity of my system. The doctors just figured that the steroids, for some inexplicable reason, suddenly kicked in. I had a rough patch for about 6 weeks coming off the steroids from 70 mg.
>
> I'm still taking the remedy. I'm a spiritual journeyer. I have a particular scent for death. I have had a vision of my own death. A transformation. A shift to another state of consciousness. An annihilation of the ego.

We continued to give Carlos rattlesnake with good response. His ITP did not resurface. One year, 8 months after we first saw him, he reported that his platelet count was 215,000. We last saw him 6 months ago and hope that he continues with homeopathy. Not only did homeopathy help Carlos dramatically, but he is the one of our most fascinating patients ever! ◆

Judyth Reichenberg-Ullman and Robert Ullman are licensed naturopathic physicians, board certified in homeopathy in practice for over 30 years. They are authors of the best-selling *Ritalin-Free Kids* and *Homeopathic Self-Care*, as well as *The Savvy Traveler's Guide to Homeopathy and Natural Medicine, The Homeopathic Treatment of Anxiety, Depression and Bipolar Disorder, Whole Woman Homeopathy, Rage-Free Kids, A Drug-Free Approach to Asperger Syndrome and Autism, The Patient's Guide to Homeopathic Medicine*, and *Mystics, Masters, Saints and Sages: Stories of Enlightenment*. They have been pioneers in their field for over 30 years. Visit our information-packed, user-friendly website www.healthyhomeopathy.com, with lots of free articles, minibooks, and information about our books and our practice. Please follow and friend our Facebook page Healthy Homeopathy. They live on Whidbey Island, Washington, and in Pucón, Chile, and practice at the Northwest Center for Homeopathic Medicine in Edmonds, Washington. They treat patients in person and by phone or videoconference. Contact them at 425-774-5599, drreichenberg@gmail.com, or drbobullman@gmail.com.

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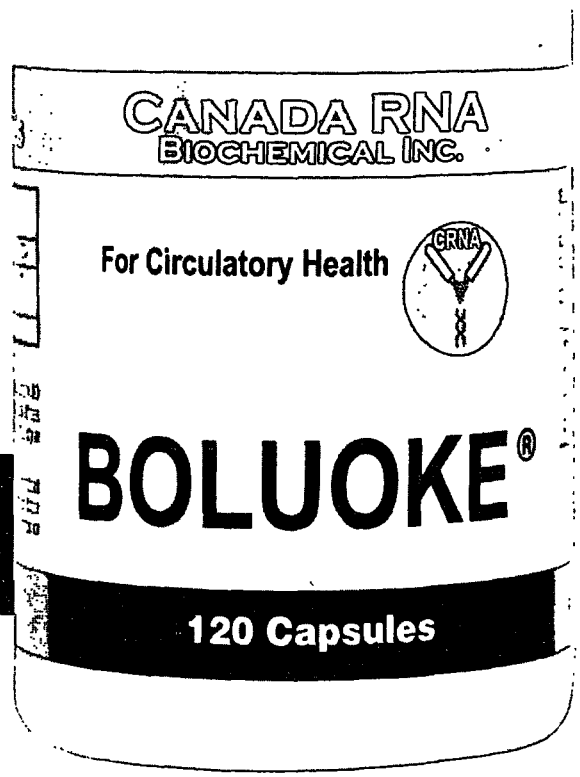

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Metabolic Medical Institute's Fellowship in Integrative Medicine in partnership with GWU Receives Approval by the American Board of Physician Specialties

The Metabolic Medical Institute is extremely pleased to announce that the Fellowship in Integrative Medicine in partnership with the George Washington University has received approval by the American Board of Physician Specialties to qualify graduates to sit for the newly established American Board of Integrative Medicine (ABOIM). This interprofessional fellowship program is led by Dr. Andrew Heyman.

The Metabolic Medical Institute contributes expert faculty and content to the program, and is critical for providing in-person learning experiences for students. MMI is widely recognized as a leader in medical education in nutrition, metabolism, and functional and integrative medicine, and serves as the principal training partner to the George Washington University in integrative medicine.

"The Metabolic Medical Institute continues to carry on its long-time mission to provide clinicians with advanced medical education that fosters disease prevention. Being at the forefront of medicine's paradigm shift, we are proud of our partnership with George Washington University and achieving this very prestigious subspecialty of integrative medicine. Increasing the number of well-trained, certified specialists in integrative medicine will significantly provide access to better patient care. The acknowledgement of this subspecialty has an impact in the ability of the health-care community to address chronic disease states with far reaching effects on patients, communities and society as a whole," said Doreen Brown, CEO, Tarsus Medical Group.

The fellowship is the first academic program in the country that confers both a master's degree in science in Health Sciences in Integrative Medicine through a major university *and* allows physicians the opportunity to become board certified as well. The curriculum is a longitudinal, cross-disciplinary hybrid model comprising online, in-person, scholarly, and practical experiences.

Fellows generate patient care plans, conduct case analyses, and evaluate practice standards to demonstrate competence of integrative medicine practice. Biostatistics, epidemiology, and clinical research courses provide an opportunity for students to collaborate with professionals from various disciplines, explore translational research in human health, and allow participation in practice-based research networks.

The fellowship program ensures that graduates will operate successful clinical practices, while building their professional skill set in research methods, business practices, relevant health policy and social aspects of health.

Heyman says, "I am delighted to direct such an innovative program in collaboration between two premier educational organizations such as MMI and GW. It represents an evolution in the field of medicine and our graduates will lead this change towards a more patient-centric, wellness, and health focused health-care system. The assembled expert faculty, along with the depth and breadth of curriculum is at the highest academic level. Our approval for the new Board of Integrative Medicine demonstrates our collective commitment to excellence in education."

Please contact our educational advisors for any specific questions on the enrollment process or for further guidance at 561-997-0112. To read more about our fellowship program, please visit www.mmimedicine.com.

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BCA-Clinic Introduces New Traffic Light System for Borrelia Activity

In addition to the traditional ELISA and immunoblot tests, which examine various kinds of antibodies in patients' sera, the BCA-clinic in Augsburg, Germany, started using a Lyme test called ELISPOT years ago. In contrast to ELISA and immunoblot, ELISPOT detects *Borrelia* infections and various coinfections on a cellular level. Now the BCA-clinic, which specializes in Lyme disease and its coinfections, starts offering a new and improved Lyme test for the first time, which is an enhanced version of ELISPOT. Autoimmun Diagnostika (AID) GmbH in Strasberg, Germany, has developed this "LymeSpot Revised" test for *Borrelia* and its coinfections. It can differentiate between an active (specific effector cells) and a latent (specific memory cells) infection.

When ELISPOT is used for Lyme testing, it focuses on the production of γ-interferon, whereas LymeSpot Revised also detects cytokine IL-2. Using LymeSpot's "traffic light" principle, an active infection (mainly the effector cells) is indicated by a high number of green-colored cells. When this is the case, the infection needs to be treated. If the ratio between γ-interferon and interleukin-2 is inverted, the disease is more likely to be at a latent stage, which is then indicated by a red coloration of the cells (mainly memory cells). In this case, an antiinfective treatment would not be applicable. If the memory cells and effector cells are both present, indicated by red and green in balance, then both the infection and the inflammation are still present. In this case, the therapy will be based on the clinical profile of the patient.

The unique LymeSpot Revised test was released in April 2015. The BCA-clinic offers it for *Borrelia* or along with ELISPOT for *Chlamydia pneumoniae*. Dr. Carsten Nicolaus, head of the BCA-clinic Augsburg, said: "We've been looking forward to be able to use 'LymeSpot Revised' in our diagnostics. Thanks to its additional differentiation, we are able to make more precise decisions on how to approach a patient's treatment."

The BCA-clinic in Augsburg (Germany/Bavaria) specializes in treating the Lyme disease and its coinfections and has treated patients suffering from multi-infectious diseases syndrome (MIDS) and multi-system illnesses (MSI) for 10 years now. The BCA-clinic is one of very few health-care institutions worldwide that incorporate medical Lyme diagnostics, laboratory work, in-house diagnostic research, and specialized therapy under one roof. The BCA-clinic works closely with ILADS (International Lyme and Associated Diseases Society) and renowned Lyme and infection research institutes all over the world.

Find out more about our Lyme and infection care expertise at http://borreliose-centrum-augsburg.de/en/our-opinion-studies.

Find out more about LymeSpot Revised at http://www.aid-diagnostika.com http://www.infectolab.de. ◆

Calendar

Please submit an announcement of your event 90 days in advance. Event publication must be limited to 25 words or less. Multiple event listings require paid advertising. Contact calendar@townsendletter.com for details.

JUNE 23-25: A4M BHRT SYMPOSIUM in San Diego, California. CONTACT: www.a4m.com/2016/june/san-diego/a4m-symposium.html

JUNE 23-25: METABOLIC MEDICAL INSTITUTE MODULES on Weight Management and Compounded Prescriptions in San Diego, California. CONTACT: www.mmimedicine.com/metabolic-medicine-event-schedule.html

JULY 1-3: 3RD INTERNATIONAL CONGRESS ON NATUROPATHIC MEDICINE in Barcelona, Spain. CONTACT: icnmnaturopathy.eu

JULY 8-10: INSTITUTE OF WOMEN'S HEALTH & INTEGRATIVE MEDICINE presents PRIMARY CARE FOR WOMEN: GENOMIC MEDICINE BOOTCAMP in Portland, Oregon. CONTACT: www.instituteofwomenshealth.com

JULY 15-17: HORMONE ADVANCED PRACTICE MODULE – RE-ESTABLISHING HORMONAL BALANCE in National Harbor, Maryland (DC) CONTACT: https://www.functionalmedicine.org/Hormone

JULY 15-17: ENERGY REGULATION ADVANCED PRACTICE MODULE – Illuminating the Energy Spectrum in National Harbor, Maryland (DC) CONTACT: https://www.functionalmedicine.org/Energy

JULY 22-24: 4TH COLORADO INTEGRATIVE MEDICINE CONFERENCE – Focus on Mind-Body Medicine & Lifestyle Management in Estes Park, Colorado. CONTACT: 970-310-3030; info@altermedresearch.org; www.altermedresearch.org/cimc2016/

JULY 27-30: AMERICAN ASSOCIATION OF NATUROPATHIC PHYSICIANS' ANNUAL CONFERENCE & EXPOSITION in Salt Lake City, Utah. CONTACT: www.naturopathic.org/aanp2016.

AUGUST 6-7: GREAT PLAINS LABORATORY WORKSHOPS ON ORGANIC ACIDS TESTING AND GENETIC TESTING in San Jose, California. CONTACT: www.gpluniversity.com

AUGUST 10-13: 25TH ANNUAL IAACN SCIENTIFIC SYMPOSIUM – Renovation of the Structural Integrity of the Human Body Through Biomolecular Interventions Beyond the Collagen Connections in Jacksonville, Florida. CONTACT: www.iaacn.org/symposium/

AUGUST 11-13: METABOLIC MEDICAL INSTITUTE MODULES on Gastroenterology and Toxicology & Detoxification in Las Vegas, Nevada. CONTACT: www.mmimedicine.com/metabolic-medicine-event-schedule.html

AUGUST 20: THE GASTROINTESTINAL METABOLOME IN CLINICAL PRACTICE in Denver, Colorado. Also, **AUGUST 21** in Los Angeles, California; **AUGUST 27** in Seattle, Washington; **AUGUST 28** in San Francisco, California. CONTACT: clin-ed.org

AUGUST 25-28: NORTHWEST HERB SYMPOSIUM – "Botanicals at the Beach" with Practitioner Track @ Camp Casey Conference Center on Whidbey Island, Washington. CONTACT: nwherbsymposium.com/

SEPTEMBER 3-5: 44TH ANNUAL CANCER CONVENTION @ Sheraton Universal in Universal City, California. **SEPTEMBER 6-DOCTORS' SYMPOSIUM.** Tour of Mexican clinics on **SEPTEMBER 7 & 17.** CONTACT: Cancer Control Society, 323-663-7801; www.cancercontrolsociety.com

SEPTEMBER 3-9: HEALTHY BIRTH, HEALTHY EARTH @ Findhorn Foundation, Scotland. CONTACT: https://www.findhorn.org/programmes/healthy-birth-healthy-earth

SEPTEMBER 8-11: ICIM'S 62ND CONGRESS – "Re-examining the Oath: Reversing Nutrient Depletion and Iatrogenic Toxicity" in Toronto, Ontario. CONTACT: www.icimed.com

SEPTEMBER 9-10: INTERNATIONAL ACADEMY OF ORAL MEDICINE AND TOXICOLOGY (IAOMT) ANNUAL CONFERENCE & JOINT MEETING WITH IABDM in Reno, Nevada. CE credits. CONTACT: https://iaomt.org.

SEPTEMBER 9-11: 10TH ANNUAL INTERNATIONAL HYPERBARIC MEDICINE CONFERENCE in New Orleans, Louisiana. CONTACT: www.hbot2016.com

SEPTEMBER 15-17: 2016 ACAM & AAPMD JOINT ANNUAL MEETING – An Interdisciplinary Approach to Advanced Prevention in Tucson, Arizona. CONTACT: www.acam.org/ACAM2016

SEPTEMBER 16-18: 14TH ANNUAL INTERNATIONAL RESTORATIVE MEDICINE CONFERENCE - Cutting-edge Protocols for Treating Chronic Conditions: Practical Clinical Skills You Can Use Monday Morning in Hilton Head, South Carolina. CONTACT: restorativemedicine.org/aarm2016/

SEPTEMBER 19-23: APPLYING FUNCTIONAL MEDICINE IN CLINICAL PRACTICE - 5 day foundational course in Baltimore, Maryland. CONTACT: https://www.functionalmedicine.org/AFMCP

SEPTEMBER 21-24: A4M BHRT SYMPOSIUM in Dallas, Texas. Also, ABAARM & ABAAHP exams. CONTACT: www.a4m.com/conference-schedule.html

SEPTEMBER 21-24: METABOLIC MEDICAL INSTITUTE MODULES on Neurology, Autoimmune Disease, Cardiovascular, & Stem Cells in Dallas, Texas. CONTACT: www.mmimedicine.com/metabolic-medicine-event-schedule.html

SEPTEMBER 24: A4M SYMPOSIUM – A New Prescription for Pharmacy Practice in Dallas, Texas. CONTACT: www.a4m.com

SEPTEMBER 29-OCTOBER 2: 7TH ANNUAL INTEGRATIVE MEDICINE FOR MENTAL HEALTH CONFERENCE in Reston, Virginia (near D.C.). CONTACT: www.immh2016.com/

SEPTEMBER 30-OCTOBER 1: A4M SYMPOSIUM in Washington, D.C. CONTACT: www.a4m.com/2016/washington-dc/a4m-symposium.html

SEPTEMBER 30-OCTOBER 2: 10TH ANNUAL MICROCURRENT CASE CONFERENCE in St. Pete Beach, Florida. CONTACT: microcurrent.info.

SEPTEMBER 30-OCTOBER 2: KLINGHARDT EUROPEAN NEURAL THERAPY & INJECTION TECHNIQUES in Kenmore, Washington. A transformative workshop: basic to advanced skills. CONTACT: 908-899-1650; info@klinghardtacademy.com; www.klinghardtacademy.com/Seminars-Workshops/Injection-Techniques-and-Skills-2016.html

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OCTOBER 6-9: AMERICAN ACADEMY OF ENVIRONMENTAL MEDICINE ANNUAL MEETING – The Role of Mitochondria in Health & Disease near San Diego, California. LDA: A New Treatment Option; environmental mold, mycotoxin exposures. CONTACT: AAEM, 316-684-5500; www.aaemconference.com

OCTOBER 7-9: HOMEOPROPHYLAXIS: The Evidence-Based Choice in St. Petersburg, Florida. CONTACT: www.WorldWideChoice.org

OCTOBER 13-15: 1ST INTER AMERICAN STEM CELL CONFERENCE and 4TH INTERNATIONAL SYMPOSIUM ON CELLULAR THERAPIES & REGENERATIVE MEDICINE in Havana, Cuba. CONTACT: 305-224-1858; www.regenestemconference.com

OCTOBER 13-16: IGNITE CONFERENCE 2016 – The Business of Better Medicine in Santa Ana Pueblo, New Mexico. CONTACT: eeIGNITE.com

OCTOBER 22-23: 10TH AUSTRALIAN HOMEOPATHIC MEDICINE CONFERENCE in Brisbane, Australia. CONTACT: www.homeopathyconference.com

OCTOBER 26-NOVEMBER 1: 43RD BIOLOGICAL MEDICINE TOUR TO GERMANY & BADEN-BADEN MEDICINE WEEK – "EXPERIENCE & SCIENCE: DIAGNOSIS & TREATMENT POSSIBILITIES WITH HIGH PRACTICAL RELEVANCE." Program includes 50th Anniversary Medicine Week congress, exclusive OIRF English language lectures from renowned German clinicians and researchers as well as instrumentation, clinic, and pharmacy presentations. CONTACT: Occidental Institute, 250-490-3318 or 800-663-8342; www.oirf.com/germany2016.html

OCTOBER 28-30: DETOX ADVANCED PRACTICE MODULE – Biotransformation and Toxicity in Chicago, Illinois. Live Streaming Available. CONTACT: https://www.functionalmedicine.org/Detox

OCTOBER 30-NOVEMBER 3: AIHM ANNUAL CONFERENCE – PEOPLE, PLANET, PURPOSE: Global Practitioners United in Health & Healing in San Diego, California. CONTACT: www.aihm.org/aihm-conference/

NOVEMBER 5-6: GREAT PLAINS LABORATORY WORKSHOPS ON ORGANIC ACIDS TESTING AND GENETIC TESTING in Dallas, Texas. CONTACT: www.gpluniversity.com.

NOVEMBER 11-13: PRO-AGING EUROPEAN SEMINARS in Brussels, Belguim. CONTACT: wosaam@wosaam.ws; www.wosaam.ws/

DECEMBER 9-11: A4M WORLD CONGRESS ON ANTI-AGING MEDICINE in Las Vegas, Nevada. Also, ABAARM & ABAAHP exams. CONTACT: 561-997-0112; www.a4m.com/

DECEMBER 9-11: METABOLIC MEDICAL INSTITUTE MODULES on Endocrinology, Clinical Practice Protocols, Weight Management, & Stem Cells in Las Vegas, Nevada. CONTACT: www.mmimedicine.com/metabolic-medicine-event-schedule.html

Women's Health Update

by Tori Hudson, ND
womanstime@aol.com

Higher Vitamin D Levels Associated with Lower Cancer Risk

In the last 3.5 decades, research has proposed a link between several cancers and lower serum levels of vitamin D. Multiple epidemiologic studies have found inverse associations between serum levels of 25-hydroxyvitamin D (25[OH]D) concentration and the risk of many cancers, including breast, colorectal, and prostate. In one randomized controlled trial, women who were given vitamin D and calcium had a 60% reduced incidence in all non-skin cancers compared with those women in the placebo group.[1]

The purpose of the current study was to be more precise in determining any association between 25(OH)D concentration and the risk of non-skin cancer in women 55 years and older. Two different cohorts were used. The first (n = 1169) was one from a randomized, controlled clinical trial in Nebraska with a median level of serum vitamin D of 30 ng/mL. The second was from a prospective cohort study of individuals living in 52 countries, although 90% were in either the US or Canada (n = 1135), with an average serum D level of 48 ng/ml. By using this approach, the analysis could be done across a broad range of 25(OH)D serum levels.

The incidence of all invasive cancers excluding skin cancer was evaluated over several years with a median of 3.9 years compared in relationship to 25(OH)D concentrations. The incidence of cancer was lower at higher concentrations of 25(OH)D levels and women with concentrations of 40 ng/ml or more had a 67% lower risk of cancer than women with levels <20 ng/ml.

Comment: The results of this analysis support the importance of serum levels and cancer risk and thus direct us more precisely to a target serum level of vitamin D to optimize cancer prevention. The significant risk reduction comes at levels that are considerably higher than the >20 ng/ml considered adequate for bone health, the minimum recommended by the Institute of Medicine. I urge patients and practitioners to pay close attention to the units used by their labs. For example, 12–20 ng/ml = 30–50 nmol/L.

McDonnell SL, Baggerly C, French CB, et al Serum 25-hydroxyvitamin D concentrations ≥40 ng/ml are associated with >65% lower cancer risk: pooled analysis of randomized trial and prospective cohort study *PLoS ONE*. 2016;11(4):e0152441;doi:10.1371/journal.pone.0152441.

Menopausal Hormone Therapy and Risk of Ovarian Cancer

This meta-analysis was performed to examine the risk of ovarian cancer according to different types and regimens (either continuous or sequential) of menopausal hormone therapy. While ovarian cancer is not a common women's cancer, and has been decreasing in the US in the last 30 years, it accounts for 5% of cancer deaths and is responsible for more cancer deaths than any other gynecological cancer. Several studies have shown that unopposed estrogen in postmenopausal women has been associated with up to a 50% increased risk of ovarian cancer. Data on the combination of estrogen plus progestins are inconsistent, although in general, studies have shown no association with estrogen plus progestins in regard to ovarian cancer, or at least an association that is much weaker than with estrogen alone. In 2009, a meta-analysis reported a relative risk of ovarian cancer with estrogen plus a progestin of 1.10 per 5 years of used as compared with a relative risk of 1.22 for estrogen alone. However, prospective studies have shown no difference in ovarian cancer risk with estrogen alone vs. estrogen plus a progestin. In the Women's Health Initiative (WHI), the hazard ratio was 1.58 for estrogen plus progestin compared with placebo. Other meta-analyses have suggested an association with menopausal hormone therapy and ovarian cancer risk, but the regimen of cyclic estrogen-progestin or continuous estrogen-progestin or the different types of ovarian cancer was not assessed.

In the current meta-analysis, 180 studies were identified and 12 met the inclusion criteria. Of these 12 studies, 9 were

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cohort studies of over 2.3 million women and 7549 cases of ovarian cancer. The other 3 were case-control studies including 1347 cases and 2052 controls. Both continuous and sequential regimens were associated with an increased risk of ovarian serous ovarian cancer, but not clear-cell, endometrioid, or mucinous ovarian cancer. Also in the current meta-analysis, the hazard ratio and relative risk were lower in the estrogen-progestin group than the estrogen alone group, which is consistent with the opposing effects of progestogens. This seeming protective effect of progestogens requires further studies, as well as making a distinction between different types of estrogens and different types of progestogens – different synthetics and bioidentical progesterone.

Comment: All meta-analyses are fraught with problems. Not every study included in this meta-analysis is the same with different ethnic groups, different durations of hormone use, different years since menopause, hysterectomy or no hysterectomy, different estrogens and different doses and deliveries, and different progestational agents and dosages. That all said, menopausal hormone therapies – estrogen alone and estrogen-progestins, whether cyclic or sequential – are associated with a slight increase in risk of ovarian cancer. This will be especially important in women with a first-degree relative with ovarian cancer and in obese women.

Shi L, Wu Y, Li C. Hormone therapy and risk of ovarian cancer in postmenopausal women: a systematic review and meta-analysis. Menopause 2016; 23(4):417–424.

Mammogram Screening: A Summary Guide of Different Recommendations and Patient Handout

Screening Mammograms: One Procedure, Many Opinions

American College of Obstetrics and Gynecology (ACOG)
- Starting Age: 40
- Ending Age: ~75
- Frequency: Annually

American Cancer Society (ACS)
- Starting Age: 45
- Ending Age: When life expectancy is <10 years
- Frequency: Annually if 45–54
- Frequency: Every other year if > 55

US Preventative Services Task Force (USPSTF)
- Starting Age: 50
- Ending Age: 74
- Frequency: Every other year

European Model
- Starting Age: 50 (option to start at 40)
- Ending Age: 69
- Frequency: Every other year
- Frequency: (annually if 40–49)

UK Model
- Starting Age: 50
- Ending Age: 70
- Frequency: Every 3 years

Keep in mind that these guidelines apply to average-risk women. You are considered average risk if all of the following are true:

- no personal history of breast cancer.
- no known genetic mutation increasing risk for breast cancer (i.e., BRCA).
- no history of chest radiation

The major purpose of mammograms is to detect cancerous lumps before they can be felt and start treatment sooner, with the hope that earlier detection and treatment will save lives. Unfortunately, it appears that women die at a similar rate whether breast cancer was detected early by mammogram or later by breast exam.[2,3] In addition, screening mammograms lead to healthy women receiving unnecessary breast biopsies and even cancer treatment; a Cochrane Review estimates that for every life saved by mammography, 10 women receive unnecessary breast cancer treatment.[4]

So why bother with mammograms at all? Consider the following:

- Early detection of breast cancer with mammograms may spare women from more aggressive treatment regimens, improving quality of life for women diagnosed with breast cancer.
- We know that women who get breast cancer before age 50 tend to have more aggressive cancers. Delaying screening mammograms to age 50 or later may result in a more aggressive cancer in a younger woman being missed.

Increasingly, the medical community is giving weight to the individual risk factors and informed choice of women in the decision of when and how often to screen for breast cancer using mammography. In fact, population studies in Switzerland found that opportunistic screening (mammograms only when requested by doctor or patient) worked as well as uniform screening (mammograms at specified intervals) in identifying breast cancer.[5]

Source: Jennifer Johnson, ND, LAc, and Tori Hudson, ND; A Woman's Time Clinic; Portland, Oregon

Notes

1. Lappe J, Travers-Gustafson D, Davies K, et al. Vitamin D and calcium supplementation reduces cancer risk: results of a randomized trial. *Am J Clin Nutr*. 2007;85(6):1586–1591.
2. Miller A et al. Twenty five year follow-up for breast cancer incidence and mortality of the Canadian National Breast Screening Study: randomised screening trial. *BMJ*. 2014;348:g366.
3. Autier P, Koechlin A, Smans M, Vatten L, Boniol M. Mammography screening and breast cancer mortality in Sweden. *J Natl Cancer Inst*. 2012;104(14):1080–1093.
4. Gøtzsche P, Jørgensen K. Screening for breast cancer with mammography. *Cochrane Database Syst Rev*. 2013;6. Art. No.:CD001877. doi:10.1002/14651858.CD001877.pub5
5. De Gelder R et al. Cost-effectiveness of opportunistic versus organised mammography screening in Switzerland. *Eur J Cancer* 2009; 45(1):127–138.

Dr. Tori Hudson graduated from the National College of Naturopathic Medicine (NCNM) in 1984 and has served the college in many capacities over the last 28 years. She is currently a clinical professor at NCNM and Bastyr University; has been in practice for over 30 years; and is the medical director of the clinic A Woman's Time in Portland, Oregon, and director of research and development for Vitanica, a supplement company for women. She is also a nationally recognized author, speaker, educator, researcher, and clinician.

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Does Vitamin C Cause Kidney Stones? Rekindling the Debate

It has frequently been claimed that ingestion of large doses of vitamin C can increase the risk of developing kidney stones, because vitamin C is converted in part to oxalate. While these claims have largely been refuted, two new observational studies have rekindled the debate by finding that higher intake of vitamin C was associated with an increased risk of kidney stones. This new research will be discussed at the end of this editorial.

A number of studies have indeed found an increase in urinary oxalate excretion after supplementation with large doses of vitamin C. However, the hyperoxaluria associated with high-dose vitamin C was due primarily to a laboratory artifact resulting from the conversion of vitamin C to oxalate ex vivo (i.e., after it has left the body, while it is in the collection bottle).[1] If there is a small increase in urinary oxalate resulting from ingestion of large doses of vitamin C, that increase might be counterbalanced by other effects of the vitamin. For example, ascorbic acid binds calcium in the urine, potentially reducing the formation of calcium oxalate crystals; produces a small increase in urinary acidity, thereby increasing calcium oxalate solubility; and possibly decreases urinary stasis by promoting diuresis.[2] In addition, vitamin C reversed some potentially lithogenic metabolic abnormalities (such as hyperinsulinemia and poor urine acidification) following a high-carbohydrate, high-calcium meal in men with recurrent calcium oxalate kidney stones.[3]

Practitioners who have routinely used large doses of vitamin C have not observed kidney stones as a side effect.[4] Abraham Hoffer, a pioneer in the field of orthomolecular psychiatry, prescribed 2 to 10 g per day of vitamin C for more than 20 years to more than 3000 patients and did not see any calcium oxalate kidney stones.[5] Robert Cathcart treated more than 11,000 patients over a 14-year period with large doses of vitamin C. He reported that vitamin C did not cause kidney stones, and actually seemed to prevent stones in patients who had had them previously.[6] Jackson et al. administered nearly 8000 high-dose intravenous vitamin C infusions over a 16-year period to 273 patients, and none of them developed a kidney stone.[7]

Until recently, observational studies also failed to support the suggestion that vitamin C causes kidney stones. In a 6-year prospective study of 51,529 male health professionals (published in 1996), the risk of developing a kidney stone was 22% lower in men consuming 1500 mg per day or more of vitamin C than in those consuming less than 250 mg per day.[8] A 14-year prospective study of 85,557 female nurses (published in 1999) found that higher intake of vitamin C (≥ 1500 mg per day) was not associated with an increased risk of kidney stones.[9] However, a prospective cohort study of 48,850 Swedish men (published in 2013) found a significant increase in incidence of kidney stones among men taking vitamin C supplements.[10] In addition, prospective cohort studies (published in 2016) of 156,735 female nurses and 40,536 male health professionals found that, in multivariate analysis, there was a significant trend toward a higher incidence of kidney stones with higher vitamin C intake in men, but not in women.[11]

How does one reconcile the conflicting findings from observational studies? With regard to the Swedish study, the results may have been influenced by selection bias, since men taking supplements other than vitamin C were excluded from the analysis. It is possible that men who take only vitamin C supplements have differences in diet, lifestyle, and health compared with men who take other supplements as well; and that those differences (rather than vitamin C supplementation)

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were responsible for the observed increase in stone risk. In the 2016 study of female nurses and male health professionals, when the analysis was adjusted only for age, there was actually a *lower* incidence of kidney stones with higher vitamin C intake in both women and men. This trend was statistically significant in the women, but not in the men. The analysis that adjusted only for age was not emphasized by the researchers. Instead, they focused on the multivariate analysis, which adjusted for many factors including age, supplemental calcium intake, and dietary intake of magnesium, calcium, sodium, potassium, and fructose. It is not clear whether the assumptions upon which the adjustments were made are valid. For example, the multivariate analysis would presumably adjust stone risk upward for people with high intake of magnesium or low intake of sodium. It is possible that the model "overadjusted" the data, leading to spurious elevations of stone risk in people who, for example, eat broccoli (which is high in both vitamin C and magnesium and low in sodium). Overall, the observational studies cited in this article do not provide any clear evidence that high vitamin C intake increases the risk of kidney stones.

It is possible that, in rare cases, genetic abnormalities render a person susceptible to vitamin C-induced kidney stones. In a case report, a Chinese boy developed a calcium oxalate ureteral stone at the age of 9 years, after having taken 3 g per day of vitamin C for 6 years. Urinary oxalate (measured correctly, to avoid laboratory artifact) was markedly elevated, but returned to normal after vitamin C was discontinued.[12] There is anecdotal evidence that vitamin C-induced elevations of urinary oxalate can be minimized by vitamin B6 (pyridoxine) supplementation. In addition, magnesium supplementation would presumably reduce the risk of stone formation associated with a vitamin C-induced increase in urinary oxalate.[13]

Alan R. Gaby, MD

Notes

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11. Ferraro PM et al. Total, dietary, and supplemental vitamin C intake and risk of incident kidney stones. *Am J Kidney Dis*. 2016;67:400–407.
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Announcing The Best of Naturopathic Medicine Competition 2017

The *Townsend Letter* is pleased to announce our eighth Best of Naturopathic Medicine competition. Naturopathic students, faculty, researchers, and practitioners are invited to submit research papers, reviews, and articles. Selected papers will be published in our February/March 2017 issue. The author of the winning paper will be awarded $850. Runner-up papers will be published and authors will receive an honorarium.

Papers submitted should be 1500 to 3500 words and referenced. Author guidelines are available at the *Townsend Letter* website: www.townsendletter.com. Papers should be submitted digitally, preferably as a Microsoft Word document. Papers authored by multiple writers are acceptable; the lead author should be an ND graduate or candidate of an accredited four-year naturopathic school. Papers submitted for the competition may not be submitted to other publications or have previously been published. All entries must be submitted by October 31, 2016.

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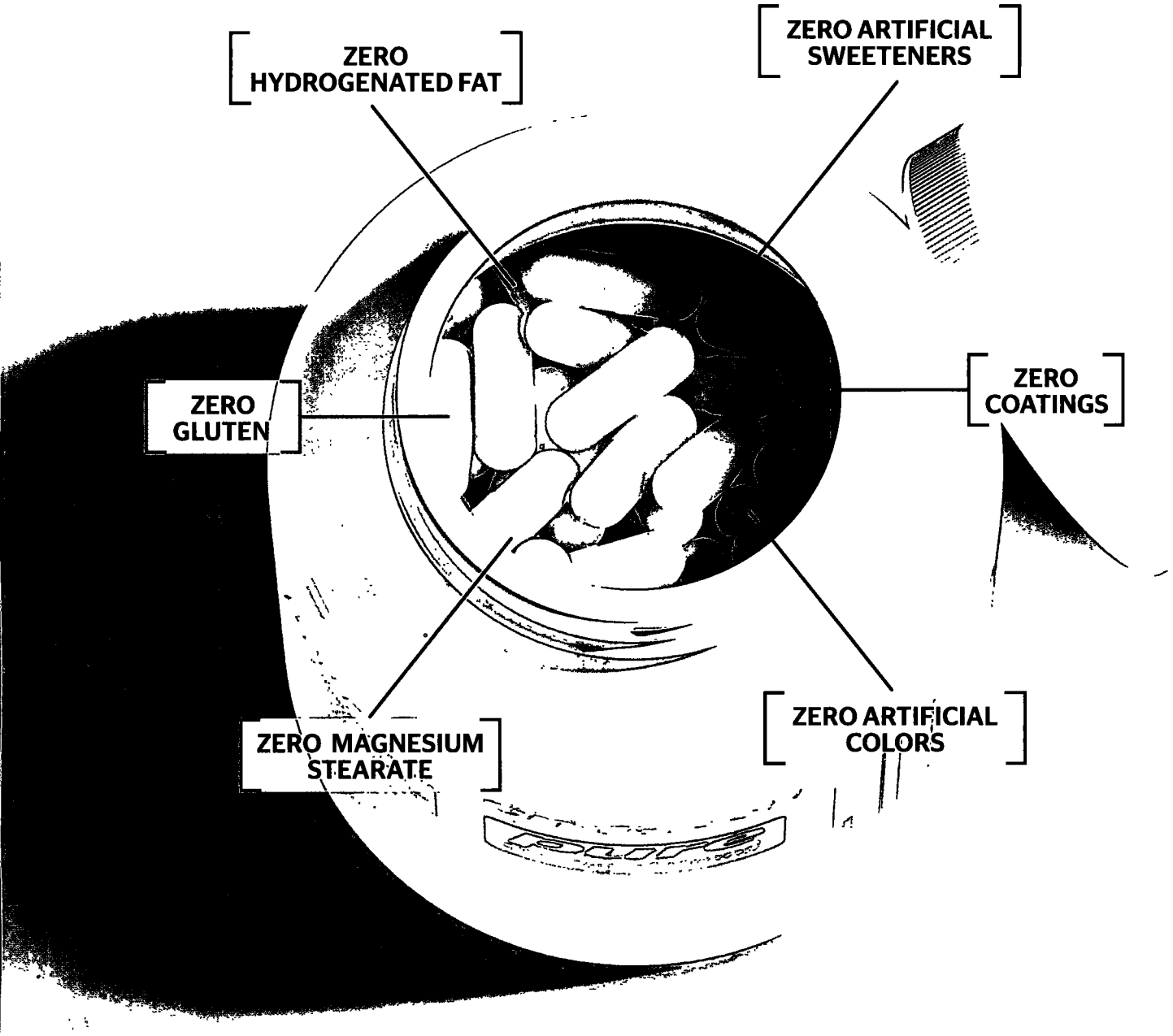

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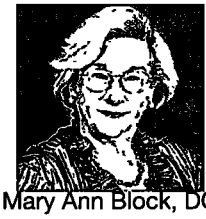
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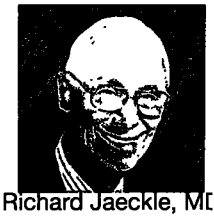
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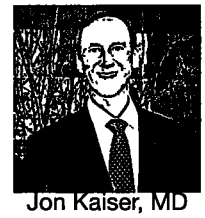
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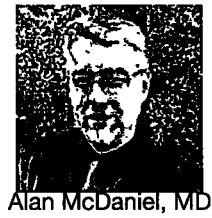
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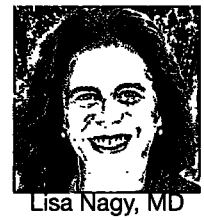
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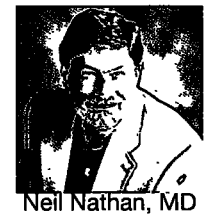
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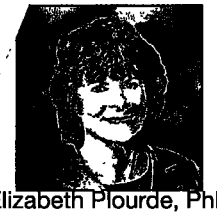
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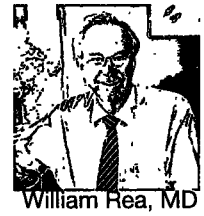
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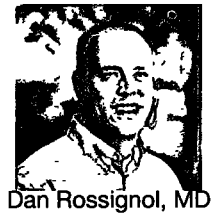
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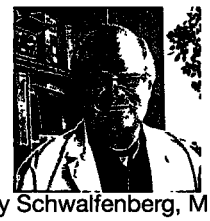
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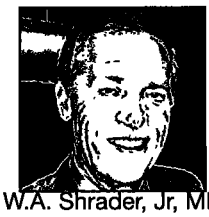
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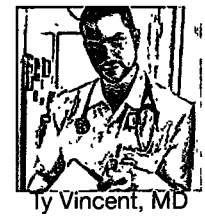
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