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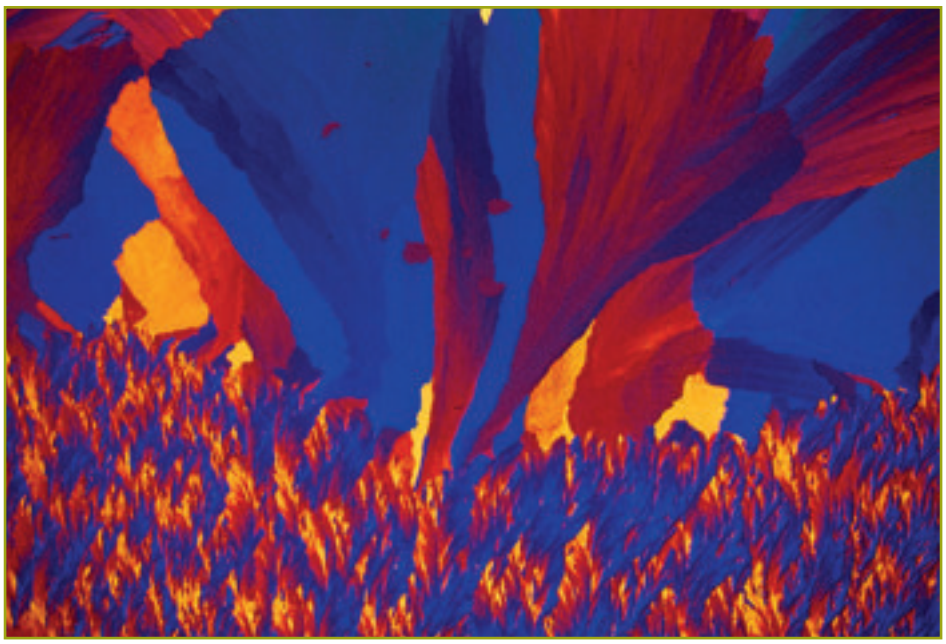

CRYSTALLOGRAPH OF CHOLECALCIFEROL (VITAMIN D3). WOMEN WITH SERUM VITAMIN D LEVELS OVER 40 NG/ML HAVE A 40% LOWER RISK OF BREAST CANCER THAN THOSE WHO ARE DEFICIENT (<20 NG/ML). RISK BEGINS TO DROP SUBSTANTIALLY AT ROUGHLY 50NG/ML. SUPPLEMENTATION DOSES UP TO 20,000 IU PER WEEK PROVING SAFE IN AN ONGOING CLINICAL TRIAL.

Image courtesy of Michael W. Davidson, Optical Microscopy Division, Florida State University Research Foundation

CANCER CARE

Consensus Builds Around High-Dose Vitamin D for Breast Cancer Prevention

BY JANET GULLAND
Contributing Writer

NEW YORK • The role of vitamin D in cancer care was the subject of considerable attention at the recent Society for Integrative Oncology 7th annual assembly. Researchers and clinicians gathered at the meeting seemed to be moving toward a consensus that high-dose vitamin D supplementation has potential to markedly reduce risk of primary breast cancer as well as breast cancer recurrence, with minimal risk of toxicity.

Data presented at the meeting—held just two weeks before the Institute of Medicine's November 30 consensus statement dismissing the potential of vitamin D beyond bone health—indicate that women with serum levels under 20 ng/ml are at significantly increased risk, that raising levels to 50 ng/ml mitigates that risk, and that oral doses upwards of 10,000 IU/day are safe for women at risk of breast cancer.

While there are still many unanswered questions about the role of vitamin D in cancer prevention and treatment, speakers at the conference were largely in agreement that the standard Recommended Daily Allowance of 400 IU/day is grossly inadequate and has little scientific basis. The Institute of Medicine's new recommendation of 600 IU for adults—including post-menopausal women—won't likely change anything.

A 40% Risk Reduction

Some of the strongest recent data comes from the Long Island Breast Cancer Study Project, which involved 1,026 women with breast cancer diagnosed between 1996 and 1997 compared with 1,075 matched controls. Vitamin D deficiency, defined as a serum level under 20 ng/ml, was common in both groups, but more prevalent among the women with cancer, reported Katherine Crew, MD, an epidemiologist at Columbia University College of Physicians & Surgeons, and lead investigator on the study.

Thirty-three percent of the cancer cohort was frankly deficient versus 28% of the cancer-free controls.

But the real message is in the analysis of odds ratios. The women who had blood levels of 40 ng/ml or greater had 40% lower odds of breast cancer versus those with serum levels of 20 ng/ml or lower. There was even a small 16% odds reduction among the women with

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CARDIOVASCULAR

Cordless Phone EMFs Trigger Heart Rhythm Abnormalities

BY ERIK GOLDMAN
Editor in Chief

Controversy continues to rage over the possibility that exposure to electromagnetic fields from cell phones and other cordless devices may increase the risk of brain tumors and cognitive dysfunction. That's been hard to prove and many mainstream researchers dismiss the risk as alarmism.

But an international collaborative team of Canadian, US, and European researchers recently discovered something that may prove harder to dismiss: in some individuals, the 2.4 GHz pulsed signals emitted by a cordless phone system reliably produce measurable and clinically significant disruptions in cardiac rhythm.

In an elegantly-designed study, Magda Havas, PhD, and colleagues at the Environmental & Resources Studies Department at Trent University, Canada, showed that 40% of a cohort of 25 generally healthy volunteers showed marked increases in heart rate, arrhythmias, and other disturbances in heart rate variability (HRV) following exposure to a cordless phone base station actively emitting 2.41 GHz pulsed microwave signals.

Fields of this frequency are also emitted by many wireless routers and other WiFi technology.

This is the first objective evidence of cardiovascular effects associated with wireless EMF exposure, and it lends quantitative vindication to the concept of "electrohypersensitivity," the sense some people have

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PRACTICE DEVELOPMENT

Despite Recession, Concierge Practices Show Brisk Growth, Excellent Outcomes

BY ERIK L. GOLDMAN
Editor in Chief

CHARLOTTE, NC • The "concierge" or membership model of primary care practice is growing at a brisk pace nationwide, and it appears to be fairly recession-proof. Moreover, it can significantly improve clinical outcomes for patients, even those of modest means.

There are now approximately 5,000 US physicians practicing under a membership, concierge, or "retainer" model, estimated Dr. William Lee, a Raleigh, NC, family physician who after 30 years in practice, recently joined the MDVIP concierge network.

Speaking at *Holistic Primary Care*'s 2nd annual *Heal Thy Practice: Transforming Primary Care* conference, Dr. Lee noted that there are many variants of retainer-based care, but all share a few basic features: patients pay a fixed fee per year (or per month) in exchange for comprehensive, personalized, prevention-oriented care on-demand. Doctors limit their patient panels to a manageable number, eliminate the hassles of insurance, and bring home incomes considerably higher than they could earn from insurance reimbursement.

Concierge physicians generally have between 100 and 1,000 patients, a much lower number compared with the usual panel of 2,000–3,000 in insurance-based practices. Fees vary widely, from $600 to $5,000 per patient per year.

MDVIP (www.mdvip.com), now owned by Procter & Gamble, is arguably the best

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Vitamin D

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serum levels of 20–29 ng/ml, which is low but not technically deficient. Dr. Crew noted that the data were adjusted for age, race, parity, family history of breast cancer, and other key variables (Crew KD, et al. *Cancer Prev Res.* 2009; 2(6): 598–604).

"Higher levels of 25-hydroxy-vitamin D confer lower risk of breast cancer. This was consistent for both estrogen receptor-positive (ER+) and negative (ER–) breast cancer, which is important because we really don't have effective chemotherapy for ER– breast cancer," Dr. Crew told attendees.

The study turned up several other interesting findings, including the fact that vitamin D deficiency correlates with obesity, which also increases cancer risk. The researchers found deficiencies in 36% of the women with body mass indices over 30, but only 23% of those with BMI's under 25. The explanation is not yet clear, but Dr. Crew suggested that there may be a fat sequestration effect wherein vitamin D is being stored in adipose tissue, thus lowering serum levels in the obese women.

Sense in Supplementation

The Long Island data are compelling, but Dr. Crew urged caution in drawing definitive conclusions. "These are observational findings based on one measurement of serum vitamin D status; we don't know from this study if raising the vitamin D level would lower breast cancer risk, and even if it does, we don't know the best and safest method for doing this."

Other studies, however, are pointing the way toward clear risk reduction strategies.

For example, the Women's Health Initiative's 2007 report, while showing no significant risk reduction from vitamin D at the standard 400 IU/d dose, *did* show a 20% reduction in breast cancer incidence among the women who reported taking additional vitamin D, on their own, beyond the "official" 400 IU dose. The biggest incidence reduction was for ER– cancers. Dr. Crew said the findings are definitely significant though they have been largely overlooked.

Also in 2007, Lappe and colleagues published a study of 1,179 post-menopausal women showing that those taking 1,100 IU/d of vitamin D plus calcium (1,500 mg/d) had far lower incidence of breast cancer versus those taking placebos (2% versus 6.8%). A third subgroup, taking calcium alone, also had fewer breast cancers but the incidence reduction was not as great (3.6% versus 6.8%) (Lappe et al. *Am J Clin Nutr.* 2007; 85(6): 1586–1591).

Looking at the best available data, it seems that breast cancer odds ratios begin to drop significantly as serum vitamin D levels get over 50 ng/ml. According to Garland and colleagues, you see a 50% risk reduction right around a serum level of 52 ng/ml (Garland et al. *J Steroid Biochem Mol Biol.* 2007; 103(3–5): 708–711). Progressive, nutrition-oriented oncologists agree that 40–60 ng/ml is the target range.

> **"The women who had blood levels of 40 ng/ml or greater had 40% lower odds of breast cancer versus those with serum levels of 20 ng/ml or lower."**
> **—Katherine Crew, MD**

How Much?

So, how much vitamin D does a woman have to take to get up to the cancer-prevention range? At least 3,000–4,000 units per day, depending on the extent of the deficiency. This is almost an order of magnitude higher than the Institute of Medicine's new RDA of 600 IU, but within range of the new upper limit.

What about toxicity? The most worrisome potential adverse effects of excessive vitamin D would be hypercalcemia, bone demineralization, nephrocalcinosis, and cardiac arrhythmias. However, these problems don't really arise until serum levels get above 150 ng/ml, said Dr. Crew. Someone would have to take a lot of vitamin D over a long period to get the blood level up in that range.

Back in 2004, Vieth and colleagues studied daily doses of 10,000 IU for up to 5 months, and found no evidence of toxicity (Vieth et al. *J Steroid Biochem Mol Biol.* 2004; 89–90(1–5): 575–579).

Safe at 30,000 IU per Week

Dr. Crew's group at Columbia are assessing the effect of cholecalciferol (vitamin D3) at high doses of 20,000 IU and 30,000 IU per week, in vitamin D deficient pre- and post-menopausal women at high breast cancer risk. The women will be treated for a full year. Breast-specific outcome measures include tissue changes on biopsy, imaging of breast fibrodensity, as well as urine and serum markers.

According to Julie Campbell, a research fellow, the study will ultimately involve 80 women in total. So far, 20 pre-menopausal and 14 post-menopausal women have completed the trial, with no evidence of any adverse effects at either dose level. "There have been no cases of hypercalcemia so far, and only one woman has shown high urine calcium levels," said Ms. Campbell.

She pointed out that high-dose supplementation leads to rapid correction of deficiencies. Among the pre-menopausal women, mean levels were up in the 50–60 ng/ml range within 3 months, with the 30,000 IU dose giving larger rises than the 20,000 IU dose. It is important to note that even at these high doses, none of the subjects got up into the potentially toxic 150 ng/ml serum range.

The study is ongoing, and investigators have not yet completed analysis of vitamin D's effects on breast tissue. However, the available data indicate that two of the 20 pre-menopausal women taking 30,000 IU had a 15% reduction in fibrodensity, a surrogate marker for cancer risk.

"These are pilot data but they are compelling," Ms. Campbell said. "High dose vitamin D supplementation can successfully raise serum levels to target range within a year, without significant toxicity. Based on imaging and biomarkers, there are possible preventive effects."

Though the IOM report seems to dismiss the potential benefits while raising a specter of alarm based on little evidence of actual toxicity incidence, the Columbia experience suggests little downside to supplementing in the range of 10,000–30,000 IU per week. The only major caveat is that one needs to watch calcium closely. Raising the serum vitamin D level will tend to increase calcium absorption, so if a patient is taking a lot of calcium the vitamin D boost could potentially increase risk of kidney stones.

The role of vitamin D in primary breast cancer prevention should become more clear on publication of a new Phase IIB intervention trial by the Southwest Oncology Group. The study involves 200 high-risk women randomized to placebo or 20,000 IU per week and followed for a year.

Improving Survival, Preventing Recurrence

There's growing evidence that serum vitamin D level is inversely correlated with risk of recurrence in women who've already had breast cancer. Researchers in Toronto studied 512 women diagnosed with early-stage breast cancer from 1989–1996, and followed them for an average of nearly 12 years. The women had a mean vitamin D level of 23 ng/ml at baseline, with 37.5% in frank deficiency (<20 ng/ml) and 38.5% showing insufficient levels (20–29 ng/ml).

The women who were vitamin D deficient had a roughly two-fold increased risk of cancer recurrence and death at 12 years compared with those who had "sufficient" vitamin D levels (Goodwin et al. *J Clin Oncol.* 2009; 27(23): 3757–3763).

Dr. Crew said her team saw a similar effect in the Long Island study, with a near doubling in the adjusted hazard ratio of death within 8 years among the vitamin D deficient women compared with those who had blood levels over 30 ng/ml.

Interestingly, women in northern latitudes diagnosed with breast cancer in the Summer or Fall have statistically better survival rates compared with those diagnosed in the Winter or Spring. Further, breast cancer has a 25% higher mortality rate in the Northeastern US compared with the Southwest. While there are many potentially confounding variables in epidemiological findings like this, Dr. Crew said there could very well be a vitamin D effect in play.

The Sunshine Vitamin is clearly a subject of great interest to cancer researchers these days, and future studies should help clarify optimal treatment strategies.

The new IOM report states that for the general population there's no strong evidence for pushing supplementation beyond the 600 IU range, a conclusion that many are questioning. For women at risk of breast cancer, the available data suggest a conclusion that runs counter to the IOM's recommendations.

It makes good sense to test vitamin D levels in all at-risk women, and to do whatever is possible to get serum levels into the 40–60 ng/ml range.

Read more on Vitamin D and how the clinical community is responding to the new Institute of Medicine report. Visit www.holisticprimarycare.net and read Editor Erik Goldman's blog.

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"Holistic Surveillance" of Prostate Cancer Is Focus of New Organization

By August West
Contributing Writer

There are approximately 200,000 new cases of prostate cancer diagnosed each year. The vast majority are caught at early stages—thanks to concerted screening efforts—and most can be controlled through a comprehensive multimodal holistic approach aimed at reducing inflammation, a key driver of the disease.

"I believe that 80% of prostate cancer surgeries in the US are unnecessary, and it appalls me to observe an increasing trend of urologists purchasing their own radiation units, hiring a radiotherapist, and then benefiting from the added income from the high facility fee," said Aaron Katz, MD, Director of Holistic Urology at Columbia University Medical Center, New York.

"I have decided to make it my mission to increase patient access to holistic treatments. I believe there is potential to help tens of thousands of men and women" currently living with urologic cancers or other urologic diseases, said Dr. Katz.

Speaking at the inaugural meeting of the Society for Integrative Urology (SIU), a new organization Dr. Katz has founded, he stressed that thousands of largely ineffective and unnecessary surgeries could be avoided each year if more physicians understood how to utilize the various vitamins and nutrients, botanical anti-inflammatory compounds, and medicinal mushrooms that have been shown in good clinical studies to down-regulate inflammation and inhibit the growth of prostate cancer.

Dr. Katz founded the SIU with two of his Columbia colleagues: Philippa Cheetham, MD, and Jillian Capodice, LAc. The primary goals are to educate both physicians and patients about non-pharmaceutical, non-surgical options, and to promote a concept Dr. Katz calls "Active Holistic Surveillance" for early stage prostate cancer. This approach draws on years of research and clinical experience gained at the Holistic Urology center at Columbia.

"We're fairly biased against radiation and surgery, and we try to prevent patients from needing them," he told the gathering.

Lots of Antioxidants

A low-fat diet high in fresh produce and lean protein is the cornerstone of the Holistic Surveillance protocol, but it also includes liberal use of green tea, pomegranate juice, vitamin D, vitamin E, selenium, lycopene, the multi-herb anti-inflammatory formula called Zyflamend, Genistein Combined Polysaccharide (a soy derivative), and Active Hexose Correlated Compound (AHCC—an NK-cell activator derived from Shitake mushrooms).

"We use a lot of antioxidants," said Dr. Katz, "and lots of vitamin D." Regarding the latter, he noted that at Columbia he routinely has prostate cancer patients taking 5,000 IU per day. "We found that 73% of our men with prostate cancer are deficient in vitamin D at time of diagnosis. If we can raise the blood levels to the 40–60 ng/ml range, I believe we can cut the mortality by about 50%. We've been recommending 5,000 IU, and we've not seen any adverse effects."

But he stressed that Active Holistic Surveillance is not just about supplementation, it's about teaching patients to live healthier lives, and to recognize and then minimize the factors that drive prostate neoplasia. It's also about creating a strong partnership with the patient, which increases the likelihood that he will come in for regular monitoring, another cornerstone of this approach.

Dr. Katz believes a large majority of men with intraepithelial neoplasia or early stage prostate cancer will never need more invasive treatment if they are diligent in making lifestyle changes and following the Holistic Surveillance program.

The Possibility of Prevention

"Unfortunately, the majority of urologists rely solely on surgery and pharmaceuticals. They do not take the time to review the scientific research on holistic treatments, they dismiss prevention as a non-possibility, and they fail to advise their patients on lifestyle changes, diet, exercise, and the use of science-backed nutraceuticals as a means of prevention or complementary therapy."

In founding the new organization, Dr. Katz hopes to change the situation. He has set a goal of raising $200,000 in the coming year, which will be used to develop a website and an online journal to disseminate reliable scientific data supporting nutritional, botanical, and lifestyle-based interventions; to establish local and national conferences and education programs for urologists and primary care doctors alike; and to support a weekly radio show aimed at educating the public.

Ultimately, he hopes SIU will become a hub for integrative-minded physicians versed in how to implement Active Holistic Surveillance, one that will enable more patients to find this sort of comprehensive care.

"I didn't start out with an interest in alternative medicine," said Dr. Katz, reflecting on a career trajectory that has put him at the forefront of alternative medical research and holistic patient care. "I got interested in it because I saw that the focus of urology was all about treatments—radiate, resect, remove! There was nothing about prevention. I wanted to prevent these cancers, not just treat them."

What began as a sudden vision late last summer rapidly materialized into a first meeting drawing roughly 80 people to upper Manhattan in November. Clearly, the SIU is off to a promising start!

We at *Holistic Primary Care* applaud this endeavor, and we hope the broader holistic medical community will support it—collectively and individually.

For more information or to make a donation to the SIU, visit: www.integrativeurology.org

Cordless Phone EMFs

cont'd from page 1

that they become physically ill when close to EMF fields from cell phones, microwave ovens, computers, fluorescent lighting systems, and WiFi networks.

Simple Set-Up, Striking Stats

Dr. Havas' team continuously monitored HRV in the 25 subjects, ranging in age from 37 to 79, who were in a supine position for the duration of the experiment. They subjected the volunteers to 3-minute intervals of exposure to a cordless phone base station placed 30–50 cm (approximately 2 feet) from their heads. The subjects and the monitors were blinded as to whether the base station was actually plugged into a live electrical outlet and emitting signals or not.

The tests were conducted in two Colorado locations (Golden and Boulder), and the investigators carefully measured and accounted for background EMF at the test sites. They used a LifeSource UA-767 digital blood pressure monitor, and the NervExpress HRV monitoring system, which gives comprehensive information about autonomic activity, particularly the balance between the sympathetic and parasympathic branches.

After baseline measurements, the subjects underwent a series of exposures in which the phone base station was connected to an active outlet (true exposures) or a false outlet and, therefore, not emitting signals (sham exposures). All HRV data were read and interpreted by an independent reader not present at the experimental sites.

EMF'd Up

Most subjects (15 of the 25) did not show detectable CV responses to the EMF. However, 40% (10 of 25) showed statistically significant increases in heart rate of 10–30 bpm over baseline. Four volunteers went into overt tachycardia, within 1–2 seconds of exposure to the live and radiating base station. In one subject, heart rate jumped from 61 bpm at baseline to 154 bpm on exposure.

The HRV profile in those who showed CV changes was characterized by strong up-regulation of sympathetic activity, and down-regulation of parasympathetic activity, suggestive of an adrenalin-mediated "fight or flight" stress response.

Fortunately, the sympathetic overdrive and attendant cardiac changes were transient and returned to baseline patterns within seconds after the EMF emission was cut off (i.e., the base station was unplugged from the live outlet).

The data were published October 22, 2010, in a special edition of the *European Journal of Oncology,* focused entirely on non-thermal biological and clinical effects of EMF on living systems. This monograph was jointly sponsored by the International Commission for Electromagnetic Safety and National Institute for the Study and Control of Cancer and Environmental Diseases.

The monograph includes studies of EMF impact on carcinogenesis, cognitive function, the integrity of the blood–brain barrier, endocrine and reproductive function, as well as Dr. Havas' heart rate paper.

Corroborating Subjective Experience

The autonomic disruptions shown by the HRV monitor correlate well with the sort of symptoms many electrosensitive people report, including: arrhythmia & palpitations, altered blood pressure, dizziness, nausea, fatigue, and sleep disturbances.

Of the latter two, Dr. Havas points out that, "When the sympathetic nervous system is stimulated and the parasympathetic is suppressed, the body is in a state of arousal and uses more energy. If this is a constant state of affairs, the subject may become tired and may have difficulty sleeping."

The study is important because it provides objective corroboration for symptoms that doctors—or the patients themselves—often dismiss as imaginary or "stress-related." In fact, they are stress-related, but the source of stress may be electronic.

Prior to the actual experiment, subjects were questioned on their self-perceived electrosensitivity. One third indicated that they did not know if they were electrically sensitive, 16% said they had little sensitivity, and 8% felt themselves to be not sensitive at all. Forty percent believed themselves to be moderately to extremely sensitive, noting that prolonged exposure to EMF-emitting devices could bring on phenomena like poor memory, difficulty concentrating, eye problems, sleep disruption, headaches, dizziness, heart palpitation, and arrhythmia.

It is interesting that 40% of the volunteers did turn out to be responsive to EMF according to the CV monitor. There was some overlap between self-perceived sensitivity and objective autonomic responsiveness, but the correlation was far from exact. Five of the subjects overestimated their sensitivity (i.e., they considered themselves "sensitive" but did not respond to provocation), and two underestimated it.

A New Diagnostic Technique?

In an interview posted on the website www.electromagnetichealth.org, Dr. Havas said this study began as a quest to find an objective way of evaluating claims of electrohypersensitivity. Ultimately, she hopes the findings will help prevent the unnecessary and reflexive over-medication of people whose heart symptoms are driven simply by proximity to "hot" EMF sources.

"Doctors, especially cardiologists, really need to know about this. They could very well be misdiagnosing some of their patients." The technique used in the study (HRV monitoring with provocation via exposure to an EMF-emitting device) could be used clinically.

> **"The real question is not, 'Is EMF a health risk?' but rather, 'For whom is it a health risk…and how do we help sensitive people minimize exposure?' "**

The real question is not, "Is EMF a health risk?" but rather, "For whom is it a health risk, how do we detect the risk, and how do we help sensitive people minimize exposure?" She estimated that roughly one-third of all adults is somewhat sensitive to EMF fields, and between 3% and 5% react strongly enough to cause clinically significant, potentially debilitating problems. The problem is, you can't tell who is who just by looking.

HRV monitoring is inexpensive, widely accessible, easy to use, and powerful in terms of the information it can give. "You can do the provocation studies in about 10 minutes, so in principle you could do this with patients with intermittent heart problems that seem unrelated to any other symptoms or risk factors for heart disease," said Dr. Havas. The major caveat is that you need to ensure that the testing space is clean of extraneous wireless EMFs or "dirty" AC power lines.

Beyond Cell Phones

This study assessed the impact of EMF from a specific AT&T cordless phone system. Can the findings be generalized to other devices?

While a lot more research needs to be done using a wide variety of devices using different frequencies, Dr. Havas believes there is a general physiological principle at work, and that people who are sensitive to EMFs will likely have noxious responses to many different types of equipment.

Cell phones have been at the center of the current storm about EMFs. Concern about brain tumor risk prompted the City of San Francisco to pass an ordinance in June requiring cell phone retailers to post point-of-sale information about potential neurological risks of exposure to EMFs beyond a Specific Absorption Rate (SAR) of 1.6 W/kg—that's most cell phones.

Advocates of the ruling, which had strong popular support, say it is a major public health victory; critics call it an empty albeit high-profile measure taken against a largely imaginary risk.

A recent report in the *New York Times* entitled "Should You Be Snuggling with Your Cell Phone?" only added fuel to the fire www.nytimes.com/2010/11/14/business/14digi.html?emc=eta1). Author Randall Stross reviews the inconclusive but still disturbing epidemiologic and experimental links between cell phone EMF and brain cancer. He also points out that the fine print in cell phone packaging materials recommends that the devices be held ⅝" to 1" away from the head.

Dr. Havas' study is important for several reasons: it is based on measurable physiological parameters that correlate with symptoms; it shifts the focus away from hard-to-prove health consequences like brain tumors and onto easily trackable, real-time phenomena like heart symptoms; and it underscores the fact that cell phones are only one component of the EMF fields blanketing our lives.

"Unlike cell phones that radiate microwaves only when they are either transmitting or receiving information, the cordless phone radiates constantly as long as the base is plugged into an electrical outlet," she noted.

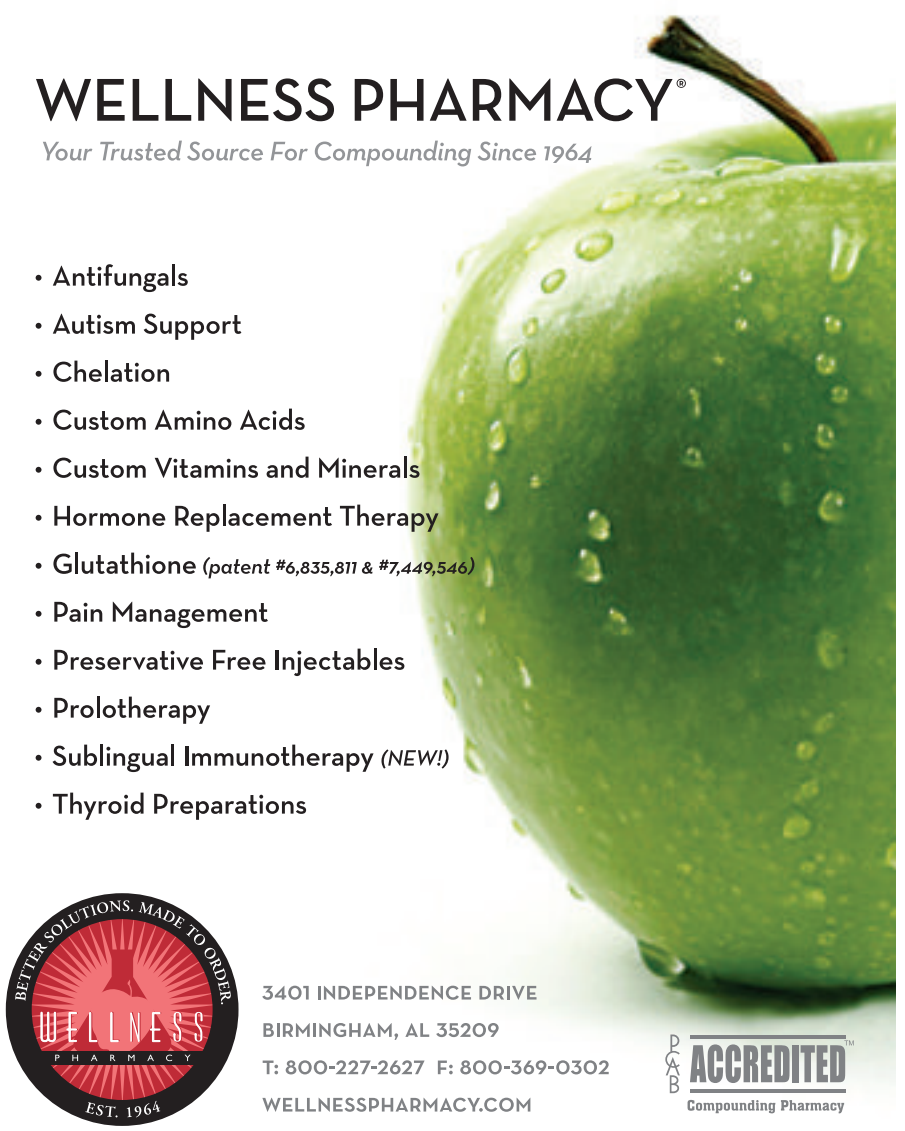
With the base station at roughly 2 feet from their heads—the equivalent of sleeping with a cordless phone system on the nightstand—the study subjects absorbed a maximum EMF "dose" of about 5 MW/cm^2. This is a mere 0.5% of the 1,000 MW/cm^2 deemed "safe" in US and Canadian health guidelines. Yet these relatively weak fields could induce significant CV changes in some people.

"What this tells us is that those guidelines are not protecting the hearts of individuals who might be particularly responsive to EMF signals."

Suggested Reading

Dr. Havas is co-author, along with Camilla Rees, of an e-book entitled *Public Health SOS: The Shadow Side of the Wireless Revolution* (2008), a comprehensive review of the science on EMFs and adverse health consequences. Purchase the book from www.electromagnetichealth.org.

Environmental epidemiologist Devra Lee Davis, author of *When Smoke Ran Like Water* (2002) and *The Secret History of the War on Cancer* (2007), has a new book entitled *Disconnect: The Truth About Cell Phone Radiation, What the Industry Has Done to Hide It, and How to Protect Your Family.* Learn more at www.environmentalhealthtrust.org.



Vitamin D May Prevent Tamoxifen-Associated Joint Problems

Women with breast cancer often experience severe joint pain as a consequence of treatment with aromatase inhibitors like Tamoxifen. Researchers in Barcelona suggest that vitamin D supplementation can prevent or at least reduce the pain.

This is important because severe arthralgias often limit a woman's willingness to complete tamoxifen treatment.

Daniel Prieto-Alhambra and colleagues at the Hospital del Mar, studied a cohort of 290 breast cancer patients undergoing treatment with Tamoxifen or another of the aromatase inhibitors (AIs). At baseline, 90% had serum vitamin D levels under 30 ng/ml, which is considered deficient in sunny Spain.

All the patients were given 800 IU/d vitamin D, but those who were deficient also got an additional 16,000 IU oral boost every two weeks.

Among the women who were pain-free at baseline, those who reached serum levels of 40 ng/ml were 50% less likely to experience drug-associated joint pain than those who remained vitamin D deficient.

The authors note, however, that it is challenging to get the blood levels up to this protective level. At 3 months, 50% of the women treated with the booster doses were still deficient (Prieto-Alhambra D, et al. *Breast Ca Res Treat*. 2010; DOI: 10.1007/s10549-010-1075-9).

"We conclude that most women requiring AI therapy have low concentrations of vitamin D at baseline, and the appearance of AI-induced arthralgias in women with early breast cancer is associated with their plasma concentrations of Vitamin D," said Dr. Prieto-Alhambra.

The relationship between vitamin D, breast cancer, and aromatase inhibitors is complex. The Barcelona group had previously shown that vitamin D deficiency is extremely common in women treated with these drugs. The question is whether drugs like Tamoxifen can cause the deficiency.

There is some evidence that aromatase inhibitors compromise vitamin D metabolism by competing with cytochrome P3A4 enzymes in the liver. The clinical significance of this has not yet been determined.

Dr. Prieto-Alhambra and colleagues recommend routinely assessing serum vitamin D levels in any woman considering aromatase inhibitor therapy, and supplementing if she is deficient. Not only might the vitamin reduce the odds of drug-associated joint pain, it might actually reduce risk of recurrence.

Vitamin D3 Gives Mixed Results for Preventing Flu in Schoolchildren

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Vitamin D has been the subject of great research attention over the last five years. Among its many potential health benefits is enhancement of immune system function, leading some people to believe that vitamin D supplementation might be helpful in preventing seasonal infectious conditions like the flu.

Researchers in Japan conducted a randomized, double-blind, placebo-controlled trial to investigate the relationship between vitamin D3 and seasonal influenza in children. Vitamin D3 supplementation was not clearly shown to reduce overall incidence of influenza, though it did reduce the incidence of influenza A infection (level 2 [mid-level] evidence).

In the trial, 430 schoolchildren aged 6–15 years were randomized to receive either vitamin D3, 600 IU twice daily for a total of 1,200 IU/d, or placebo from December 2008 through March 2009. A total of 334 children (78%) were included in the final analysis, with 96 children (22%) being lost to follow-up. Presence of influenza was confirmed by rapid antigen testing.

In comparing the vitamin D3 group versus the placebo group, influenza A was confirmed in 10.8% versus 18.6%, respectively ($p = 0.04$, NNT 13). While influenza B was confirmed in 23.3% versus 16.8% ($p = 0.13$). Overall, there was no significant change in total flu incidence between the supplemented and unsupplemented kids (Urashima M, et al. *Am J Clin Nutr.* 2010; 91(5): 1255–1260).

Interestingly, among the children previously diagnosed with asthma, vitamin D supplementation reduced the incidence of asthma attacks, which occurred in 1.2% in the vitamin D3 group and 7.2% in the placebo group ($p = 0.006$, NNT 17).

Seasonal influenza epidemic in the United States typically occurs annually from late fall to early spring, a period during which sun exposure is limited and a large number of people living in northern latitudes become vitamin D deficient.

This trial explores vitamin D as possible prophylactic against seasonal influenza. The data show that vitamin D3, at a dose of 1,200 IU/d, did reduce the risk of getting influenza A, but it was also associated with an increase in influenza B, giving no net decrease in the total rate of influenza or influenza-like illness in these school-aged children.

This article was adapted from DynaMed, published by EBSCO Publishing (www.ebscohost.com/dynamed). DynaMed is a commercial-free clinical reference tool created by physicians for physicians and other healthcare professionals for use at the point-of-care. Offering clinically organized summaries for more than 3,200 topics, DynaMed is updated daily, and monitors the content of over 500 medical journals and systematic evidence review databases. New data are evaluated using DynaMed's 7-Step Evidence-Based Methodology, then integrated with existing content, and overall conclusions are revised as appropriate, representing a synthesis of the best available evidence.

For more information on vitamin D3, see the "Influenza in children" topic in DynaMed.

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Calorie Restriction Mimetics: New Tools for Reducing Chronic Disease, Promoting Longevity

By Stephen Holt, MD, PhD
Contributing Writer

The only intervention that has ever been consistently shown to extend average and maximal lifespan in a wide variety of living organisms is the restriction of caloric intake.[1–5]

Many experiments involving reduction of total caloric intake, in some cases by as much as 70% of ad libitum intake in free-feeding animals, show that calorie restriction improves a number of biomarkers of aging, with overt evidence of improved general health.[2–11] The benefits observed in lab animals have also been seen in primates and humans.

As studies over the past two decades defined the beneficial biochemical and physiological effects of calorie restriction, scientists found that a variety of substances, both drugs and natural compounds, could mimic these desirable effects. These so-called "calorie restriction mimetics" have great potential clinical value because very few people can adhere to the degree of calorie restriction that will lead to substantial extension of life.

By the late 1990s, scientists identified a number of compounds that have anti-aging properties as a consequence of their ability to mimic the biological changes associated with caloric restriction.[9] These include foods like avocados, nutraceuticals such as resveratrol, carnosine, and acetyl-L-carnitine, herbs such as gymnema and cinnamon, and drugs like metformin and thiazolidinediones.

Use of calorie restriction mimetics, in isolation of significant dietary calorie reduction, has naïve appeal to some people; it looks like an easy option for longevity promotion, but it may not be so. It is much more reasonable to combine calorie restriction mimetics with tolerable but meaningful reductions of overall caloric intake. This approach is deeply rooted in good scientific agreement, derived from almost eight decades of research.[1–10]

While more research on the use of calorie restriction as a longevity promoter in humans is desirable, the benefits are well documented and highly credible. It certainly warrants consideration if we ever wish to get beyond current futile attempts to reverse the obesity epidemic.[12]

I believe that use of calorie restriction mimetics in conjunction with calorie restriction diets is central to disease reduction and longevity promotion. It represents the second key component in what I call the "Anti-Aging Triad," which also includes interventions for stem cell support, and therapies for telomere lengthening (visit www.holisticprimarycare.net and read "Telomeres, Aging & Disease Prevention").

Biological Effects of Calorie Restriction

A simple understanding of the biochemical and physiological effects of calorie restriction explains why this intervention can extend average lifespan.[9,10] There is a major added bonus: Calorie restriction also extends *maximum* lifespan, defined as the greatest number of years that a living organism can survive.[9,10]

The biological outcomes of calorie restriction include, but may not be limited to: alteration of the expression and actions of many key enzyme controlling metabolism and protein synthesis; reduction of damaged protein and facilitation of its removal; modulation of normal processes of cell death (apoptosis); modification of the actions of chaperone molecules; reduction in protein/sugar cross-linking (glycosylation); reversal of dysglycemia; reduction of chronic inflammation and inflammatory markers; hormetic effects; inhibition of glycolysis through insulin sensitization; and specific influences on genes that alter cell repair or death (e.g., Sir2 gene or the human homologous SIRT1 gene).[1–10,13–16]

Clinically, we can observe that caloric restriction produces:[1–10,13–16]

1. Favorable effects on cardiovascular structure and function, including reduced heart rate, blood pressure, LDL cholesterol, and triglycerides.
2. Improvements in insulin sensitivity and normalization of blood glucose.
3. Increase in protein synthesis and elimination of abnormal proteins.
4. Modulation of the process of "orderly cell death" (apoptosis) with improvement in the repair and maintenance of DNA integrity.
5. Reduction of oxidative stress by diminution of free radical generation.
6. Reduction in body temperature.
7. Reduction in body fat mass, including visceral adiposity, with concomitant increase in muscle mass.
8. Beneficial effects on hormonal secretion, particularly on hormones that tend to fall with age, e.g., DHEA and growth hormone.
9. Improvements in brain function, including memory, cognition and perhaps mood.
10. Spontaneous enhancement of an ability to engage in physical activity.
11. Stimulation of growth factors, e.g., BDNF, a nerve growth factor.
12. Weight loss.

If you're skeptical, bear in mind that these biochemical and physiological outcomes have been observed in essentially all species of animals that have been subjected to calorie restriction experiments.[5] Scientists and physicians focused on anti-aging medicine are in agreement that the effects seen in animals are often present in non-human primates and humans.[5,9]

Table 1. Putative calorie restriction mimetics. The asterisk (*) denotes good scientific agreement on use as nutritional support, with evidence of safety and efficacy in producing physiologic and biochemical changes typically associated with calorie restriction.

Agent	Comment
Metformin	A drug that increases insulin sensitivity, reduces gluconeogenesis, inhibits excessive glucose absorption, enhances glycolysis secondary to increased expression of genes encoding for glucokinase and liver-specific pyruvate kinase. Modulates stress responses, with the activation of AMPK.
Resveratrol*	A plant polyphenol that stimulates the Sir2 gene, reducing or modulating apoptosis. Proven anticancer benefits with beneficial cardiovascular effects, including potent antioxidant activity. Effects on apoptosis are complex, operating through mechanisms of hormesis, dependent on the ratio of resveratrol to other related molecules that alter "pro and anti-apoptotic" factors.
Carnosine*	A combination of amino acids, which inhibits cross-linking of proteins and formation of harmful AGE's (advanced glycosylation end-products). Enhances glutamate action in the brain, stimulating nitric oxide with improvement in brain function and memory. A classic anti-aging factor that increases average lifespan, but not maximum lifespan in rodents. Arguably a calorie restriction mimetic, carnosine has potential synergy with other natural anti-aging compounds.
Avocado*	Mannoheptulose from avocado improves insulin sensitivity and blood glucose levels, with thermogenic effects on fat deposits in muscle. Enhances lifespan in mice.
Gymnema*	Alkaloids (gymnemosides) from this herb have glucose regulating effects.
2-Deoxyglucose	Increases insulin sensitivity and reduces blood glucose, but is toxic at high doses. Not recommended for routine use because of narrow window of safety versus therapeutic effect.
Aminoguanidine	Reduces abnormal protein accumulation, prevents glycosylation and reduces AGE's.
Hydroxycitrate	May reduce caloric intake. Not recommended for clinical use because of liver toxicity.
Adiponectin	Plays a role in fat metabolism, perhaps mediating the effects of calorie restriction.
Thiazolidinediones	Insulin sensitizing drugs, but with limited utility owing to variable and onerous side effects.
Iodoacetate	Prevents the ill effects of toxic glucose metabolites.
Exandin	A glucagon-like-peptide (GLP) which counteracts the effects of glucagon, reduces plasma glucose, and suppresses food intake.
PYY3–36	A peptide gut hormone that inhibits food intake via actions on the hypothalamus, with secondary effects on glucose metabolism.
Leptin	Stimulates fat metabolism and reduces body weight. Involved in hormonal responses triggered by calorie restriction. May be a principal mediator of the clinical effects of calorie restriction.
Alpha Lipoic Acid*	Valuable antioxidant with insulin sensitizing actions.
Cinnamon*	Methylhydroxychalones in cinnamon are insulin mimetics.
Acetyl-L-Carnitine*	Antioxidant with neuroprotective and energizing effects. May not be a calorie restriction mimetic by strict definition, but facilitates mitochondrial function.
Mixed Antioxidants*	While not calorie restriction mimetics *per se,* grape seed extract, mixed polyphenols, green tea polyphenols, ellagic acid, and maritime pine bark are antioxidants with specific anticancer and cardiovascular effects.

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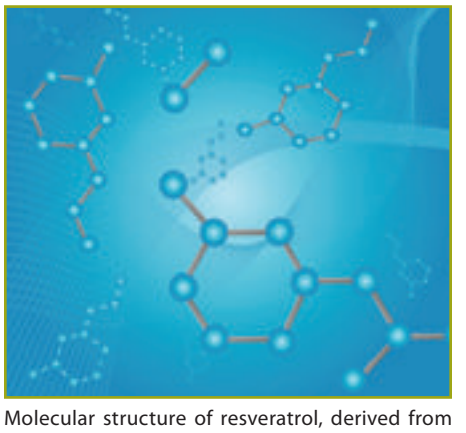
Calorie Restriction Mimetics

A calorie restriction mimetic is a pharmaceutical or natural compound which has the ability to reproduce one or more principal biological effects of calorie restriction.[9] There are many putative calorie restriction mimetics (Table 1)[1–9] that are potentially useful in humans.

Some may have primary effects on genetic controls of aging, whereas others may have more specific effects on glucose metabolism. In other words, calorie restriction mimetics show considerable biochemical versatility. There is also a lot of inter-individual and intra-individual variation in the human response to a calorie restriction mimetic.

Calorie restriction produces a highly complex cascade of biological events that match, in part, the even more complicated cascade that regulates aging. I have repeatedly reminded myself and other practitio-



Molecular structure of resveratrol, derived from the skins of red Grapes. Resveratrol is one of a number of naturally occurring compounds that mimic the beneficial physiological effects of calorie restriction.

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continued on next page

ners of Integrative Medicine that the power of synergy is a pivotal component of natural therapeutics.[17] It continues to surprise me that many practitioners are using single-supplement interventions, despite the fact that bio-integrative medicine largely rejects the flawed concept of the "single-drug, single-receptor action" in therapeutics.

For example, resveratrol—a potent polyphenol found in the skins of red grapes and other plants—has been heralded as a key anti-aging supplement. But it won't likely lead to optimal outcomes by itself. Resveratrol's effects are significantly enhanced by the synergistic action of other calorie restriction mimetics, along with dietary changes.

Table 1 provides a list of calorie restriction mimetics supported by credible science showing biological effects in animals and/or humans.[1–10,13–19]

A Novel Anti-Aging Strategy

Longevity is unquestionably the legacy of positive and healthy lifestyle. Anti-aging or "regenerative" medicine must be defined within the context of advanced preventive medicine. At the same time, it is important to realize that prevention or reduction in prevalence of premature causes of death and disability may not have as significant an impact on average and maximum lifespan as has been hitherto supposed. We physicians need to pair efforts at prevention of fatal illness with promotion of well-being!

The combined use of several dietary supplements that have additive calorie restriction mimetic effects, in conjunction with appropriate lifestyle and dietary changes, can go a long way in meeting both of those clinical goals.

I am not optimistic that major reduction in daily caloric intake is a widely achievable intervention for most people in industrialized societies like the US, where high-calorie, low-nutrient foods are plentiful, cheap and ubiquitous. Consequently, the availability of natural substances that reproduce the physiological effects of calorie restriction is a major advance in the anti-aging field.

My recommendations would include the synergistic use of supplements such as carnosine, resveratrol, gymnema alkaloids, and alpha lipoic acid, as well as foods like cinnamon and avocado. Grape seed extracts, ellagic acid, and pine bark polyphenols give added benefits. These mimetics should be used in the context of a healthy diet with tolerable but meaningful limitations on total caloric intake. Bear in mind that these compounds all have potentially beneficial effects beyond their ability to mimic the effects of calorie restriction.

We certainly need longitudinal studies to assess the benefits of calorie restriction mimetics, but it may take many years before what now seems obvious clinically becomes apparent in "hard-nosed" scientific language. With the prevalence of obesity, diabetes, heart disease and other chronic diseases as high as they are at present, I don't think we can afford to wait for "definitive" clinical trials. In treating patients, we need all the help we can get, and we need it now!

Stephen Holt, MD, PhD, is the founder and scientific advisor of Natural Clinician, LLC (www.naturalclinician.com). He is a widely recognized researcher, clinician, lecturer and author of many scientific papers and books. This article, the second in a series on regenerative medicine, is based on a keynote speech presented at The American Academy for Anti-Aging Medicine's Annual Congress. The topic of calorie restriction mimetics is explored in detail in Dr. Holt's new book entitled The Anti-Aging Triad.

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Sublingual Immunotherapy: Allergy Relief Under Your Tongue

By Scott Rollins, MD
Contributing Writer

Sublingual immunotherapy is a safe, highly effective alternative to injection-based treatments for managing allergies. Moreover, it enables primary care physicians to treat patients that they are currently referring out to specialists.

Immunotherapy, by whatever route, treats the cause of allergies by giving increasing doses of the substances to which a person is allergic. This, in turn, increases tolerance to those allergens and ultimately reduces symptoms. It is truly functional medicine in that it gets to the root cause of allergies instead of simply trying to control the symptoms. When done well and thoroughly, it can be highly effective.

In the US, subcutaneous injections are the only form of immunotherapy that most doctors and patients know. This is unfortunate because "allergy shots" are extremely inconvenient, costly and sometimes dangerous. For the most part, injections are given by specialists, and this relatively simple treatment has been carved out of primary care. With shots as the only option, a very small percentage of Americans who might benefit from immunotherapy get the relief they need.

Fortunately, shots are *not* the only option.

Outside the US, Sublingual Immunotherapy (SLIT) is the most common method of treating allergies. It is supported by a large body of science showing that in most cases it is equivalent or even superior to subcutaneous injections in efficacy and safety. SLIT is also vastly more convenient, and ideally suited to the primary care setting.

My own clinical experience with SLIT has been highly satisfactory, and I predict it will soon become the norm in this country. Prestigious centers such as Johns Hopkins Sinus Center are already offering SLIT, and one can envision its rapid expansion into the primary care arena. SLIT is patient-friendly functional medicine at its finest!

History of Sublingual Immunotherapy

The concept of immunotherapy originated in the early 1900s, based on the idea of vaccination against infectious agents. An attempt at vaccination against "airborne toxins" led to the subcutaneous route of allergen administration.[1] This line of thinking ultimately became the standard American approach to allergy treatment, with allergists primarily overseeing and administering subcutaneous immunotherapy (SCIT). Early attempts at oral, nasal and bronchial immunotherapy were either not successful or fraught with complications.

Things changed in 1986, when the British Committee for the Safety of Medicines reported several deaths caused by SCIT and raised concerns about the safety and the risk/benefit ratio.[2] About the same time cheaper drugs (anti-histamines, inhaled steroids) became widely available. Interest in alternative routes for IT, beyond injections, began to increase. That same year the first randomized controlled trial with SLIT was published.[3] SLIT was soon confirmed to be effective in several controlled studies, in both adults and children.[4,5]

By 1993, the European Academy of Allergy and Clinical Immunology (EAACI) published a position paper recognizing SLIT as a "promising route" for desensitization.[6] A few years later, the EAACI declared that "use of SLIT in clinical practice is justified because of the ascertained efficacy and the favorable safety profile."[7] There is ample data proving safety of SLIT in adults and children over age 5.[8,9] The World Health Organization accepted its use in adults in 1998.[10]

In 2004 the first metanalysis showed SLIT was effective for allergic rhinitis[11] and another study showed that it actually helps prevent asthma.[12] Additional papers in 2006–2008 bolstered the idea that SLIT is significantly effective for rhinitis and asthma in adults and children.[13–17] Since then, there have been many large trials in adults and children weighing in favor of SLIT.[18–23]

How Immunotherapy Works

All forms of immunotherapy involve a "recalibration" of the portion of the immune system that is hypersensitive.

The allergic response in hay fever and asthma is the type-1 hypersensitivity reaction that involves an allergen binding to specific IgE receptors on mast cells. This triggers mast cell degranulation and release of histamine and leukotrienes that cause blood vessel dilation and leaking, leading to the symptoms of swelling, itching, and inflammation.

Mast cells are most abundant in the skin and respiratory tract, which explains why allergy symptoms present there. It also explains why side effects to allergy shots include pain, redness and swelling at the injection site and possible anaphylaxis.

The T-helper (Th)-1 pathway is responsible for defense against intracellular pathogens, and a pathologic response in this pathway is associated with autoimmune disease and cell-mediated allergies. The Th2 pathway is responsible for defense against extracellular pathogens, and it is here that asthma and IgE-mediated allergies present when the Th2 system goes awry.

Note that Th3 or T-regulatory (T-reg) cells control both the Th1 or Th2 pathways. In particular, T-reg cells secrete interleukin-10 (IL-10), which leads to immunosuppression and reduces inflammation. The Th1 and Th2 pathways also exert negative feedback on one another; up-regulation of one will down-regulate the other.

While there is much research needed to fully understand the mechanisms of SLIT, there is a consensus that it works by inducing a population of IL-10 producing T-reg cells, triggering a Th1 immune response and increasing IgG4. This ultimately inhibits allergen-IgE binding to B cells, reduces eosinophil activity, and reduces cellular adhesion molecules.

Unlike SCIT, in which allergen is exposed to primed mast cells in the skin, SLIT delivers the allergen directly to antigen-presenting cells in the tissue underneath the tongue. These cells "present" the allergen to the immune system, bypassing and ultimately down-regulating the Th2 pathway.

Effectiveness of SLIT

During the last 3 years there have been numerous well-designed, well-powered studies using standardized grass pollen sublingual tablets. The general effect of SLIT was a significant reduction in symptom severity and medication use. The first metanalysis of SLIT for allergic rhinitis included 22 trials and nearly 1,000 patients, and showed significant reduction in both symptoms and medication requirements.[24]

A metanalysis of SLIT for asthma, which included 25 trials and over 1,000 patients, indicated that it is beneficial, though the magnitude of the effect is small. However, the authors note that SLIT is a safe alternative to subcutaneous injections and that it gives improvements in symptoms, medication use, pulmonary function, and overall well-being.[25]

A metanalysis of SLIT for allergic rhinitis in children, which included 10 trials and 484 patients, showed that SLIT with standardized extracts is effective[26] compared with placebo. There is also a metanalysis of 9 SLIT trials for asthma in children, representing 441 patients, and showing that SLIT reduces symptom scores and rescue drug use in kids with allergic asthma.[27]

How Does SLIT Measure Up Against SCIT?

Comparison of SLIT with SCIT reveals that sublingual and injection therapies are equally effective according to subjective clinical parameters. Both give highly significant reductions of symptoms and medication use.[28] It is interesting that even though the clinical outcomes were equivalent, objective parameters (total specific IgG, specific IgG4, skin reactivity) changed only in patients treated with injection therapy. The clinical efficacy of SLIT is not statistically different from SCIT, and both treatments are clinically effective compared with placebo.

> **"Sublingual is equivalent to subcutaneous injections in efficacy and safety, vastly more convenient, and ideally suited to the primary care setting."**

All things being equal, SLIT may be favorable owing to its advantageous safety profile.[29] Some studies even give SLIT the edge over SCIT for allergic rhinitis.[30]

Safety of SLIT

The safety of SLIT over SCIT is well worth noting. In a comprehensive review of 104 articles on SLIT,[31] there were 66 studies that provided some information on safety and tolerance, representing 4,378 patients who got nearly 1.2 million total doses. There were no fatalities or anaphylactic events reported, and only 1.4 significant adverse events (SAE) per 100,000 SLIT doses.

Mild reactions in the oral mucosa were the most common non-serious AE, occurring in about 75% of patients, most frequently during the escalation phase. Moderate AEs occurred in 0.056% of SLIT doses. These included gastrointestinal symptoms, hay fever symptoms, and itching. A total of 21% of SLIT patients reported AEs compared with 11.7% of placebo patients. The most common SLIT-related serious AEs were asthmatic reactions, followed by abdominal pain/vomiting, uvula edema and urticaria lasting 48 hours; all were rare.

By comparison, according to the World Allergy Organization, there are an estimated 3.4 fatal and 22.8 near-fatal reactions caused by subcutaneous allergy shots every year. Local reactions at the injection site, such as redness, swelling, and warmth, are common, with about 10–20% of users experiencing large (>25 mm) reactions.

Safe use of SLIT depends on identifying risk factors for side effects, which would include asthma, especially if not optimally controlled, and previous significant reaction to allergy shots. Safety of SLIT in children has been shown down to age 3 and several studies have shown safety of multi-allergen mixtures. Safety of SLIT in pregnant and nursing women is unknown at this time.

SLIT in Primary Care

Before initiating immunotherapy, it is important to: 1) Demonstrate the presence of IgE-mediated disease; 2) Document that a specific sensitivity is involved; 3) Document the severity and duration of symptoms; and 4) Ensure availability of standardized, high-quality vaccines.[32–34]

After 16 years of administering subcutaneous immunotherapy in my office I am very familiar with its protocols, successes, and risks. SCIT does work well in controlling asthma and hay fever. However, we've seen a fair share of significant adverse reactions including anaphylaxis, which is why I got interested in the sublingual option.

Our protocol for SLIT involves taking a detailed initial history along with respiratory allergen testing by either serum RAST or skin tests. We then inform the patient about the risks and benefits of SLIT, educate them on home use, administer a 60 day supply of allergen drops and include an epinephrine kit for safety and peace of mind (though the risk of anaphylaxis is almost nil).

We instruct patients to take the drops under the tongue daily. During the first 10 days, called the "escalation phase," the dosage is gradually increased. After that, in the "maintenance phase," the patient takes a fixed number of drops per day.

Our allergen supplier is Wellness Pharmacy of Birmingham, Alabama (www.wellnesshealth

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PCI Offers "STEPs" for Building Prevention-Focused Practice

Physician Consulting Inc., a Colorado-based consulting company, is helping primary care physicians across the country develop thriving prevention-focused practices through incorporation of safe, effective, and scientifically-sound non-pharmaceutical therapies.

PCI identifies well-validated but underutilized non-drug modalities that enable physicians to improve their treatment of common disorders like sleep apnea, adrenal fatigue, chronic allergies, inflammatory and autoimmune diseases, chronic pain syndromes, and others for which conventional drug-based options are limited.

The company's tandem goals are to improve health outcomes while simultaneously providing physicians with new, direct-pay treatment modalities that can strengthen the fiscal heath of their practices.

Founded in 2009 by Kauley Jones, who brings more than 20 years' experience in medical practice development, the company has grown rapidly to include 12 consultants working with over 400 physicians nationwide.

"So many doctors these days are struggling just to keep their offices open and to make payroll. They're frightened to the point of paralysis, and so busy working IN their businesses, that they have no time or energy to work ON their businesses. We're trying to help by doing a lot of that development work for them," Ms. Jones told *Holistic Primary Care*.

PCI's "STEP Plan (Strategic Treatments, Exceptional Profitability) provides physicians with a palette of screening, diagnostic, and therapeutic options as well as guidance on how to incorporate them into existing practices. The modalities represented in the STEP program all share the following characteristics: 1) They address common clinical problems not well-managed under current "standards of care"; 2) They are backed by good science showing improved clinical outcomes; 3) They can create new revenue streams for physicians.

The STEP plan involves partnerships with some of the leading companies in integrative and functional medicine, including: Labrix, Spectracell Laboratories, Sleep Group Solutions, Wellness Pharmacy, TransFormation Enzymes, GUNA Biotherapeutics, Med-Hot Thermal Imaging, SCENAR Health USA, and Biogenesis Nutraceuticals.

In this and future editions of *Holistic Primary Care,* we will explore many of the clinical components comprising PCI's STEP program, and the ways in which they are transforming practices across the country.

To learn more about Physician Consulting Inc., visit http://www.physicianconsultinginc.com/ or call 800-590-7260.

.com). A leader in compounding since 1964, Wellness Pharmacy goes to great lengths to safeguard extract compatibility and stability, ensuring a consistent standard of excellence in the allergen product.

They also provide packaging and distribution of the allergen drops, either mailing directly to our office or to the patient's home. This is a nice contrast to SCIT, which obliges the physician to mix allergens and make the serial dilutions.

In terms of treatment duration, some patients note symptom improvement within 3–4 months after starting SLIT, but it is recommended that treatment continue for 3–5 years in order to confer lasting immunity.

Massive Potential Cost Savings

Treatment for allergies is big business! In 2005, roughly 22 million Americans spent $11 billion on doctors' bills, prescription drugs, and other medical care to relieve allergy symptoms, according to the Agency for Healthcare Research and Quality (AHRQ). Visits to doctors and hospitals accounted for $4 billion. The remaining roughly $7 billion was spent mostly on prescription drugs. Much of that expenditure could have been avoided if people had better access to effective immunotherapy. SLIT is a very viable option.

Unfortunately, most insurance plans do not cover SLIT, and the FDA considers it an "off-label" use. Hopefully, that will change as more physicians and patients become aware of its therapeutic and fiscal potential. When compared with the cost of allergy shots, SLIT may be a more economical choice and is certainly more convenient for patients.

SLIT has potential to treat other allergic reactions such as IgE-mediated food allergies, atopic dermatitis, and honeybee allergies. Key topics for future research include: evaluation of optimal dosing and duration of treatment, efficacy and safety of no build-up regimens, duration of pre-seasonal induction, efficacy of SLIT in asthma, and use of mixtures of unrelated allergens.

Sublingual immunotherapy has been a valuable addition to my practice, and I believe it has the potential to greatly improve the management of allergies and related conditions in the US.

Scott Rollins, MD, is Board Certified with the American Board of Family Medicine and the American Board of Anti-Aging and Regenerative Medicine. He specializes in rural family medicine and emergency services, bioidentical hormone replacement, thyroid and adrenal disorders, fibromyalgia and other complex medical conditions. In 2004 he was awarded "Family Physician of the Year" by the Colorado Academy of Family Practice. He is founder and medical director of the Integrative Medicine Center of Western Colorado (www.imcwc.com), and also serves as Medical Director of Physician Consulting, Inc. (www.physicianconsultinginc.com).

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Prevention Practice Pearl

Evaluating GI Transit Time

By Russell M. Jaffe, MD
Contributing Writer

Gastrointestinal transit time—the interval between consumption of food and it's elimination as feces—is a handy indicator of digestive health and, by extension, overall health status. It is easy and inexpensive to measure, and often proves helpful in working with patients who have digestive problems.

All it takes is a willing patient and a handful of encapsulated charcoal capsules!

A transit time between 12–18 hours is considered healthy. But for all too many Americans, the transit time proves to be 36–96 hours or even longer. This is problematic because the longer the fecal material sits and putrefies in the intestines, the more likely it is that toxins will be absorbed.

Long transit times are associated with toxin reabsorption, poor metabolism, and a predisposition toward or amplification of many chronic intestinal or systemic illnesses.

Low intake of dietary fiber is a major factor underlying prolonged transit times in many people. Absence of fiber in the diet requires the body to work harder to "push" wastes along. Clear evidence of a grossly prolonged transit time can sometimes be a strong motivator for patients to make healthful changes in their diets.

Very short transit times (under 10 hours) indicate a different type of problem. In these cases, the GI system does not have adequate time to digest and assimilate what is eaten. And, the patient may be experiencing a form of malnutrition, despite consuming large amounts of food.

A Fistful of Charcoal

Assessment of transit time is quite simple. It involves ingestion of a concentrated dose of activated charcoal—the same sort as is used for treating gas and bloating—and then tracking when the charcoal shows up in the feces.

Instruct the patient to take 6–12 capsules (1.5–3 grams of charcoal) with 8 ounces of water between meals. For most accurate results, he or she should ingest the capsules just after a bowel movement. I recommend using a high quality brand of activated charcoal such as Requa, easily obtained in most pharmacies.

The number of capsules to take should be guided by the patient's weight, as follows:

- If weight is less than 150 lbs: 6 capsules
- 150–200 lbs: 8 capsules
- 200–250 lbs: 10 capsules
- If weight exceeds 250 lbs: 12 capsules

The patient should make sure to mark the specific time of charcoal ingestion, as this marks the start of the test. It is complete when the patient begins to notice the black, crumbly charcoal in the feces. Make sure the patient records this time, as well. The transit time is simply the difference between the two.

see **GI Time** p. 11

Oximation in Practice

Treating Skin Disorders From the Inside Out: *An Interview with Dr. Julia Hunter*

By Roby Mitchell, MD
Contributing Writer

Dermatologists who think holistically are a rare breed. Sure, many will lip-service the ideas that "Beauty begins from within" and "Skin health is a reflection of overall health." But how many of them practice that way?

Most treat the skin as if it were somehow separate from the rest of the organism, a canvas to be stretched, tweaked, nipped, irradiated, abraded, lasered and slathered with toxic immunomodulatory chemicals without regard to how it is connected to the whole.

This is why I was thrilled to meet Dr. Julia Tatum Hunter at a nutritional medicine conference a few years ago. Dr. Hunter is a dermatologist who works to restore the overall health of her patients, not just to create a cosmetic illusion of health in a body burdened by chronic disease.

Dr. Hunter received her MD at the University of South Alabama, Mobile. Though she always had an interest in dermatology, she actually began her career in anesthesiology, working with plastic surgeons. She realized that while skin surgery can work wonders, it cannot fundamentally change the underlying processes that drive cutaneous disorders. In her quest to find ways to treat root causes, she pursued post-grad training in dermatology, nutrition, Chinese medicine and Ayurveda. She applies them all in her practice, located in Beverly Hills, CA (www.skinfitnessplus.com/).

Much of what Dr. Hunter has learned over the years will be helpful to us in primary care, since we frequently see patients with acne, eczema, psoriasis, premature skin aging, and neoplastic skin lesions. I'm pleased to share this conversation with Dr. Hunter, my friend and go-to source on all things cutaneous.

Holistic dermatologist Julia Hunter sees eye to eye (to eye) with "Dr. Fitt" Roby Mitchell on many things, including the role of oximation in the etiology of many common skin diseases.

Photo courtesy Dr. Roby Mitchell

Roby Mitchell: *We met at a conference on nutritional medicine. Tell me what events, starting from medical school, ultimately led you to that conference?*

Julia Hunter: In medical school I was the contrarian, always asking "why" questions, as in "Tell me why this is so? Why should I believe you? Better yet, don't just TELL me, SHOW ME!" I could see we were being shaped, manipulated, hazed, and propagandized. It dawned on me that maybe even the professors didn't see the forest, because they were so focused on the trees.

I was keen on understanding physiology, and I saw early on that we were being taught to treat symptoms, not to treat causes. I wanted to *cure* high blood pressure and heart disease and cancer, not just get rid of the symptoms. I also believed strongly in prevention. I wanted to know why a patient had a particular condition. I saw human suffering and wanted to prevent it, and I saw how our training seemed to be influencing that impulse out of us.

I knew there had to be "something else," so I began to look wider. I found naturopaths, oriental medicine practitioners, homeopaths—even down there in Alabama. I grabbed any opportunity to learn!

RM: *It's interesting that you even became a physician. As you've told me before, your confidence in physicians has always been . . . well . . . "limited."*

JH: Let's just say, my experiences with doctors growing up had not inspired complete trust! For example, I had flat feet, and my parents took me to a world-renowned orthopedist to fix them. I quickly figured out how he wanted me to walk. I practiced it, and at the next visit, I performed the walk perfectly. He pronounced a "cure" even though nothing changed in my feet. That is when my confidence in physician omnipotence began to wane!

My parents actually stayed away from doctors as much as possible. They were dumbstruck and not exactly happy when I announced I was going to med school. They thought I was better suited to be a lawyer, with all my "why questions" and debate skills. But I loved science and felt called to alleviate suffering.

I ended up in anesthesiology because, after doing different rotations, I found that I was averse to the constant pressure to write prescriptions. When I worked at Beth Israel Hospital in Boston, the so-called "House of God," I saw that once patients started on a first prescription it seemed to be a downhill slide from there. That was NOT what I wanted to be responsible for. I wanted to prevent people from getting so sick they needed drugs.

RM: *How did you get from anesthesiology to dermatology?*

JH: I found the operating room very depressing. I saw the economics of it all, and how the staff became so disconnected from caring. I saw all the negative psychology and politics of medicine. I felt it was such an extraordinary waste to spend so much fixing a ruptured aneurysm rather than preventing it by educating the patient.

I moved to plastic surgery anesthesia because I thought this would be happier surgery. But there, I saw patients who spent SO much money and pinned such high hopes on these procedures, and 2 years later they're back looking just as bad. The skin still has all the rosacea, brown spots, fine lines and wrinkles, skin tags. Again, we were doing nothing for the causes, just treating the symptoms. This all reignited my love of dermatology, because I really saw that the skin was a window to what was going on inside.

RM: *The way you speak of it, it seems like dermatology inevitably leads to a holistic perspective.*

JH: Well, the skin does tell a lot about what is going on internally, and you have to fix the inside first, in order to give the external results. Acne and virtually all other common skin pathologies like psoriasis, eczema, and skin cancers are caused by internal conditions. Skin problems are multifactorial, like everything else, with genetic predispositions, nutrition factors, hormonal influences, medication side effects, stress factors, inflammatory pathology all playing a role. Gut health, or lack thereof, also plays a big role. I am looking for the internal causes as well as any external causes.

RM: *Tell us a little about how you work diagnostically.*

JH: First, I talk with my patients. I take an extensive history, and I examine everything! My intake process covers every aspect of their health, including family history, diet, exercise, hormones, gut issues. I pay very close attention to those last two. My initial consultations take 1.5 hours. I also do blood work and biopsies when necessary. I've found that I can get a lot of useful information from the Biomeridian system, which evolved out of Reinhard Voll's work in the 1950s, trying to electronically identify and validate acupuncture points and meridians.

RM: *You've been able to apply the concept of "Oximation"—oxidative stress plus chronic inflammation in a context of hormone dysregulation and fungal overgrowth—as it figures into skin disease. Talk about that.*

JH: Many skin disorders are connected with accumulated damage due to oximation and high fungal loads. The aging process, skin neoplasia, inflammatory and autoimmune diseases are all either caused by or exacerbated by oximation. Sure, there are genetic predispositions, but it's the environment in which you place your genes that causes diseases. If that environment is constantly pro-inflammatory and pro-oxidative, the genes express pathology.

Fungi play a primary or secondary etiologic role in most of the diseases I see. Candida and other fungi trigger constant inflammation. If you don't cure fungal overgrowth you will not cure the pathology. You may mitigate it temporarily but it will reappear either in the skin or somewhere else. Patients never really get well if they're in a constant state of inflammation and carrying a lot of yeast.

Hormones, especially thyroid hormones—or lack thereof—play a big role in all of this. If your thyroid is low, your skin, your immune system, in fact your entire body, are working at a retarded rate. You grow more fungi, inflammation is increased, oximation is increased. Everything starts aging more quickly. So we need to pay attention to the thyroid, and to other hormones like testosterone, DHEA, cortisol, estradiol and estriol, progesterone, growth hormone. The body is an orchestra. If one instrument is out of tune, the entire orchestra sounds bad.

RM: *Would you say that skin disease is a harbinger of systemic disease?*

JH: Many of them are just that. Rosacea and redness, enlarged pores, acne including back and chest acne, folliculitis, dandruff, ingrown beard hairs, molluscum, persistent and/or significant psoriasis, eczema, vitiligo, hair loss, lateral eyebrow loss, nail fungus/weakness, skin cancers, bags under eyes, skin tags, brown spots . . . in my experience, all of these have internal causes connected with inflammation, oxidative stress, fungal overgrowth, hormone imbalances, or metabolic problems.

The skin is just a window to what is going on inside. You will never cure the skin pathology unless you cure the internal cause. If you

continued on next page

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are using steroids to get rid of these skin conditions—and many doctors are—you are not curing, you are just suppressing temporarily. Plus, if you look at the complete ingredient list for many of these topical meds, you'll see they are full of inflammatory ingredients! Adding inflammation to an inflammatory condition is just like throwing gas on a fire.

RM: *What role does diet play in skin pathology and in your treatment approach?*

JH: Well, I do believe that we are what we eat and, as you like to say, we cannot medicate patients out of what they've eaten and lifestyled their ways into!

In practice, I've found that the guidelines in Peter D'Adamo's *Eat Right for Your Blood Type* have great merit and give patients good direction on how to eat for health and beauty. The *Paleolithic Diet* is good in principle, but many people cannot follow it.

But before we can really get into diets, we need to concentrate on healing the gut, which is often really dysfunctional in people with skin disease. We know there's a large, very important component of the immune system concentrated along the gut tract. So, healing the gut also quells immune system over-activity. I have seen severe acne and skin pathologies of every sort improve or resolve outright, just by curing gut inflammation! So by clearing up the gut, you resolve problems like gas, bloating and constipation, and you also clear up the skin!

There are many aspects to this—stomach HCl production, adequate digestive enzymes, having the right probiotic bugs in the gut, making sure the diet is rich in anti-inflammatory plant-based foods, minimizing refined carbs and pro-inflammatory fats.

> **"Concentrate on healing the gut, which is often really dysfunctional in people with skin disease."**
> ***—Julia T. Hunter, MD***

RM: *Vitamin D, or "Vitamone" D as I like to call it, since it has hormone-like actions, is getting a lot of attention lately. What's your take on sun exposure and vitamin D. Do you advocate that people avoid the sun and use sunscreens?*

JH: Use Sun*block,* not sun*screen.* Sunscreens do not protect against inflammation or UV-induced DNA damage, they simply delay the response. Sunblock deflects UV rays completely, which is protective, but you have to reapply it every 2 hours to get maximal protection. I also recommend protecting the eyes and scalp. You don't want cataracts or a head full of skin cancer/melanoma. I like sunblocks that have Zinc, as there may very well be problems with Titanium.

As to vitamin D3, supplements are inexpensive and readily available. So I recommend taking a lot, to keep blood levels in the high-normal range. But don't try to get it by sun exposure. The truth is, even many of my sunbathing patients have low vitamin D3 because they are full of fungus, which is stealing it all.

RM: *You recently introduced a new line of skin care products, called Maximal Result Skin Therapy. The market is seemingly saturated with skin products. Why was it necessary to formulate a new line?*

JH: I've looked closely at just about every product line on the market worldwide. I am always looking for what works best. And I need to understand why it works. I am an ingredient fiend! I want to know about *all* the ingredients in a product, not just the "active" ones, because the overall outcome is not determined just by the actives. Absence of toxicity is sacrosanct to me, and often there are toxic compounds among the "non-active" ingredients.

When I first got into this field, I was depressed because I could not find "best-results" products that were non-toxic. There were "organic and natural" lines, but they did not necessarily deliver the best clinical results. People were always trying to get me to do my own line, but I saw no need to re-invent wheels. The choices seemed to come down to either the standard toxin-laden but effective products, or the less toxic but less effective "natural" ones. I figured there had to be a better way. Then I learned about "chirally correct" formulation.

RM: *What does that mean?*

JH: As we know from basic biochemistry, many compounds have a "D" and an "L" form, like a "right" and "left" version of the same compound. And they have different physiological effects. The "correct" form is the one for which the target tissue has receptors and which turns on a beneficial response. This is why we use L-ascorbic acid and not D-ascorbic acid when we give vitamin C, or why we use L-glutamine, not D-glutamine.

The idea of using the right isomer is widely recognized in pharmaceutical development. In fact, the FDA mandated all pharmaceuticals be chirally-correct in the late '90's to minimize side effects. Give the wrong form, and you may end up inducing dysfunctional responses. This holds true with skin care products, too.

Chirality is akin to bioidenticality; you want to give a form of a compound that binds properly to receptors and triggers a healthy response. So chirality plays a big part in my formulations.

I want these products to be scientifically sound, and to give strong, visible results. That's why the tag line is, "Show me, don't tell me" skin care." I want them to be easy to use, affordable, and focused on helping people manage common skin pathologies.

In terms of packaging, I wanted products that come in recyclable containers, free of toxins like bisphenol-A, with reliable pumps, easy to use and convenient for travel.

I put all my experience, knowledge, and ideals into creating this line. I've tested the products extensively and I stake my reputation on them. They're the most ingredient-dense products on the market today. I will continue to upgrade them as new science becomes available.

RM: *What are some of the skin care ingredients that people should try and avoid, and why?*

JH: I would avoid anything with a lot of preservatives. Why are preservatives in there in the first place? Because most skin products are made years before they're sold. They're essentially "dead" products that don't go rancid only because of the preservatives, just like chemically preserved foods that are only "shelf-stable" and not completely rotten because of preservatives.

Avoid parabens, as they are inflammatory and promote skin aging. Triethanolamine is another baddie; it is an estrogen mimetic in men and women. Propylene glycol, which is very common, is inflammatory and promotes aging. Ureas, found in a lot of products, release formaldehyde and other toxins. Mineral oil clogs up pores, as does petrolatum, so avoid them. Try to stay away from sodium lauryl sulfate, which is hard because it is in so many things. But it damages cell membranes, destroys protein, triggers inflammation and promotes aging. There is a long list of bad-news ingredients, but these are for starters.

RM: *Your line includes a unique vitamin C product in powder form. What does vitamin C do for skin and why is yours formulated this way?*

JH: Vitamin C is what cross-links collagen. When it is present in the skin, it stimulates collagen production, kind of like a signal to make hay while the grass is high. The net effect is a tightening and lifting, a youthful thickening from new collagen production.

Vitamin C is anti-inflammatory, so it decreases rosacea, redness, pore size, aging, sun damage, and it protects against the internal inflammatory chemicals circulating in the blood. It also helps un-bunch the melanocytes that make up the brown "age spots." It decreases melasma and dark circles around the eyes. It has an anti-microbial effect too, helping to kill bacteria, viruses and fungi. Topical vitamin C builds a firm foundation for your skin care house.

The problem is that when vitamin C is in a liquid or cream form, it gets rapidly oxidized so you get very little therapy by the time it's applied on the skin. My formulation is a powder; you mix it fresh for each use, and you get 100% L-ascorbic acid. You also get a lot of other antioxidants, vitamins, minerals, L-glutathione and other good things.

RM: *Do you think informed primary care physicians can take care of most common skin pathologies?*

JH: Yes, absolutely. But I beg you not to take the easy route and prescribe the temporary hydrocortisone quick-fixes that end up damaging the skin in the long run. When you see someone with chronic rashes, pimples, inflammatory skin problems, non-healing lesions, or rapid skin aging look carefully at their hormones, their diet, their metabolism, their GI function. Find out what's going on systemically. If you fix the systemic problems, the skin problems will usually resolve, too.

If you've done your best, and the skin pathology persists or if you feel you really don't have the necessary time to do a good cutaneous work-up, then refer to a dermatologist. Primary care doctors should also be very careful with suspicious-looking moles. Err on the side of caution with anything that looks potentially cancerous. Be aware that there are more unpigmented melanomas these days, so keep a high level of suspicion.

RM: *What are some of your basic, everyday strategies for healthy skin?*

JH: Make sure you're getting enough vitamin D3, and from supplements, NOT from sun. Drink lots of chemical-free water. Eat healthy oils that contain Omega 3's and 6's—I happen to like flax, walnut, and hazelnut oils. Use non-toxic soaps, shampoos, and personal care products. Remember, virtually everything you put on your skin absorbs into your skin and circulation.

The more antioxidants, vitamins, and minerals in the diet, the better! Melatonin, iodine/iodide and magnesium are especially important. Avoid excessive sugar. Learn to cast off stress, develop your sense of humor, share love and friendship, open your mind, be compassionate and respectful of others! It all counts!!!

GI Time

cont'd from page 9

It is often helpful to have the patient record other features of their feces, including consistency, texture, color, uniformity (or lack thereof) and buoyancy, all of which can provide clues as to what's happening (or not happening) in the GI tract.

The transit time measurement is a very good focus for working with patients who have digestive issues, and normalization of transit time can become a health goal that patients begin to work toward through dietary and nutraceutical approaches. I generally recommend that they re-check transit time twice a month until a healthy transit time is achieved.

Russell Jaffe received his MD and PhD from Boston University School of Medicine in 1972. He is a founding chairman of the Scientific Committee of the American Holistic Medical Association. Dr. Jaffe developed the lymphocyte response assays (LRA) that enable physicians to rule in/out 436 common allergenic substances based on delayed hypersensitivity by functional LRA by ELISA/ACT or MELISA tests. He is also founder of Perque, a practitioner-only nutraceuticals company (www.perque.com).

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Nutritional Medicine: A Textbook by Alan R. Gaby, MD

This article consists of excerpts from *Nutritional Medicine,* a comprehensive textbook recently completed by Alan Gaby, MD. This book is a thorough and practical compendium on the use of dietary change, nutritional supplements, and other natural products for the prevention and treatment of more than 400 health conditions.

Written for busy practitioners who need reliable but clinically-relevant information to guide patient care, *Nutritional Medicine* combines literature reviews, case reports, thorough background material and Dr. Gaby's lifetime of clinical experience in applying nutritional approaches to manage complex disorders and to promote health and well-being.

In addition to thorough reviews of nutritional interventions for nearly all of the common chronic disorders, the book also includes 61 chapters on specific vitamins, minerals, amino acids, and other compounds, reviewing in detail the biochemical effects, clinical indications, interactions, preparations, dosage and administration.

Nutritional Medicine contains 1,374 pages and more than 15,000 references. It is priced at $295. For further information, visit www.doctorgaby.com or call 603-225-0134. The following excerpts give a sense of the scope of material in the book, and the clinically-focused way in which it is presented.

Vitamin K and Warfarin: Misunderstood Interaction

Warfarin works by inhibiting the vitamin K-dependent activation of coagulation factors II, VII, IX, and X. Because this inhibition is competitive in nature, the effect of warfarin is influenced by dietary vitamin K intake. Increasing vitamin K intake inhibits the action of warfarin, whereas decreasing vitamin K intake has the opposite effect. For this reason, patients taking warfarin should keep their dietary intake of vitamin K consistent.[1]

Studies have shown that supplementation with 100–150 µg/day of vitamin K_1 results in fewer fluctuations of the International Normalized Ratio (INR) outside the normal range, thereby reducing the risk of thrombotic events resulting from under-treatment, and the risk of hemorrhagic events resulting from over-treatment. Vitamin K supplementation probably improves the stability of anticoagulation by decreasing the relative change in total vitamin K intake associated with variations in dietary vitamin K.

Seventy warfarin-treated patients with fluctuating INRs were randomly assigned to receive, in double-blind fashion, 150 µg/day of supplemental vitamin K_1 or placebo for 6 months. The percentage of time patients were within the target INR range increased to a significantly greater extent in the vitamin K group (from 59% at baseline to 87%) than in the placebo group (from 63% at baseline to 78%; $p < 0.01$ for the difference in the change between groups). More patients achieved stable control of anticoagulation in the vitamin K group than in the placebo group (54% vs. 21%; p value not stated).[2]

Eight patients (aged 45–79 years) receiving warfarin, whose INRs had been fluctuating for reasons that were not clear, were given 100 µg/day of supplemental vitamin K_1 for 8–72 weeks. After vitamin K supplementation, INR fluctuations decreased in nearly all patients. A significant decrease was seen in the INR standard deviation ($p < 0.05$), and more INRs were within 0.2 units of the target range (57% vs. 32% prior to supplementation).[3]

Despite this evidence, many practitioners advise patients taking warfarin to restrict dietary vitamin K intake. That advice is inappropriate for 2 reasons. First, as noted above, lower vitamin K intake results in greater fluctuations of INR values. Second, restricting vitamin K intake requires the avoidance of leafy green vegetables, which decreases the quality of the diet.

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Dementia and Vitamin B_{12}

Vitamin B_{12} deficiency is well recognized as a cause of cognitive decline and dementia.[4] Dementia due to vitamin B_{12} deficiency responds to vitamin B_{12} therapy, unless it has progressed to the point of irreversible brain damage.

The presence of a normal serum vitamin B_{12} level does not rule out vitamin B_{12} deficiency as a possible cause of cognitive impairment. Some patients with dementia who had normal serum vitamin B_{12} concentrations and normal hematological parameters were found to have subnormal or undetectable levels of the vitamin in their cerebrospinal fluid (CSF), suggesting that they had a defect in the transport of vitamin B_{12} across the blood–brain barrier or accelerated breakdown of the vitamin in brain tissue.[5,6]

In one study, subnormal CSF vitamin B_{12} levels were found in 9 of 12 patients with senile dementia, 5 of 6 with alcoholic dementia, and 0 of 5 patients with multi-infarct dementia. Vitamin B_{12} deficiency would have been missed in the vast majority of these patients if only serum vitamin B_{12} had been measured.

Parenteral vitamin B_{12} therapy (dosage and duration of treatment not specified) produced "clear" clinical improvement in some of these patients, but oral vitamin B_{12} was not beneficial.[7] The lack of clinical improvement with oral therapy is consistent with the observation that CSF vitamin B_{12} levels did not increase in demented patients after oral administration of the vitamin, but did increase after intramuscular administration.

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Food Addiction and Opioid Peptides

It has been suggested that overeating is related to auto-addiction to endogenous opioid peptides.[8] That possibility is supported by the observation that administration of naloxone (an opioid antagonist) prevented stress-induced eating in rats[9] and abolished overeating in genetically obese mice.[10] In addition, administration of naloxone decreased *ad libitum* food intake in obese human volunteers.[11]

An interaction with the opioid system might explain, above and beyond the purported allergy/addiction syndrome, why so many patients crave wheat or dairy products. Hydrolysis of wheat gluten and alpha-casein (a milk protein) by pepsin has been reported to yield peptides that have opioid activity.[12] Since peptides can be absorbed intact into the bloodstream,[13] these molecules have the potential to interact with the endogenous opioid system.

Depending on the efficiency with which a person's digestive enzymes breaks down peptides into individual amino acids, and depending on the sensitivity of their endogenous opioid system to exogenous opioid peptides, different people may be more or less susceptible to becoming addicted to wheat or dairy products.

Addiction to refined sugar may also be mediated in part by the opioid system. In rats fed a 10% sucrose solution for 21 days or a 25% glucose solution for 8 days in addition to their usual chow, administration of naloxone caused biochemical imbalances in the brain that resembled the effects of morphine withdrawal. Naloxone did not produce these effects in rats fed chow alone.[14]

The recognition that the opioid system may contribute to addictive eating does not lead to any particular medical strategy for managing obesity, other than maintaining awareness that wheat, dairy products, and refined sugar may be common triggers for addictive eating. However, patients may benefit psychologically from the knowledge that their "lack of willpower" could have a physical basis. Such knowledge often makes it easier for patients to endure withdrawal symptoms, and to resume healthful eating after periodic lapses.

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Fibromyalgia: A Case Report

I saw a 48-year-old woman who had a 6-year history of fairly constant myalgias and arthralgias. Six months previously she was found to have an elevated sedimentation rate (50 mm/hr). She had been diagnosed by a rheumatologist as possibly having polymyalgia rheumatica, although the possibility of fibromyalgia was also considered. She also had migraines about 8 times per year and chronic nasal congestion.

During her first office visit she was given a therapeutic trial consisting of 6 ml of vitamin C (222 mg/ml), 4 ml of 20% magnesium chloride, 2.5 ml of 10% calcium gluconate, and 1 ml each of vitamin B_{12} (1,000 µg/ml), pyridoxine (100 mg/ml), dexpanthenol (250 mg/ml), and B complex 100. At the end of the injection she reported with amazement that all of her muscle aches and joint pains were gone for the first time in 6 years.

The injection was repeated a week later (at which time her symptoms had not returned), followed by every other week for several months, then once a month for 3 years until I moved out of state. Her treatment regimen also included identification and avoidance of allergenic foods, and empirical administration of desiccated thyroid. She discovered that eating refined sugar caused myalgias and arthralgias, and that thyroid hormone improved her energy level, mood, and overall well-being. During the 3 years of monthly maintenance injections, she reported that mild symptoms would begin to recur if she went much longer than a month between injections.

Does Vitamin E Cause Heart Failure?

Some practitioners reported in the 1940s and 1950s that vitamin E in doses of 200–600 IU/day produced clinical improvement in CHF patients.[15] Intramuscular administration of 300–400 IU/day of vitamin E for 4–5 days was said to produce rapid and dramatic diuresis (usually within 12 hours of the first injection) in patients with severe heart failure.[16] However, other practitioners found that vitamin E in doses of 150–800 IU/day was not beneficial for patients with CHF.[17–20] More recently, controlled trials have shed an unfavorable light on vitamin E. In a double-blind study of patients with advanced CHF (NYHA class III or IV) administration of 1,000 IU/day of vitamin E for 12 weeks did not improve heart function or quality-of-life scores, compared with placebo.[21] Moreover, in a double-blind study of

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New Survey Data Highlight Convergence of Conventional & Holistic Medicine

By August West
Staff Writer

Many things about primary care have changed over the last decade. A lot of those changes haven't exactly been beneficial to either doctors or patients. Others are well worth celebrating. In particular, the incorporation of nutrition-based interventions and other holistic approaches into mainstream practice is one of the brightest developments of the last 10 years.

Primary care physicians today, even many who identify as "conventional" in practice style, are vastly more open to nutrition-based therapies than they were 10 or 20 years ago. At least that's what the data from *Holistic Primary Care's 2010 Physician Survey* are telling us.

It seems that the "integration" we've been hearing so much about is actually happening, and not just in academic medical centers with CAM departments, but in the real-world, rough-and-tumble of daily clinical practice. And we say, "Here's to that!"

The survey, sponsored by *Holistic Primary Care,* and conducted by Signet Research, an independent 3rd party survey firm, involved 2,000 primary care doctors across the US, randomly chosen from this publication's mailing list. The study consisted of a 52-item questionnaire, and generated a 9% response rate—strong for any market research, and remarkable for a survey of busy clinicians. That response rate, in and of itself, signals the growth of interest in holistic medicine.

The numbers tell us that nearly 80% of all primary care practitioners are incorporating some modalities from holistic or "alternative" medicine into their practices, with nutrition counseling and stress management being most common. Many are getting into functional medicine, botanical medicine, and acupuncture. One-fifth are using some form of hands-on manual technique with their patients.

Imagine how low those numbers would have been 10 years ago!

Who Responded?

Seventy-eight percent of respondents are MDs, 12% are osteopaths, and the remainder naturopaths, chiropractors, nurses and others. Sixty-two percent are men, and the average age is 50. Nearly half practice in the suburbs, with another 37% in city settings, and the rest in rural areas.

One-third run solo practices, and another third are in small group practices of under 10 practitioners. Half are fully insurance-based, while 8% (and growing) have opted out of insurance entirely. The rest have a mix of insured and self-pay patients.

Two-thirds self-identify as "primarily conventional" in practice style; a robust 29% identify as "integrative/mixed," and 7% identified as fully "holistic." On average, they're seeing 18 patients per day, and a quarter of them are seeing between 20 and 30 patients.

Nutrition Moves to Center Stage

There's no question that nutrition, dietary supplements and other natural products have become part of the day-to-day clinical reality. Nearly all of the respondents—the "Conventionals" and the "Integrative/Holistic" types alike—are often having discussions with patients about supplements and natural products. About half {I took out "of you"} are having such discussions several times per day.

More than three-quarters are routinely recommending or "prescribing" some type of dietary supplements to patients. Multivitamins, omega-3s and probiotics top the list.

Most are taking some sort of dietary supplements themselves, and the supplement categories they are most comfortable recommending to patients closely mirror the ones they are taking for their own health maintenance.

All that said, many still feel cautious about supplements and natural products. Quality assurance and safety are major determinants in their willingness to "prescribe" or, in some cases, sell particular products.

Roughly one-third of the respondents said they've seen a serious adverse reaction associated with supplement use. However, few who say they've seen such events reported what they saw to either the FDA or the product manufacturer(s), as is mandated by the new Adverse Events Reporting regulations. MDs and non-MDs in the survey were pretty much equivalent in their lack of reporting.

Collectively, the medical community needs to step up the reporting effort; it's the only way we'll ever get an accurate picture of dietary supplement safety.

Organic & Eco-Friendly: Walkin' the Talk

We are particularly heartened by respondents' eagerness to learn about holistic medicine, and to fill the gaps in medical education. Seventy-five percent said they want more education in dietary and lifestyle-based interventions; 60% specifically indicated a desire for more education about the role of dietary supplements in clinical practice. Half want more information on stress management.

Clearly, respondents are endeavoring to "walk the talk" toward healthier, more eco-conscious lives. Over 90% regularly participate in one or more physical activities, with running, working out, and hiking being especially popular. Swimming, yoga, and meditation were also frequently cited recreation favorites. A large number are buying organic food and eco-friendly "green" cleaning products.

One in Five Ponder Practice Change

The data show that many of the respondents are less-than-happy with their current practice situation. Roughly 20% {I took out "of you"} are considering a substantial change in practice model, such as a move to direct-pay fee for service or a concierge/membership practice model.

Forty percent are actively considering ways to bring new revenue into their practices, such as dispensing supplements, aesthetic procedures and "spa" treatments, and advanced diagnostic testing. One of the more troubling—though not surprising—findings is that 10% are considering leaving medicine altogether.

We were pleased to learn that our publication is helping many of you navigate the ever-changing and somewhat unknown terrain of holistic or "alternative" medicine. More than three-quarters of respondents said the information in *Holistic Primary Care* is useful in their practices, and 81% indicated that *HPC* is particularly helpful in understanding the role of nutrition, dietary supplements and natural products in clinical practice.

More than half of you are sharing information from *HPC* with patients and medical colleagues. We were especially pleased to find out that almost one-third of you are leaving *HPC* in your waiting rooms for patients to read!

Whether you've been practicing the principles of holistic medicine for decades or you've only recently begun to explore options outside the framework of allopathic, drug-based medicine, we hope these survey findings encourage you, and help you to realize that many other physicians share your vision for a gentler, more humanistic way of practice in synch with the core principles of physiology and the laws of nature.

If you are among the 2,000 clinicians who participated in the survey, we thank you heartily for sharing information about your life and your practice. The knowledge we've gleaned from the survey will help us make *HPC* a stronger publication, and enable us to better serve you and your primary care colleagues.

Holistic Primary Care's new "Primary Care Physicians & Holistic Medicine: Transition, Transformation, Opportunity—An Executive Report from *Holistic Primary Care's 2010 Physicians' Survey*" is a comprehensive analysis of physician attitudes, practice patterns, and personal experience with holistic nutrition-based medicine, nutraceuticals and natural products. It is the first survey of its kind to assess a large and representative sampling of conventionally trained MDs across the United States. The complete report, complete with charts, graphs and a detailed analysis, is available for purchase at www.holisticprimarycare.net, or contact Erik Goldman at (212) 406-8957 or Erik@holisticprimarycare.net..

patients with vascular disease or diabetes, those who received 400 IU/day of vitamin E for a mean of 7 years had a 19% higher incidence of CHF (14.7% vs. 12.6%; p = 0.007) and a 40% higher incidence of hospitalization for CHF (5.8% vs. 4.2%; p = 0.002), when compared with those who received placebo.[22]

The negative results observed in many vitamin E studies might be explained by the fact that virtually all of these studies used pure alpha-tocopherol, whereas vitamin E as it occurs naturally in food consists of 4 isomers: alpha-, beta-, gamma-, and delta-tocopherol.

Studies in humans have shown that supplementation with alpha-tocopherol can deplete gamma-tocopherol.[23] Gamma-tocopherol is metabolized largely to 2,7,8-trimethyl-2-(beta-carboxyethyl)-6-hydroxychroman (gamma-CEHC), which may function as a natriuretic hormone, since it is involved in the body's response to sodium-induced plasma volume expansion.[24–26] It is possible that alpha-tocopherol-induced gamma-tocopherol depletion could lead to impaired regulation of sodium and water balance, potentially increasing the risk for heart failure.

If high-dose alpha-tocopherol does adversely affect cardiac function in some people, one might reasonably expect that mixed tocopherols, which contain all 4 isomers of vitamin E, would not have the same negative effects, and might even be beneficial. The clinical trials that used alpha-tocopherol should therefore be repeated using mixed tocopherols.[27]

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Despite Recession

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known of the concierge networks, and certainly one of the fastest growing. MDVIP currently has over 400 physicians in 29 states; 75% are internists, 25% are family physicians. Nearly 90% are men. "They'd like to see more FPs get into this, and they'd love to have more women. There's real demand from the public for more women providers," said Dr. Lee.

Recession Resistant

Despite the widespread economic ruin of the last 2 years, membership in concierge practices continues to grow, and renewal rates have stayed consistently over 90%.

In a poll earlier this year of doctors in membership-based practices, 60% said they were better off financially than they were one year ago; 30% said their financial situation was more or less the same. Only 10% said they were worse off, Dr. Lee told *Heal Thy Practice* attendees.

MDVIP began enrolling patients in 2001. As of 2009, there were approximately 115,334 individuals in 3,600 communities enrolled in MDVIP practices. From 2007 to 2008, total patient volume surged from 66,785 to 102,385.

Patients pay $1,500 per year for membership, with $1,000 going to the doctor, and $500 going to MDVIP as compensation for a robust set of practice transition and clinical support services. MDVIP physicians usually have around 600 patients. Dr. Lee said he is now servicing about 450.

An MDVIP doctor with a panel of 300 patient members clears $165,000 annually, after overhead. Those with 600 patients (the maximum patient number for an MDVIP practice) earn a bit over $550,000.

"Despite the recession, personalized medicine remains in demand. I've only had 3 people not renew and say it was because of financial concerns," said Dr. Lee, who in 2005 was named "Best Family Physician" in the Raleigh-Durham area. "Last year, the *New York Times* intended to do an article on retainer-based medicine, trying to show that it was in decline due to the recession. But the reporter had to change the angle of the story 180 degrees."

In the first half of 2010, Dr. Lee said he's seen "30% growth of new patients from the community, and that's without even having my name in the phonebook or spending any money on marketing. It's mainly word of mouth and the MDVIP website."

Health Care, Not Wealth Care

Critics of direct-pay and retainer-based care typically portray it as a luxury option only accessible to the well-to-do, and appealing to money-hungry doctors with a "let them eat cake," attitude toward the needs of the masses.

Dr. Lee begs to differ. "MDVIP is healthcare, not wealthcare!"

A patient's annual fee to join his practice amounts to about $125 per month, which is certainly a significant expense, but well within reach of many Americans, not just the upper crust.

For comparison, consider that someone who drinks one Starbucks premium coffee daily is spending about that much each month. Many people spend at least that much on hair stylists or mani-pedicure salons. A pack-a-day cigarette habit costs anywhere between $100 and $225 a month, depending on the state. The average cable TV contract with premium channels, something many Americans consider a necessity even in dire economic times, runs about $120 per month.

It's really a question of priorities, Dr. Lee stressed. When patients experience the depth of care they can get from a doctor who's not running to see 29 other people that day, and who is not distracted by paperwork headaches, they tend to value it greatly. For some, the strengthening of a longstanding relationship with a doctor provides much-needed support and stability in rough times.

"I have patients I never thought would be able to join this practice who did so." MDVIP membership fees qualify for reimbursement under group health plans pursuant to IRS Code section 105 & 106; cafeteria plans under section 125; Flexible Spending Accounts (FSAs), Health Reimbursement Accounts (HRAs), and Health Savings Accounts (HSAs). Some patients are able to obtain reimbursement.

MDVIP physician Dr. William Lee shows Heal Thy Practice conference attendees just how much he misses his old insurance-based practice.

A Platform for Prevention

MDVIP's acronym actually stands for "value in prevention," not "very important person," as many assume. Like other concierge or retainer models, it puts strong emphasis on prevention and wellness. The model empowers doctors to function as healers, wellness coaches, and care coordinators, making it a really good platform for holistic practice, Dr. Lee explained.

MDVIP provides funding for all affiliated physicians to become certified in preventive medicine by the American College of Preventive Medicine (www.acpm.org) at no cost to the doctors. The curriculum consists of seven 2–3 hour modules designed to improve one's understanding of lifestyle and diet.

"I cannot tell you the difference it (health coaching) has made. When I have time to tell patients specifically what to do, and help them set up a plan, and follow their course through the year, I've had patients come back losing 20–30 pounds. I've been able to take some of them off a number of medications," said Dr. Lee.

Independent analyses show clearly that concierge-models deliver superior clinical outcomes compared to conventional insurance-based practices. This is independent of the age, disease burden, or socioeconomic status of the patients. "When you have time to deal with the issues, you do better," Dr. Lee stressed.

One recent study compared MDVIP practices in Florida with HMO-based practices in that state. The MDVIP doctors achieved an average total HEDIS compliance of 89.6%. The average for the top-performing 10% of HMO practices was 65%.

When patients experience the depth of care they can get from a doctor who's not running to see 29 other people that day, and who is not distracted by paperwork headaches, they tend to value it greatly.

$79 Million Saved

A third-party evaluation of 2008 data showed that MDVIP patients had 61.3% fewer hospitalizations compared with similar patients in commercial insurance plans, and 74% fewer hospitalizations compared with Medicare patients of similar age, gender, and disease risk.

Plain and simple, MDVIP hospitalization rates are lower, even when matching for demographic variables. In 2006, MDVIP practices had an average total hospitalization rate of 119.24 admissions per 1,000. In non-MDVIP matched practices, the rate was 226.5 per 1,000. On average, MDVIP patients had 107 fewer admits per 1,000 than people in standard insurance plans, a 47% reduction.

The Centers for Medicare & Medicaid Services lists conditions for which patients should never need hospitalization, among them: Uncontrolled Diabetes, Uncontrolled Hypertension, Decompensated CHF, Decompensated Asthma, Cellulitis, Community Acquired Pneumonia, Pyelonephritis, and Perforated Appendix.

Such preventable hospitalizations are lowered by 40% in MDVIP practices. MDVIP's avoidable hospital rates average 16.6 admissions per 1,000 people. In standard insurance plans with comparable patients, the rate is 27.5 admits per 1,000.

MDVIP's hospital discharge rate in 2007 was roughly 105 per 1,000 members, versus 199 per 1,000 members in standard insurance plans. Dr. Lee estimates that at its current small size, MDVIP is already eliminating over 9,000 hospitalizations per year, saving roughly $79 million in total expenditures. "This is such a beneficial program for the government!"

Membership models like MDVIP won't solve the problem of how to expand and improve care for the indigent, but they are an increasingly viable option for many Americans. They're also an important survival strategy for solo and small-group primary care doctors who face immense pressure to sell to large networks and hospital systems. (Visit www.holisticprimarycare.net and read "Healthcare Reform Makes Primary Care a Prime Focus . . . But Don't Expect a Raise.")

To date, MDVIP has concentrated on recruiting older physicians with well-established practices in middle to upper class communities. The mean age of an MDVIP doctor is 55, with the majority in the 50–59 year age bracket. The youngest is 38. Few are practicing in poor communities.

Though they provide a great context for holistic practice, the membership practice networks like MDVIP have so far drawn exclusively from the ranks of conventionally trained MDs and DOs. A full-scale concierge network for naturopathic, chiropractic or other non-MD clinicians has yet to emerge. But that doesn't mean it couldn't happen in the future!

To purchase a recording of Dr. Lee's presentation, or any of the other excellent talks from HPC's 2010 *Heal Thy Practice* conference, visit: www.holisticprimarycare.net/cmeevents/2010-conference-recordings.

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Making the Transition to Concierge Care

CHARLOTTE, NC • "Twenty months ago I was in a situation just like many of you, working in a large practice with a heavy patient load, working long hours, filling out forms, chronically running 30–45 minutes behind schedule," said Dr. William Lee, a Raleigh, NC area family physician who recently left insurance based practice for an MDVIP concierge practice model.

Speaking at *Holistic Primary Care*'s second annual *Heal Thy Practice: Transforming Primary Care* conference, Dr. Lee described the transition process and underscored the positive effect his decision has had for his patients and himself.

Prior to the change, Dr. Lee practiced with 4 other MDs and 5 PAs. He worked 12–14 hour days, seeing 24–30 patients. Much of his time was spent in lab reviews, returning phone calls, and filling out endless paperwork. Though he was approaching retirement age, he still had years to go, and did not want to spend them in misery.

He told *Heal Thy Practice* attendees that he became interested in the MDVIP model (www.mdvip.com) after hearing a presentation by a doctor who had converted his practice. Making the transition was, he said, "a decision that has changed my life, and hopefully extended my career."

Fears & Concerns

Understandably, he had many concerns. "What would patients think about me? How would I be able to separate from patients I had known for over 20 years? What would other doctors in the community think? Would I be able to recruit enough patients? What would 24/7 call be like? What would it be like to run my own small business?" But the prospect of providing better care and having a better quality of life was compelling.

The transition took roughly 10 months. MDVIP begins with an in-depth practice evaluation, at no charge. They look at your current patient population, demographics, median income, current practice management capacity, and other variables. "In the worst case, you get a free analysis of your practice, what you're doing right and what you're doing wrong and how to run it better."

MDVIP uses the information to model out the likelihood of success in a membership model. "They are able to predict, with about 99% accuracy, whether someone can open with a number that would be economically feasible."

The next step is to schedule "town hall" meetings to explain to patients the rationale for the practice transition. MDVIP insists that no patient be left without a doctor, and requires affiliated physicians to recruit other doctors to take any patients who do not sign up as members. The company provides patient care representatives, who visit the office for 6 months to facilitate recruitment and help those who do not join to find other doctors.

Dr. Lee said he found "a great deal of acceptance," among his patients, even those that did not join. "People understood why I was making the change." MDVIP allows 10% of total patient volume to be "scholarship" patients. "I've taken full advantage of that. Those patients that I knew couldn't afford to join, I invited to come in under scholarship."

The transition also involves a lengthy process of educating and re-training staff. In some cases, it means parting ways with employees such as insurance billing staff. In Dr. Lee's case it meant leaving a group practice, finding a new office, purchasing all necessary equipment and an EMR system, transferring his malpractice coverage, and moving out on his own.

I ♥ Medicine . . . Again!

Rounding out his first year in the new model, Dr. Lee said his experience has been uniformly positive. He sees just 8–12 patients per day. His patient care hours are 9–4 on Mondays to Thursdays, and 9–12 on Fridays. He spends about an hour each day after seeing patients on lab/x ray reviews and phone calls.

Many doctors understandably fear the prospect of 24/7 call, which is part of the deal in nearly all retainer-based systems. The reality is nothing like one's imagination, said Dr. Lee.

"I actually get fewer calls now than I did before, when I was not officially on call. I've only had one midnight call (since starting with MDVIP) and it was from a lady who took the wrong pill and wanted to know if she'd be okay until morning. If you're able to take thorough care of patients in the office and give them the time and attention they need, they have much less need to call you after hours."

Dr. Lee said that stepping off the insurance treadmill cut his practice overhead in half, to around 30–35% of total gross income. Though the transition from group to solo practice was a little scary, it suits him well. "It is tremendous fun to be able to take control. I love practicing medicine again!"

To purchase a recording of Dr. Lee's presentation, or any of the other talks from *Heal Thy Practice 2010*, visit: http://www.holisticprimarycare.net/cmeevents/2010-conference-recordings.

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