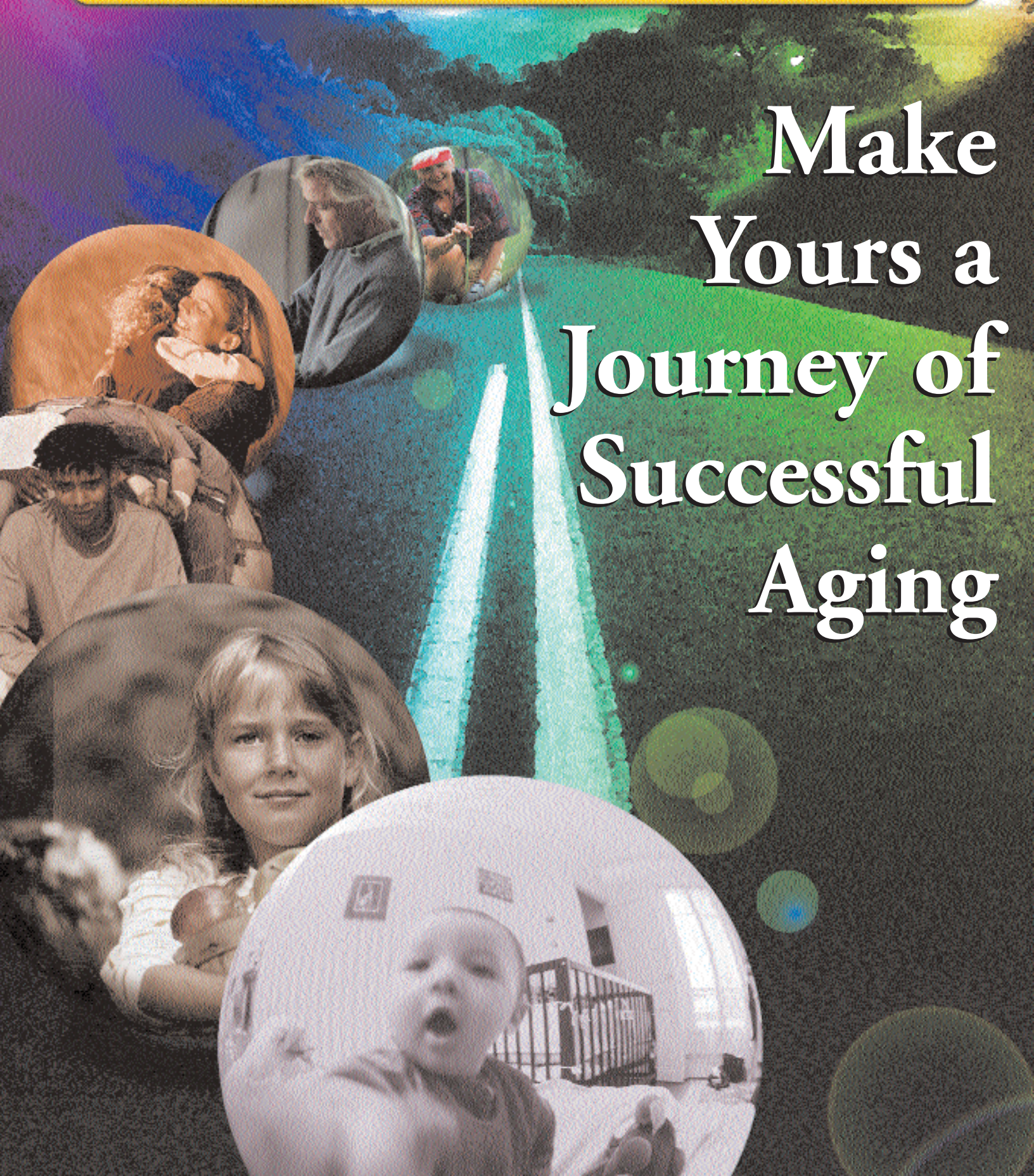


Smokies Digest

Great Smokies Diagnostic Laboratory

October 2001 Volume 10, No. 2

Make Yours a Journey of Successful Aging



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"A successful old age, Horatio, may lie not so much in our stars and genes as in ourselves."

George E. Vaillant, M.D., Kenneth Mukamal, M.D.,
Successful Aging. *Am J Psychiatry* 2001;158:839-47.

COMING IN OUR NEXT ISSUE:

Healthy Aging Medicine: Continuing our focus on modifiable risk factors in aging, this issue will feature assessment and preventive strategies for promoting optimal health and influencing genetic expression of disease.



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Bringing You Resources to Enhance Your Practice Charting New Courses in 2001

It's been gratifying this year to see the continuing growth of interest in a functional approach to healthcare. Our latest Achieving Clinical Excellence program, the one-day Clinical Intensive on aging, was very well attended, and practitioners are already signing up for the next seminar on chronic fatigue and illness.

Thanks to the fine performance of our Product Management Team, 2001 will be a record year for the introduction of new testing. In this issue, there's a special section on our new tests and a hint of what is yet to come. By the time the fall Clinical Intensive seminar takes place in seven cities around the country, we'll have yet another innovative metabolic assessment to offer healthcare professionals – one that will be especially useful in uncovering the causes of the diagnostic dilemmas that practitioners increasingly confront in their practices.

We've also taken an important step to support your efforts to educate patients about optimal health by introducing a Functional Physiological Range feature on two of our test reports, with more to follow. Special Studies Coordinators Kelly McLellan, M.S., and Kay Patrick discuss the ways this innovation will benefit you and your patients.

Our theme in this issue of the Smokies Digest is promoting healthy aging. Director of Medical Science Brad Rachman, D.C., will discuss the integration of healthy aging interventions into a practice, and our superb Medical Science staff will explore effective ways to assess and treat related conditions – focusing on four in this issue and the remaining four in the next. We also have excellent articles by several colleagues who use our testing in their treatment of patients. Board-certified gastroenterologist Trent Nichols, M.D., contributes a case study from his integrative medical practice using the Comprehensive Digestive Stool Analysis – the industry's gold standard in digestive evaluation.

The new century has been an exciting time for those of us in functional and integrative medicine. We at Great Smokies are proud to be your partner at the forefront of modern medicine.

Yours in health,



Stephen Barrie, N.D.
Chairman, Board of Directors



By Stephen Barrie, N.D.
Founder and Chairman of
the Board

Are you receiving the
Great Smokies Connection,
our e-mail newsletter?

To subscribe, visit
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The latest **Clinical Insights** explores Functional Medicine strategies for delaying the genetic expression associated with Alzheimer's dementia. The publication is available online at <http://www.gsdl.com/news/publications/index.html>

HEALTHY AGING IN YOUR PRACTICE: LOOKING AT THE BIG PICTURE

By Brad Rachman, D.C., D.A.B.P.M.



Today there are signs all around us of our growing population of older individuals. There are also signs, if you look closely and critically enough, of important deficits in the way conventional medicine treats their age-related health

problems. Despite the incredible potential of wonder drugs and sophisticated technology to save lives, most medicine isn't practiced with an eye to longevity or optimal health; instead, most conventional physicians remain occupied with the important business of providing first aid.

The challenge for practitioners with a holistic/functional/integrative approach is to step back and look at the big picture: the subtle interconnectedness of the aging body and the ways to fine tune an aging body formed by bad habits. This global view of healthy aging medicine takes us far beyond the

growth hormone and steroid hormone replacement therapies often associated with anti-aging. But the challenge, great as it may seem, is also an opportunity - a chance for you to position yourself and set your practice apart.

The "Big Picture" of Healthy Aging

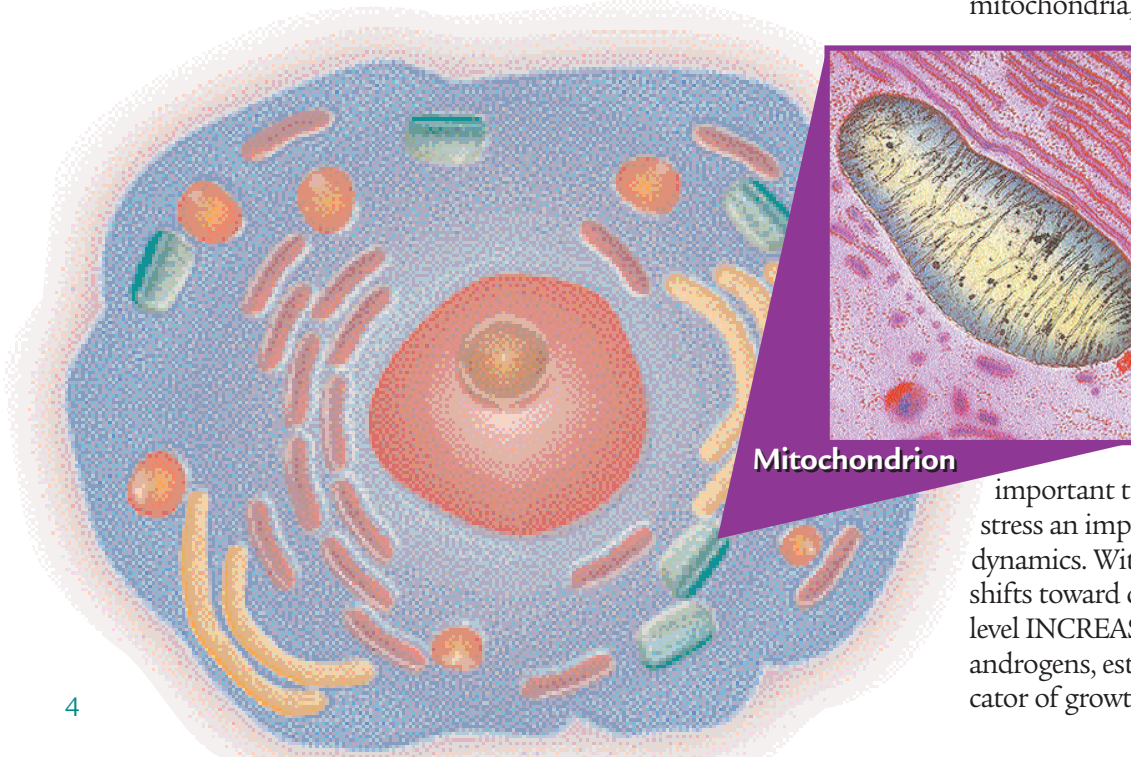
We start to look at the big picture by looking at the mitochondria, the subcellular organelles of cytoplasm that are principal energy sources for the cell and, therefore, the entire body. Looking at this microcosm can teach us much about the macrocosm - because it is at this primary level that metabolic dysglycemia, the inflammatory process, and hormone dysregulation really begin. But how many times have you heard much about mitochondria or mitochondrial dysfunction since your children finished reading *A Wrinkle In Time*?

After considering energy production in the mitochondria, we next look at the relative balance between insulin and glucose metabolism and whether dysglycemia is present. We consider the ravaging effects of chronic inflammation as a toxin and an intracellular communicator that produces deviant behavior in most cells of the body.

Imbalanced inflammation can be promulgated by fatty acid metabolism defects. Also it is

important to consider cortisol-modulated stress an important contributor to dysglycemia dynamics. With stress, the steroidogenic pathway shifts toward cortisol - the only hormone whose level INCREASES with age - at the expense of androgens, estrogens, DHEA, and IGF-1, an indicator of growth hormone production.

Over time, hyperinsulinemia alters genetic transcription factors that affect triglyceride and cholesterol metabolism, inflammatory cytokine release, and endocrine function.



Theory into Practice

There's so much more to the big picture than this, of course. There are shunted metabolic pathways, buildups of downstream metabolites, and stiffening cell walls – each a trigger for a next stage in the aging process. All of this contributes to the end product, your patient, who looks well beyond his years – obese, feeling the effects of age, and constantly tired and aching.

This is where very specific assessment can pinpoint your patients' problems and put you in the position of knowing more than they do about their health. With test results you can show them the results of age-related illnesses like dysglycemia and why the poor food choices they constantly make contribute to their inflammation and pain. You can demonstrate in black and white (and color) how their lifestyle

and diet rob them of the hormones that can make them feel ten years younger.

Test results and patient education form a good foundation for the hardest part of all, the part that makes biochemistry seem like a stroll through the park – giving patients the support they need to break the cycle. It is a big challenge, but meeting it can truly make your practice distinctive, successful... AND more satisfying.

Brad Rachman, D.C., D.A.B.P.M., is the Director of Medical Science for GSDL. The Medical Science staff is a multidisciplinary team with substantial collective experience in the field of functional medicine. While in private practice, Dr. Rachman was the founder and director of one of the most progressive and successful Functional Medicine centers in the U.S.

Eight Modifiable Risk Factors of Unhealthy Aging

- Impaired Mitochondrial Function
- Dysglycemia/Insulin Dysmetabolism
- Hormonal Imbalance
- Chronic Inflammation
- Methylation Disorders
- Impaired Digestion
- Weakened Immune Function
- Inadequate Detoxification Capacity

ACE Healthy Aging Session in Las Vegas to Offer CME & CEU Credits

Dr. Rachman and the ACE faculty will present a special session of Eight Modifiable Risk Factors of Unhealthy Aging at the December meeting of the country's leading anti-aging specialists. The American Association of Anti-Aging Medicine holds its 9th International Congress on Anti-Aging & Biomedical Technologies on December 14 – 16, 2001 at the Venetian in Las Vegas, NV. Our one-day ACE intensive training will be offered as part of the preconference sessions on Thursday, December 13.

Great Smokies has satisfied American Medical Association requirements for offering Category One Continuing Medical Education credits for Medical Doctors and Doctors of Osteopathy attending the Las Vegas session. We are also offering Continuing Education Units for Naturopathic Doctors and Doctors of Chiropractic through the University of Bridgeport. In addition to Dr. Rachman, three other members of the ACE faculty will be presenting at this session: T. Michael Culp, N.D., Chris Renna, D.O., and R. W. "Chip" Watkins, M.D.

For more details and to register for this exciting opportunity, contact our ACE coordinators at 888-201-2185.

Helping Patients Take Control of Their Health – *The Role of Lab Tests and Reports*

By Linda Rodriguez, C.N.C., Functional NUTRITION®



As a clinical nutritionist, I think it's important to educate my clients by providing them with information that clearly explains their specific health

conditions, as well as effective ways to improve their overall wellbeing. By understanding clearly what may be causing their symptoms, they can feel more responsible and motivated to do the necessary work to improve their health. Important tools for me in this respect include the reliable laboratory testing and the unique reports I get from Great Smokies.

Not only do I receive comprehensive reports in a timely manner, but the data is also presented in such a way that I am able to more easily interpret the results to my clients. Just as important, they can take home their own color copies for their personal health file for future reference. The ability to see the "before and after" data is crucial to their improvement and to their new interest in taking responsibility for their health. They tell me of the personal empowerment they feel as a result.

Toxic Burden in Middle Age

One patient who illustrates the contribution of testing and test reports is a 55-year-old menopausal woman, who was experiencing general good health with occasional symptoms of headaches, itchy ears, sporadic rashes, dizziness, indigestion, fatigue, and insomnia. She had several mercury amalgams and was concerned about metal toxicity. In addition to concerns about her general health, she was also aware of a familial predisposition to vascular dementia: her mother and her mother's sister had both died from Alzheimer's disease.

I ordered several tests, including a Great Smokies **Comprehensive Detoxification Profile**, to see if Phase I and II were working adequately, and the **Comprehensive Cardiovascular Assessment** to determine levels of C-reactive protein (CRP), Lp(a), and homocysteine, which have recently been investigated for their possible contribution to development of vascular dementia and Alzheimer's disease. The Comprehensive Detoxification Profile, as well as the homocysteine levels and CRP, were well within normal range. Her Lp(a) was borderline.

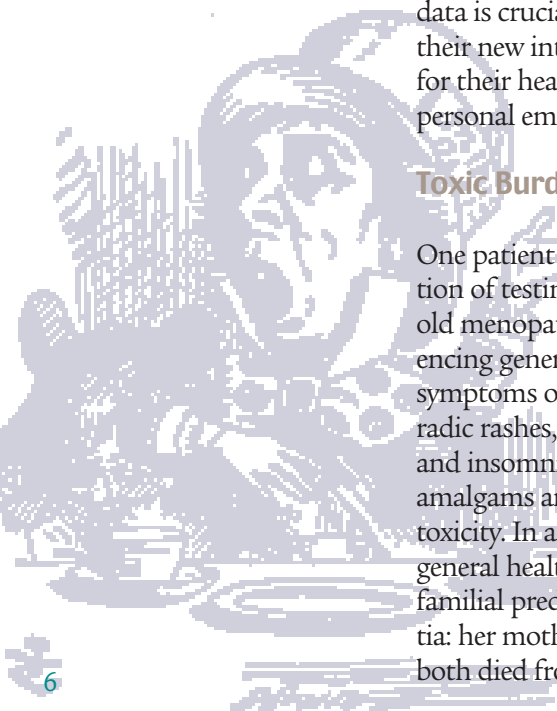
It was through GSDL's **Elemental Analysis-Hair** that we found the real culprit: my client had levels of aluminum and mercury significantly higher than the acceptable range. Since she did not want to pursue chelation therapy to get the metals out of her body, we immediately began trying several detoxifying supplements. During this process, Elemental Analysis-Hair was performed every six months. The toxins inched down, but by no great measure. Finally, I found an appropriate homeopathic remedy, and within a few months, the mercury and aluminum were well within normal range. As the metal toxins came down to an acceptable level, her symptoms began disappearing. Finding the appropriate remedy was a long, tedious task, and I know that the periodic hair analyses kept us focused and ultimately led to the satisfactory result.

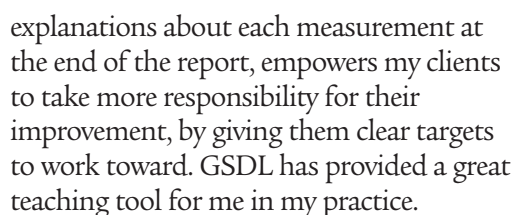
Format Makes a Difference

Because Great Smokies prepares these test reports in a color graph form, it is always easy for my clients to understand the results of each lab test, and to understand just where their measurements should fall in each color category. This, coupled with my interpretations of the Great Smokies

Great Smokies' graphic test reports, educational support for patients and practitioners, and professional support can be valuable assets in your practice.

To learn more about what we have to offer, visit <http://www.gsdl.com> or call 800-522-4762.





Linda Rodriguez, C.N.C., has been a practicing nutritional counselor and personal coach on the Monterey Peninsula in California since 1993. She is also associated with The Healing Collaborative – a group of professional health practitioners skilled in both modern and ancient healing systems. Her web site is <http://www.functionalnutrition.com/lr.html>

Our useful test reports are now available online. At your request, we can post results for you on a secure, encrypted site, which can only be accessed with your own special password. At your site, you can also find a 30-day record of tests you've submitted and their current status, with new results posted just an hour after completion. Results can be viewed online or downloaded for color printing.

Web reporting can help you control the flood of paperwork, limit third-party access to patient results, and avoid the hassle of lost mail or misplaced files. With results online, you can take reports with you and your computer anywhere in the world – to your home, on trips, or to hospitals and satellite clinics.

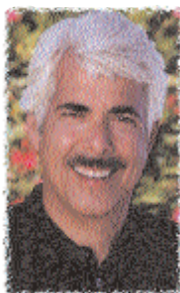
Contact a Clinical Support Representative at 800-522-4762 for more information or to sign up for your unique password. To ensure your peace of mind and your patient's privacy, passwords are assigned only after we confirm your identity.

REDUCING WEIGHT AND INCREASING HEALTH

By Elson M. Haas, M.D.

"... an emerging body of evidence suggests that abdominal fat is a key regulatory site for the general processes of inflammation, coagulation, and fibrinolysis... [with] long term implications for chronic outcomes such as CVD and type 2 diabetes."

Russel P. Tracy, M.D. Is visceral adiposity the "enemy within"? Arterioscler Thromb Vasc Biol 2001;21:881-83.



Being overweight or obese and gaining abdominal weight during the middle years is undermining the health and longevity of people in America and Western societies. Excessive weight

drains vitality and life force, and it contributes to early morbidity and mortality from cancer, diabetes, and cardiovascular disease. As a practitioner, I have worked with patients who have discovered their underlying issues, both psychological and medical, and found ways to conquer the eating habits and lifestyle choices that led to their being overweight.

In some ways, what is for many patients a lifelong struggle against excessive weight gain may not really be the individual's fault. It can often be a metabolic disorder that will power alone can do little to manage. Reactions to foods (food allergies and food sensitivities) and reactions to Candida overgrowth can cause what I call "false" fat caused by swelling and bloating as well as the "real" fat that results in increased adiposity.

REACTING TO FOOD AND YEAST

There are many ways we can react to foods. Antibodies, both IgE (true allergies) and IgG reactions, cell-mediated reactions, and drug-like reactions are the most common ways. Some foods just "disturb" people, and many of these reactions never show up on any test results; they just have to be experienced the "tried and true" way, from elimination of a specific food and a re-challenge through eating it again.

Discovering the right foods to avoid often takes some integrated scientific and intuitive detective work. I have described this process in greater detail, along with several different elimination and detoxification programs with full diet plans and recipes in my most recent book, *The False Fat Diet*.

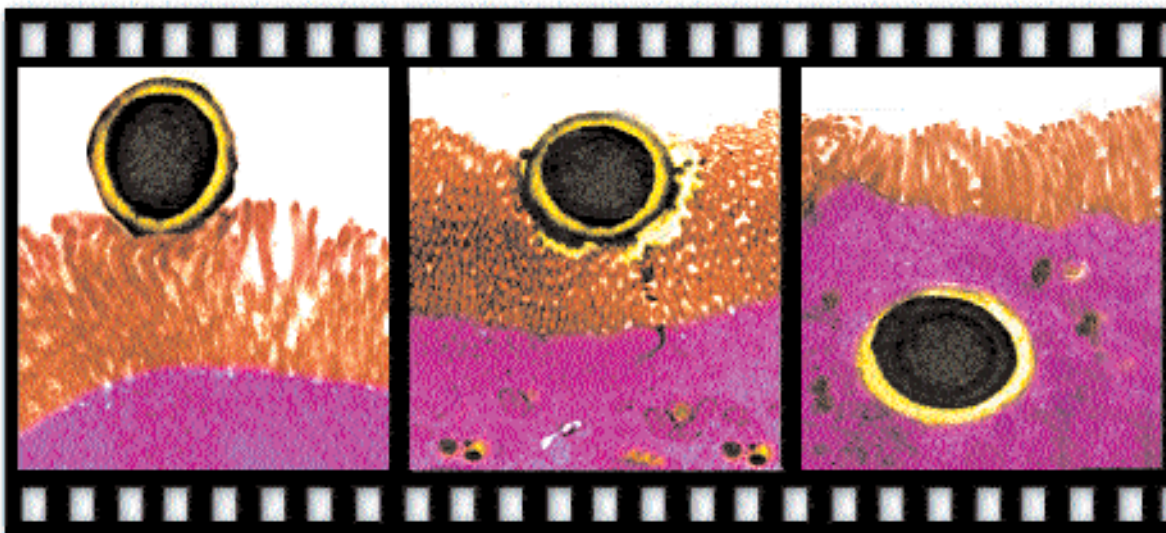
Learning about this food reactive process and applying it can facilitate weight reduction and improve health. Many conditions correct themselves as the body becomes less reactive, congested, and inflamed. The first step is knowing what food individually affects each person. Food antibody tests, as done by Great Smokies, can be helpful in guiding patients how and where to start. Laboratory testing is one component of a thorough and rigorous process of elimination diet and dietary challenges.

People need to experience their responses to specific foods first hand and develop an individualized optimal eating strategy. For example, many more people than show positive antibody test results to wheat feel better when they are off this common grain, and feel clogged and uncomfortable in the gut with unfavorable effects on thinking and mood when they consume it. For almost everyone, following a Detox Diet and avoiding many of the most common foods in the average diet will help them to feel better by reducing the tissue swelling, abdominal bloating, and metabolic disturbances that can be responsible for weight gain.

Candida infection in the intestinal tract is a condition that is still not fully accepted as a significant influence on health. Candidiasis, or the candida syndrome, involves an

Getting Rid of "False" Fat

The False Fat Diet: The Revolutionary 21-Day program for Losing the Weight You Think Is Fat (Ballantine Books, 2000) by Elson Haas, M.D., is reviewed in this issue by Mary James, N.D., on page 24.



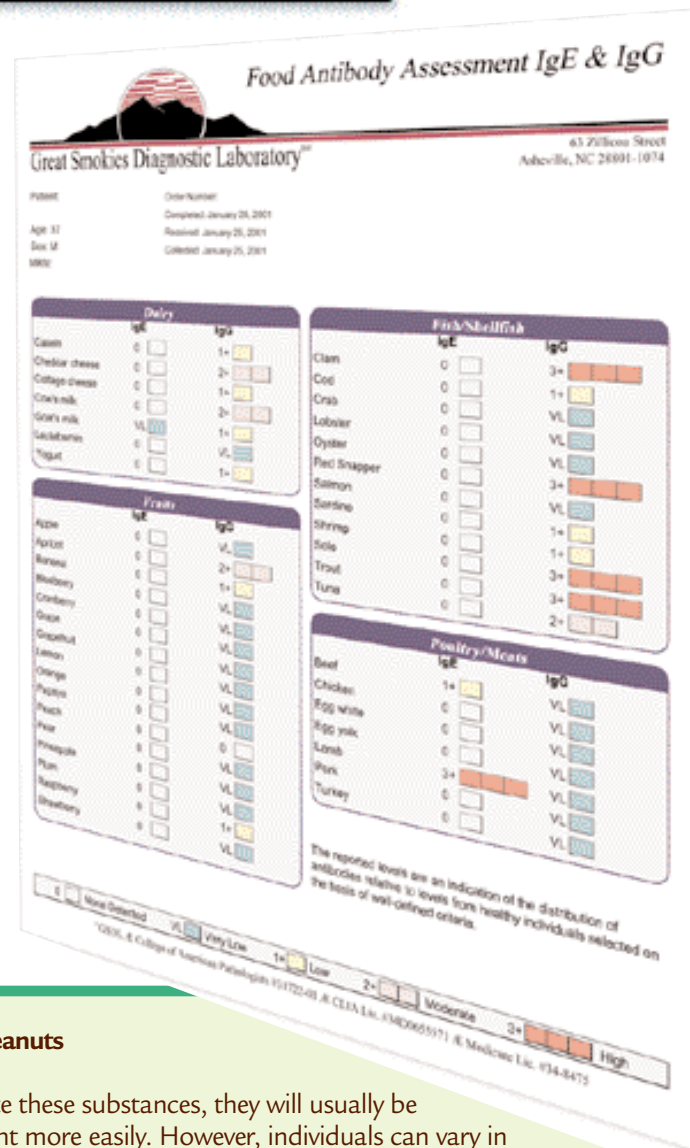
Candida assaults the intestinal lining, producing toxins and promoting permeability.

overgrowth of yeast in the gut along with an allergic reaction to it (shown by increased antibodies measured in blood). The yeast activity in the intestinal tract creates fermentation that causes gas and bloating along with the production of toxins that can pass into the bloodstream and body and affect energy, mood, mental function, and emotions.

THE FUNCTIONAL APPROACH

I have been using Great Smokies Diagnostic Laboratory for over 15 years in my work with overweight and obese patients. GSDL's advances in functional medical testing have helped me practice better medicine and improve the health of my patients. There are several GSDL tests I utilize to evaluate my overweight patients and monitor their progress: **Food Antibody Assessment**, **Candida Cultures** and/or **Comprehensive Digestive Stool Analysis**, and **Comprehensive Parasitology**.

*Elson Haas, M.D., is the Medical Director of the Preventive Medical Center of Marin in San Rafael, CA and one of nation's leading practitioners of integrative medicine. His highly acclaimed books include *Staying Healthy with Nutrition* and *The Detox Diet*, which was the *Quality Paperback Book Club Best Health Book* of 1998.*



The Sensitive Seven: Wheat, Dairy, Sugar, Corn, Soy, Eggs, and Peanuts

Wheat, dairy, and sugar are the big three, because if people eliminate these substances, they will usually be off most processed and high-carbohydrate foods, and will lose weight more easily. However, individuals can vary in what foods trigger weight gain.

I have one patient who was most reactive to soy. She had been stuck with her weight 60-70 pounds too high, but released most of that in a 3-4 month period after eliminating soy from her diet.

Good sources for information about detox diets include *The Detox Diet* by Elson Haas, M.D., and *The Seven-Day Detox Miracle* by Stephen Barrie, N.D., and Peter Bennett, N.D.

Developing a Touchstone for Optimal Health with Functional Physiologic Ranges

By Dr. Brad Rachman, Kelly McLellan, M.S., and Kay Patrick, Department of Medical Science



Great Smokies Diagnostic Laboratory recently introduced a new feature on its test reports designed to help healthcare professionals

and their patients place test results into a more clinically useful perspective. We've added a subset of the "normal" range for several analytes to reflect more accurately the important difference between statistically "normal" and genuinely "healthy" test results. This new feature complements the binary normal/abnormal categories on test reports with a more sophisticated approach to understanding health by graphically representing the narrow range of fluctuation that represents optimal wellness in humans.

"If we are always content with the everyday things that we see and hear, then we will never arrive at true knowledge."

Plato (427-347 B.C.E.)

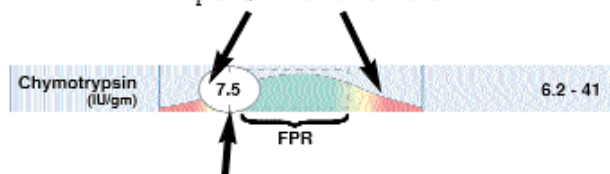
statistical construct, results for 95% of the reference population fall within the reference range, while results for the remaining 5% are considered abnormal.

There are two potential errors with this approach. Using the mean and two SD above and below it to represent the normal range can provide a distorted picture of actual test results. In addition, reference intervals are based on an apparently symptom-free population that may not actually be healthy.

Considering the actual state of health of the "average" person, the physical condition of the majority of members in "normal" reference range populations is probably far from optimal. Given our current understanding of human biochemistry, it is more likely that a subtle impairment would begin to manifest at one SD from the mean on a continuum that ranges from asymptomatic to overtly diseased.

With the word "normal" so often used interchangeably with "healthy," it's no wonder that conventional reports might be misleading to many patients.

Traditional reference values range from 6.2 to 41 IU/gm and include results placed in the "caution" area.



At 7.5 IU/gm, this patient's chymotrypsin value is *within* the traditional reference range - but still *outside* the boundaries of the optimal Functional Physiologic Range (FPR).

The Challenge with Conventional Reference Intervals

Most clinical laboratories report test results through the use of a statistical model that defines "normal" as all results from a group of asymptomatic people that fall within two standard deviations (SD) of the mean. In this arbitrary

The Value of Functional Physiologic Ranges

The Functional Physiologic Range (FPR) represents an optimal target interval for a specific analyte. The FPR is based on data from current medical literature, the concept of "central tendency," and consensus clinical opinion of GSDL's Department of Medical Science. The FPR represents the

“best case” scenario – the relatively narrow range of physiologic and metabolic variability associated with truly healthy function and balance.

For the healthcare professionals who choose to take advantage of this new feature, FPR can be a valuable educational and motivational tool. It shows patients where their results should be and graphically reinforces the treatment recommendations that practitioners make during consultation. And because it differentiates statistically “normal” from optimally “healthy,” it can provide an incentive for the changes necessary to improve patients’ long term health outcomes.

The FPR feature doesn’t replace the Reference Intervals currently provided for results. Instead, The FPR is depicted as subset of the conventional Reference Intervals that must appear on reports to meet licensing regulations. FPR is currently featured on reports for the **Comprehensive Digestive Stool Analysis** and the **Women’s Hormonal Health Assessment**. Plans are underway to include it on other test reports in the near future.

FPR and Preventive Healthcare

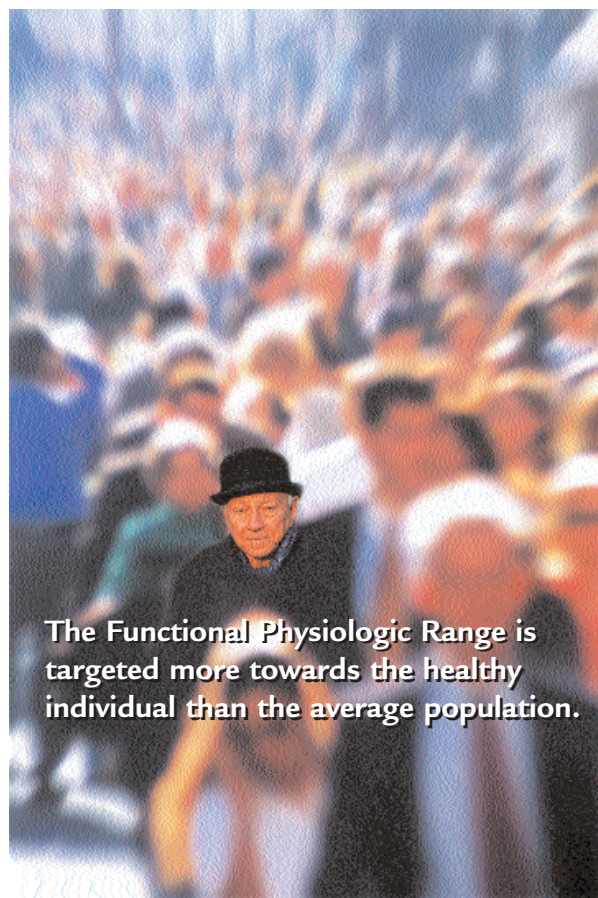
Unlike trauma and infectious disease, chronic conditions incubate for long periods before reaching the florid or frank stage. They begin with subtle deviation months, years, even decades before gross

symptoms manifest. With laboratory assessment to detect the seemingly small changes that progressively lay the foundation for chronic illness – and informed, motivated patients – healthcare professionals can design targeted interventions to delay or prevent disease.

FPR can play an important role in the process.

Kelly McLellan, M.S., received her masters degree in Health Science Education at the University of Florida. Prior to joining Great Smokies in 1998, she was a nutritional consultant in practice with James Biddle, M.D., at Asheville (N.C.) Integrative Medicine.

Clinical Research Coordinator Kay Patrick joined GSDL following her graduation from the University of North Carolina at Asheville, earning a Bachelor of Biological Sciences with a concentration in pre-medical sciences. Her responsibilities include managing our reference range development, individual case management research, and collaborative research programs.



The Functional Physiologic Range is targeted more towards the healthy individual than the average population.

Testimonials to Functional Physiologic Ranges

"In my practice, I try to emphasize an approach that optimizes health and wellness. My patients and I are not satisfied with the "normal" since this, by definition, includes those individuals in whom no obvious disease is recognized yet but remain candidates for diabetes, heart disease, cancer and other significant pathological processes that have not presently become clinically apparent. These Functional Physiologic Data Values are quite useful in directing preventive and therapeutic approaches to promote a program of optimal health."

Myron B. Lezak, M.D.

"The importance of including Functional Physiologic Values in laboratory reporting can not be overstated! It is imperative that we help our patients and the general public begin to understand the difference between laboratory norms derived from our generally unhealthy population and the norms from a cohort of powerfully healthy individuals. Making this comparison on test reports would provide a realistic continuum, and a vision for improved health."

Kristofer Young, D.C.

"Although the range of normal values for hormones is often quite wide, certain ones, such as the steroid hormones, function physiologically at extremely low concentrations, in the nanomolar (parts per billion) to picomolar [parts per trillion (ppt)] range. It is well established in clinical science that even mild hormonal imbalances can be associated with significant adverse health effects."

Brucker-Davis F, Thayer K, Colborn T. Significant effects of mild endogenous hormonal changes in humans: considerations for low-dose testing. *Environ Health Perspect* 2001;109(suppl-1):21-26.

CASE STUDY

Dysbiosis in an Elderly Female Patient

By Trent Nichols, M.D.



At first glance, the **Comprehensive Digestive Stool Analysis** (CDSA) seems to be a very simple test, obtained from one to three stool samples, but in fact, the

CDSA yields more than twenty different measures of digestive health from microbiology cultures and chemistry assays. It assesses how food is utilized by the digestive system and the absorption of fat. The test also indicates the levels of bacteria and yeast, and the by-products of bacteria (both good and bad) in the colon. These assessments together provide a downstream window into digestion, an area we often overlook, especially with our elderly patients - but one essential for good health and healthy aging.

An Array of Markers of GI Health

Patients with a motility disorder such as constipation or diarrhea will often have an overgrowth of *Candida albicans*, or a possible pathogenic bacteria such as *Pseudomonas* and *Klebsiella*. Long chain fatty acids may be malabsorbed and will be elevated in the stool. Short chain fatty acids can be low either because of inadequate food choices or malabsorption. In some cases, the test may show low levels of an enzyme from the pancreas called chymotrypsin, which can be the cause of symptoms such as a failure to gain weight, gas and bloating, and may also relate to arthritis.

Metabolic markers will indicate diminished n-butyrate especially in ulcerative proctitis and elevated beta-glucuronidase in inflammatory bowel disease, Crohn's disease, or ulcerative colitis. N-butyrate is the preferred fuel for the colonocyte. If N-butyrate is low, it indicates that the cells are in a

constant state of semi-starvation. Then our bodies can have difficulty nourishing and repairing the colonic lining. This marker, if low, may also serve as a warning sign for colon cancer. High levels of the marker beta-glucuronidase have also been found in some cases of colon cancer.

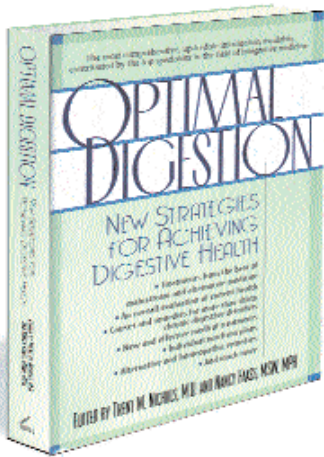
With a new component that uses a monoclonal antibody to intact human hemoglobin, the CDSA offers an even more sensitive and discriminating occult blood test for colorectal screening. A latex agglutination assay for the detection of lactoferrin, a marker for fecal leukocytes, can discriminate between inflammatory and non-inflammatory diarrhea. The CDSA can also be ordered with **Comprehensive Parasitology**.

When indicated, the test provides an assessment of Minimal Inhibitory Concentrations. These anti-microbial and antifungal sensitivities are essential for proper pharmaceutical, herbal, or nutraceuticals prescription for fungal or bacterial overgrowth (dysbiosis).

The CDSA in Action – Dorothy's Story

Dorothy is an 87-year-old female who has been followed over a 15-year period for chronic recurrent left upper quadrant abdominal pain and persistent diarrhea. She has been worked up extensively with upper endoscopies demonstrating gastroesophageal reflux disease, colonoscopies that showed diverticulosis, and negative CAT scans of the abdomen. After conventional GI treatments failed to correct her condition, she came to me for another opinion and a "functional" treatment approach.

Results of her first CDSA in 1996 indicated 3+ overgrowths of *Candida albicans*, 4+ *Pseudomonas aeruginosa*, and 4+ *Proteus*



Optimal Digestion: New Strategies for Achieving Digestive Health. Trent W. Nichols, M.D., and Nancy Faass, M.S.W., M.P.H., editors. New York: HarperCollins, 1999. ISBN: 0380804980.

Optimal Digestion is 614-page collection of essays by a team of 16 digestive and integrative/functional medicine specialists. The author group includes such recognized authorities as Jeffrey Bland, Ph.D., Elson Haas, M.D., Richard Kunin, M.D., Efrem Korngold, L.Ac., O.M.D., Michael Rosenbaum, M.D., Martin Rossman, M.D., and John Furlong, N.D.

mirabilis. Based on results of the sensitivities panel, I initiated antifungal therapy, probiotics, and uva ursi, and her abdominal pain soon subsided. She was also cautioned about mucosal irritants, such as alcohol and NSAIDs. I placed her on a high-fiber, “Yeast Free” diet, and she complied for several months. Her symptoms improved dramatically.

Gradually, however, she returned to some of the behaviors that had contributed to her GI problems in the first place. Due to dietary indiscretion in spite of my recommendations and support materials, her “misery” returned and even worsened. Subsequent CDSAs showed repeated overgrowth of *Candida albicans*, *Pseudomonas aeruginosa*, and now *Staphylococcus aureus* and *Klebsiella pneumoniae*.

Repeat therapy with antifungals, probiotics, and uva ursi eliminated her pain and once again I placed her on the restrictive diet. Unfortunately, for Dorothy and others like her, ingrained behavior patterns can be hard to change – especially when symptoms have subsided. She seems to stop complying with treatment recommendations almost as soon as her symptoms disappear, and I fear that only the “Food Police” or an even more serious bout of dysbiosis will prevent further

relapses. What Dorothy and other older patients really need is a network of peer and professional support to help achieve a diet which is both healthy and varied enough to allow opportunities to indulge occasionally.

Trent Nichols, M.D., is a board-certified internist, nutritionist, and gastroenterologist who practices with the integrative Center for Nutrition and Digestive Disorders in Hanover, PA. He is lead editor of the highly respected guide to digestive health and healing, Optimal Digestion. He has written and lectured extensively about digestive health topics such as the Gut-Brain Axis.

Sometimes our patients don't realize how remarkable their GI system really is and why stool analysis can tell us so much about it.

- The GI system is involved in a level of metabolic activity equal to the liver's
- One-third of the immune system is gut-mediated
- The gut contains more bacteria than there are somatic cells in the body (roughly 100 trillion)
- Representing over 400 species, gut bacteria may weigh as much as six pounds
- If it were spread out, the gut's surface would be equivalent to the surface area of a tennis court
- The GI tract uses about one-third of the blood flow from the heart and has the largest blood supply of any organ

"Approximately 15% of all patients with IBD [Inflammatory Bowel Disease] first develop symptoms after age 65. As the number of elderly in the population continues to grow, clinicians should expect to see a greater number of elderly IBD patients."

Douglas J. Robertson, M.D., M.P.H., and Ian S. Grimm, M.D. Inflammatory Bowel Disease in the elderly. Gastroenterol Clin North Am 2001;30:409-26.

THE FOUR Rs: An Effective Functional Medicine Treatment Paradigm

REMOVE potential gut pathogens and mucosal irritants, such as allergenic foods, alcohol, gluten and lactose (if sensitive), and NSAIDs.

REPLACE digestive enzymes and bile salts. Add nutritional supplements and herbs to support digestion. Increase fiber and water for healthy motility.

REINOCULATE with friendly bacteria and prebiotics.

REPAIR mucosal lining with appropriate amino acids, minerals, vitamins, and other healing supplements and antioxidants.

From: Jeffrey S. Bland, Ph.D. Chapter 19: Remove, Replace, Restore and Repair. In: Optimal Digestion: New Strategies for Achieving Digestive Health. Trent W. Nichols, M.D., and Nancy Faass, M.S.W., M.P.H., editors. New York: HarperCollins, 1999.

Growing GSDDL's Testing Portfolio

Filling the Void - Toxic Element Clearance Profile

By Chris Noel, Product Manager



After the introduction of the **Toxic Element Exposure Profile** of 20 analytes in hair earlier this year, the next logical development in Great Smokies' **Elemental Analysis** portfolio was self-evident. This spring we released our new **Toxic Element Clearance Profile** that evaluates levels of 30 metals excreted in urine, with element levels referenced to creatinine.

As the list of analytes makes clear, this test is truly a valuable tool for today's toxic environment – testing for toxics ranging from the classics (lead,

mercury, cadmium) to the exotic (tellurium, niobium, gadolinium). This thorough assessment of toxic element clearance focuses on the environmental and occupational exposure of the long-standing problem elements as well as elements that are becoming increasingly more common every day.

Creatinine referencing is an important advantage for using this test as a timed or provocative assessment. Levels of toxic elements can vary widely in voidings collected hours apart – by a factor of three and even more – and the only way to make a “spot” sample truly representative is to control for dilution. Creatinine, a marker of renal function, is the most reliable analyte to satisfy that need.

Analytes on the Toxic Element Clearance Profile

Aluminum	Antimony	Arsenic	Barium	Bismuth	Cadmium
Cesium	Chromium	Cobalt	Copper	Gadolinium	Gallium
Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel
Niobium	Platinum	Rubidium	Selenium	Tellurium	Thallium
Thorium	Tin	Titanium	Tungsten	Uranium	Zinc

Another First - Women's Hormonal Health Assessment

By Deborah Shepard, Ph.D., Product Manager



This summer Great Smokies became the first commercial laboratory to offer single-sample serum testing for female sex steroid hormones and estrogen metabolites. This comprehensive assessment, which employs efficient enzyme immunoassay methodology, offers a highly specific alternative to traditional methods of hormone analysis.

The innovative profile is convenient for patients and practitioners, requires less processing (with less variability in results), and measures circulating hormones and their metabolites closest to target tissues. It offers the first ultra-sensitive evaluation of important estrogen metabolites, is fully

validated, and meets FDA requirements for *in vitro* diagnostic use.

This test provides clinically valuable information about women's endocrine health and the long list of conditions related to hormone balance and metabolism. Hormones impact cognition, mood, cardiovascular health, bone status, fertility, menstrual health, and, especially for post-menopausal women, such factors as skin quality, body mass, sexual enjoyment, and libido. The test also evaluates estrogen metabolites (2- and 16-alpha-hydroxyestrone) and provides information that can be used for normalizing estrogen metabolism to decrease risk of estrogen-dependent cancers and osteoporosis.

By offering global hormone assessment for women of every age, the **Women's Hormonal Health Assessment** can guide healthcare practitioners in designing interventions to improve women's

quality of life and aging and to monitor the effects of hormone replacement and support therapies in ways never before possible.

The Women's Hormonal Health Assessment offers comprehensive evaluation of women's hormone metabolism:

Analyte

2-OHE1

16-a-OHE1

Estrone

Estradiol

Estriol

Testosterone

Progesterone

DHEA-S

SHBG

Ratios/Indices

Progesterone:Estradiol Ratio

Estriol:(Estradiol + Estrone) Ratio

2-OHE1: 16-a-OHE1 Ratio

Estrogen Distribution

Estrogen Metabolism Index

Free Androgen Index

Enhancing Our Flagship Assessment and Related GI Tests

By Jeff Ledford, Product Manager



Great Smokies has offered the gold standard in stool analysis for over 15 years, and one of the highest priorities for the digestive testing product team is maintaining and enhancing the superior quality of our **Comprehensive Digestive Stool Analysis**

(CDSA). Over the past few months we have continued our investigations into new markers and the stability of samples for assessing certain analytes.

We have just completed an exhaustive re-examination of sample stability for secretory IgA in stool - an important index of gut immune status and mucosal integrity. Like several of our competitors, we offered this marker on our CDSA until earlier this year when initial in-house stability studies convinced us to pull the marker until we could assure adequate stability. Our subsequent investigations measured sIgA in fresh stool and then daily for five to eight days under various temperature and

preservative conditions. The results persuaded us that only by carefully controlling temperature during transit and adding a special preservative can testing sIgA in stool yield clinically useful results.

Until we have developed cost-effective packaging to maintain analyte stability in stool, we will not offer this marker on the CDSA. It is our position that any lab that does not call for controlled temperature conditions and the proper preservative will not be able to give clients reliable results on the marker. Development is underway on this marker and several other new markers with exciting potential for enhancing the CDSA.

As this issue arrives, we will be close to announcing that two very important digestive breath tests, **Bacterial Overgrowth of the Small Intestine** and **Lactose Intolerance**, have become available. Both use state-of-the-art collection devices, they have been fully validated by the lab, and they will offer you clinically valuable information for treatment.

Results of Internal Investigations into sIgA Sample Stability

- sIgA in stool is not stable at room temperature, declining as much as 60% in 24 hours and declining to as little as 10% by day six
- Preservatives alone cannot inhibit protease degradation of samples
- Rate of degradation varies markedly among individuals, ruling out statistical compensation
- sIgA stability can only be assured if the sample is frozen and preserved after collection and temperature conditions are maintained at two to eight degrees centigrade until analysis

Inflammation:

Calming the Fires Within

By John A Walck, M.D. with Mary James, N.D.



Inflammation is a part of life. In fact, it is a beneficial, protective, essential, and extremely important part of life. And it has a purpose, which is to protect us from outside invasion; to promote healing;

and to provide us with important information, generally in the form of pain. When inflammation continues for longer than expected, or when it causes more suffering than is welcome, it soon earns a bad reputation. This provokes the sufferer to seek relief by any means. As practitioners, this should draw us to look more diligently for the cause of the condition, while simultaneously providing patients with effective, safe alternatives to calm their suffering.

assessments and interventions helpful in ameliorating the inflammatory process while looking for possible underlying causes (see Strategies for Controlling Inflammation).

A Case in Point

An interesting case illustrating the interplay of factors contributing to inflammation is that of RB, born in 1947. She was referred to me on 3.21.2000 by a local chiropractor for venous stasis and ulceration of her lower extremities. On System Review, she portrayed a history of multi-system dysfunction, including chronic sinusitis. Her condition was complicated by morbid obesity and also, as was soon to be discovered, type II diabetes and hypertension (Syndrome X).

After initial testing (see Triggering the Inflammatory Process) the patient was started on a rather arduous and involved treatment program that has extended over 15 months now. I began by coaching her to reduce her carbohydrate intake while increasing her consumption of high quality protein and vegetables. I included a graded exercise program, and nutrients to optimize glucose-regulation. At the same time, I optimized her endocrine system by addressing both thyroid and adrenal function. Subsequently, she embarked on a bowel detoxification program along the guidelines of HealthComm's 4R program.

Subsequent reassessments showed normal Hb A1c, fasting and 2 hr pp glucose and insulin levels, as well as resolved *Pseudomonas* and *Candida* infections. BP is now 110/75 and her legs are no longer ulcerated or edematous. Since her followup testing, my attention has been focused on the elevated C-reactive protein and fibrinogen levels. PCR testing for occult

Inflammation will not subside until its cause is identified and dealt with directly. Inflammation is a feed-forward process, meaning that the process has no natural down-regulatory mechanisms - so intent is the body's physiological processes to make known to us that something is awry. Conveying this information to us in no uncertain terms is crucial to us for our continued existence.

In the final analysis, inflammation is always a function of the immune system, protecting us from both internal and external threats. Regardless of the type of inflammation — e.g. traumatic, metabolic, degenerative, infectious, auto-immune, allergic — the Immune System carries out its defense via molecules such as cytokines, leukotrienes, nitric oxide, thromboxanes, prostaglandins, and prostacyclins.

Several physiological processes can propagate the inflammatory process. I have found various

Take advantage
of our 24-hour-a
day, 7-day-a
week online
resources at
www.gsdl.com

Mycoplasma and Chlamydia infections has proven negative to date and work-up of this situation continues.

In an alarmed state, she recently called my office reporting that she had discovered a hard, painless mass in the left lower quadrant of her abdomen. Fearing the worst, I saw her immediately. On examination, the “mass” turned out to be the anterior superior iliac spine of the anterior pelvis, which had finally come out of hiding after RB shed 150 lbs in the previous 15 months.

It is with much pleasure and gratitude that I am able to share this case with you. It doesn't seem very often that a patient with this degree of willingness, patience and perseverance comes along to illustrate to us that the body is indeed capable of healing from this degree of adversity when the underlying imbalances are addressed and the issues are treated at their roots.

Triggering the Inflammatory Process

In RB's case, test results pointed to imbalances contributing to the inflammatory process. Weighing in at over 350 pounds, she had high blood pressure and findings of edema, ulceration, and hyperpigmentation of the lower extremities,

typical of Chronic Venous Stasis. Her fasting insulin of 34, 2-hr pp insulin of 247, and Hb A1C - markers included on the **Metabolic Dysglycemia Profile** - were elevated. A 4-hr **Glucose and Insulin Tolerance Test** was positive for a diabetic curve. WBCs were slightly elevated, with a left shift. An **Adrenocortex Stress Profile** demonstrated low normal cortisol throughout a 24-hour period.

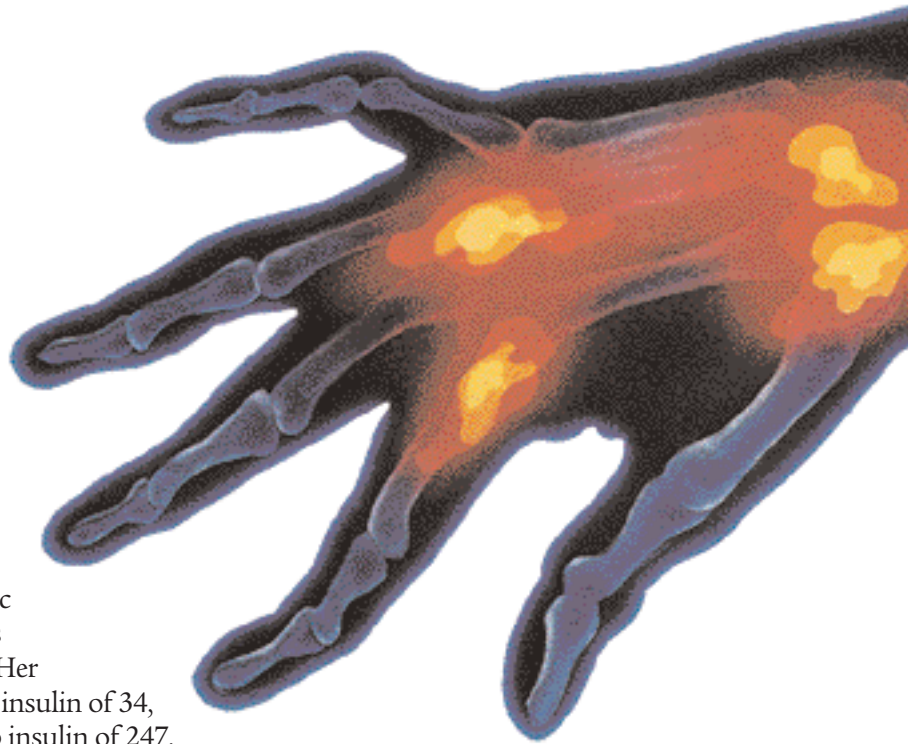
Although the **Comprehensive Cardiovascular Assessment** showed normal lipids, her lipoprotein (a), C-reactive protein, and fibrinogen were all elevated. A **Comprehensive Detoxification Profile** revealed a slow Phase I pathway, normal Phase II pathways and, surprisingly, normal free radical markers. Finally, a **Comprehensive Digestive Stool Analysis** showed maldigestion and overgrowth of *Pseudomonas aeruginosa*, *Candida parapsilosis*, and *Candida krusei*.

John Walck, M.D., has been practicing medicine for twenty-two years. He is a Board Certified physician who specializes in holistic Family Practice and Integrative Medicine in Olympia, WA.

Consulting Staff Physician Mary James, N.D., was in private practice for four years before becoming a nutritional consultant for a supplement manufacturer. With seven years experience at Great Smokies, she is our senior laboratory physician and a popular speaker at conferences and special training sessions.

Strategies for Controlling Inflammation

- Optimizing essential fatty acid status
- Reducing elevated insulin levels
- Correcting intestinal dysbiosis and leaky gut
- Addressing allergy
- Employing various herbs and nutrients, such as Turmeric, Curcumin, Boswellia, Quercetin, Hesperidin, Glucosamine, Ursolic acid, Niacinamide, Transfer Factor, B-glucans
- Correcting nutrient insufficiencies
- Reducing toxicity
- I also include NSAIDs on occasion, but never longer than two weeks.



Endocrine Issues in Aging Patients

Assessing Hormonal Health as our Female Patients Adapt to a New Phase In Life

By R.W. Watkins, M.D., M.P.H., F.A.A.F.P.

Great Smokies has a wide range of hormone assessment options. Call 800-522-4762 or find out more and order online at www.gsdl.com



I was talking with a patient recently and explaining to her “the beautifully amazing and wondrous web” that contributed to her overall hormonal state. She answered, “Yeah, beautifully amazing and wondrous if you are not going through menopause!” We agreed to compromise on the statement by changing the description to “a complex and integrative web” as I emphasized the value of assessing the elegant interrelationship of hormones before attempting to improve endocrine health.

The **Female Hormone Profile** is particularly helpful when evaluating patients with: PMS, endometriosis, fibrocystic breast disease, fibroids, and other “estrogen dominant” states, as well as helping assess other menstrual irregularities and functional infertility in pre- and peri-menopausal women who are not using transdermal hormone replacement.

The **Menopause Profile** consists of three salivary samples collected over five days and is helpful in identifying deficiencies or excesses of sex hormones and provides an easy-to-use tool for monitoring clinical therapy.

A brand new test, the **Women’s Hormonal Health Assessment (WHHA)**, allows us to look at a single serum sample and be able to assess a broader range of hormones (including estrogens, testosterone, DHEA-S, SHBG, and 2-OHE1:16-alpha-OHE1) giving us an overall hormonal assessment regardless of transdermal or oral hormone supplementation. This test will be useful in pre- and post-menopausal women.

That is where hormonal testing comes in. If you do not do an assessment, it is like shooting a target that is moving, or worse yet, one you cannot see. Fortunately, we now have a number of tools in our “functional medicine toolkit” to address this issue.

Hormones in Saliva and Serum

The salivary tests offered by Great Smokies measure bioavailable female hormone levels. Remember that about 99% of circulating hormone is bound by carrier proteins. In the case of sex steroids, the carrier protein is sex hormone binding globulin (SHBG).

By using salivary testing, cited by many researchers as being “ideal for use in psychoneuroendocrinology research,” we are able to gain insight into what is going on during any circadian or periodic rhythm. In female hormone assessment, particularly in pre-menopausal and perimenopausal women, this is valuable in that we are able to follow what is going on across the entire cycle by looking at follicular and luteal levels of hormones in addition to luteal peaks. Results will show bioavailable hormone levels of the three estrogens, progesterone, and testosterone as well as the progesterone to estradiol ratio.

A new single-sample serum assessment is now available (see pages 14-15) that measures sex steroid hormones and SHBG, along with evaluating estrogen metabolism. These assays provide additional insight into promoting female hormone health and reducing risk for many of the diseases associated with aging.

Armed with this knowledge, we are able to make clinical judgments and adjust hormonal status based on real data, not on supposition or conjecture.

R.W. “Chip” Watkins, M.D., M.P.H., F.A.A.F.P. is a board-certified family physician and holds academic appointments at several medical schools. Dr. Watkins maintains expertise on a wide variety of subjects including advanced prevention strategies, female health and wellness, herbal approaches to Syndrome X, and dysinsulinism. He regularly lectures on these topics nationally and internationally.)

– A Pandora's Box of Potential Risk

Adrenal Exhaustion from Decades of Stress – Fight or Flight as a Reality of Modern Life

By Crystal McLaughlin, N.D.



Stress and fatigue are some of the most common complaints that we hear from our aging patients. The modern lifestyle is a combination of stressful events, overwork and

lack of sleep, relaxation, and exercise. Unlike our ancestors, who had clear physical outlets for stress, modern men and women can remain in a more or less constant state of vigilance. The result of this is that we are almost always poised for “fight or flight” – with a resulting hypercortisolism that can so fatigue the adrenals over time that they ultimately will no longer produce cortisol.

In this state of sympathetic overload, epinephrine (adrenalin) and cortisol are produced in the adrenal glands in excess amounts. DHEA is also produced in the adrenals. It has many important functions of its own, and is a precursor to testosterone, which is necessary for mental and physical well-being in both men and women. Cortisol is catabolic and DHEA is anabolic.

In a typical early decompensation stage of adrenal exhaustion, cortisol will be high, especially in the morning and at mid-night, and DHEA will be low. This is because in a high stress state, pregnenolone, which is a precursor of both hormones, will go to make cortisol preferentially, and the levels of DHEA will suffer as a result. A patient in this state will typically complain of anxiety, inability to relax, fatigue, and low libido.

In typical late decompensation, cortisol will be flatline, and DHEA will remain low. This is because the adrenals are now

too exhausted to make either hormone. A patient in this state will typically complain of extreme fatigue, depression, non-existent libido and difficulty getting out of bed in the morning.

Depending upon the severity of the adrenal exhaustion, treatment will need to be continued for 9-12 months or longer. Adrenocortex Stress Profile follow-ups are suggested at 3-month intervals to assess improvement, until levels of cortisol and DHEA are normalized. Of course, lifestyle modification is also very important. Rest, sleep, relaxation, exercise, yoga, and stress reduction courses are helpful.

Staff Physician Crystal McLaughlin, N.D., received her naturopathic doctoral degree from the Canadian College of Naturopathic Medicine in Toronto and was in private practice in Wilmington, N.C. prior to joining Great Smokies. She currently serves as president of the North Carolina Association of Naturopathic Physicians.

Call 800-522-4762
or e-mail
cs@gSDL.com for
more information

Comprehensive versions of the salivary sex steroid profiles provide a more complete picture of the hormonal web with the addition of the **Adrenocortex Stress Profile** and the **Comprehensive Melatonin Profile** which allow the clinician to evaluate the complex interactions among the sex hormones, adrenal steroids (cortisol and DHEA), and melatonin, a sleep regulator and powerful antioxidant.

For men, salivary assessment of testosterone with the **Male Hormone Profile** can yield important information about levels of the hormone that affects men's health in so many important ways. Testosterone, which can decline dramatically with age, has been linked to bone and cardiovascular health, as well as maintaining lean muscle, cognition, and sexual function.

Single serum sample testing is available for DHEA-S and IGF-1. **IGF-1 Assessment** provides reliable indicator of human growth hormone levels, which can also affect cognition, skin tone, muscle tone, and cardiovascular and bone health.

Assessing Mitochondrial Function

By Chris Renna, D.O., and Russel Sher, D.C.



It is estimated that about 9% of the general population suffer from unexplained fatigue lasting more than six months. Many of our patients come into our offices

complaining of some form of physical or mental fatigue. Several studies show that patients with unexplained chronic fatigue were much more likely to have psychological disorders such as depression although it isn't clear if one caused the other or both are triggered independently by other factors.

Assessing of the etiology of fatigue requires examination of several areas including gastrointestinal, thyroid, adrenal, cardiac, hepatic, and immune function. Imbalances such as dysglycemia, dysbiosis, stress management, as well as exposure to toxic substances, should also be considered. The myriad possible causes and contributors to fatigue makes diagnosis and treatment difficult. Finding the etiology requires thorough examination of each of these areas including mitochondrial function itself.

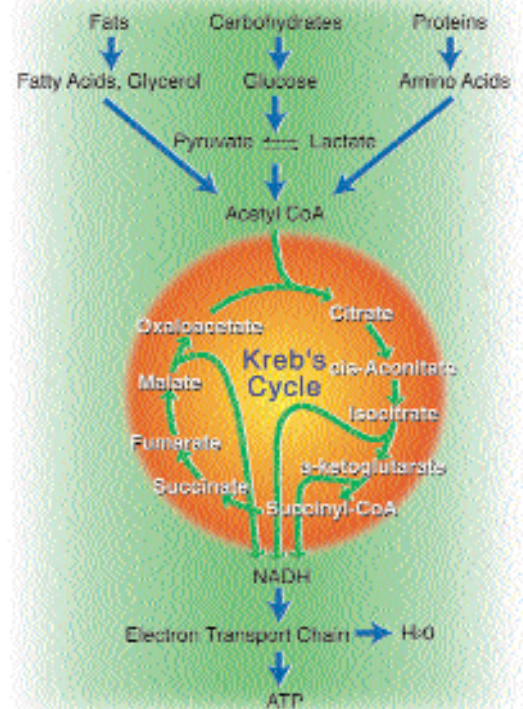
Since the mitochondria are the primary producers of energy in the form of adenosine 5'-triphosphate (ATP), it seems wise to assess the capacity of the mitochondria to function optimally. Mitochondria are about twenty times more susceptible to oxidative damage than nuclear DNA. In addition they do not appear to have the same repair mechanism as nuclear DNA.

The **Oxidative Stress Analysis** provides evidence of free radical activity as well as protective endogenous antioxidant mechanisms. Reducing oxidant stress and balancing antioxidant levels provides protection against mitochondrial DNA damage. As we age, the damage wrought by oxidative stress can lead to fatigue and premature genetic expression of cancer and other serious disease – and significantly exacerbate other chronic conditions, from diabetes to cardiovascular disease.

After food is digested and absorbed through the gastrointestinal tract, a process subject to investigation using the **Comprehensive Digestive Stool Analysis**, amino acids, glucose, and fatty

"Several studies of patients with CFS [Chronic Fatigue Syndrome] have shown reductions in muscle oxidative capacity and metabolism, atrophy of the fast twitch fibers, mitochondrial abnormalities, increased lactic acid production during exercise, and myopathic features on single fiber electromyogram."

Pascale De Becker, Ph.D., et al. Exercise capacity in chronic fatigue syndrome. Arch Intern Med 2000;160:3270-77.



acids are transformed into acetyl CoA. Acetyl CoA then enters the Krebs cycle in the mitochondrion and through a series of metabolic reactions utilizing several enzymes, nicotinamide adenine dinucleotide (NADH) and flavin adenine dinucleotide (FADH₂) are produced. NADH and FADH₂ enter the electron transport chain through the process of oxidative phosphorylation to produce ATP. Amino acid and fatty acid imbalances, known causes of metabolic disturbances resulting in fatigue, can be tested as well (reference GSDL serum or urine **Amino Acids Analysis** and **Essential and Metabolic Fatty Acids Analysis**).

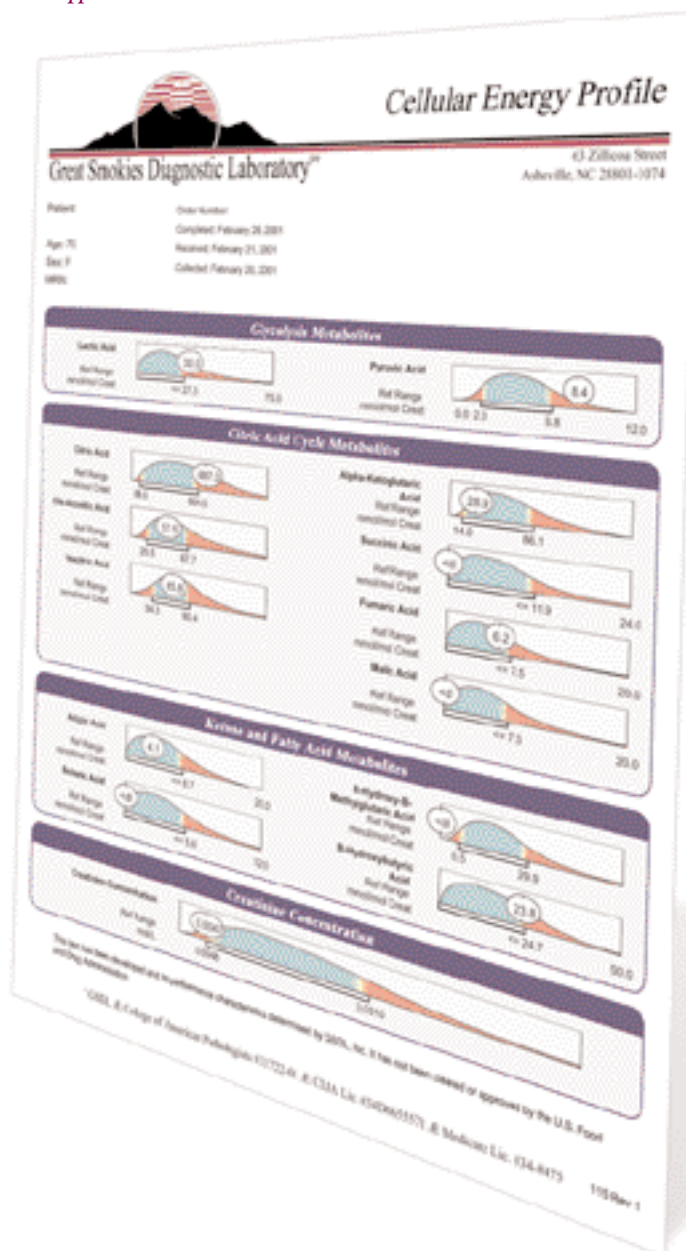
Excess levels of toxic elements especially flouride, mercury, cadmium, arsenic, and lead as well as deficiencies of iron, magnesium, manganese, glutathione, and vitamins B1, B2, and B3 may interfere with the enzymes in this process. The **Cellular Energy Profile** is an excellent tool for assessing the efficiency of glycolysis and the Krebs cycle. Each analyte provides information as to the optimal function of the enzymes involved and various treatment strategies are included in the report.

The effective treatment of chronic fatigue, and the lesser states of energy depletion leading up to this debilitating condition, can only result from a comprehensive evaluation of the many processes involved. It is likely many of the chronic fatigue patients whose condition has been classified as “idiopathic” or even “psychosomatic” are suffering from one or more conditions that can be pinpointed with careful assessment. Energy production is a fundamental first step in the metabolic process and forms a cornerstone of health preservation.

Chris Renna, D.O. is a board-certified Family Practitioner in private practice at LifeSpan Medicine, L.L.C. in Dallas, TX, and recently opened a branch of his clinic in Beverly Hills, CA. He is an active member of several professional organizations, including the American College of Family Practitioners, American College of Preventive Medicine, American Medical Association, and American Academy of Anti-Aging Medicine.

Staff Physician Russel Sher, D.C., practiced integrative chiropractic and nutritional medicine for 12 years in the United States and South Africa prior to joining GSDL's Department of Medical Science. His primary interest is the application of Functional Medicine in clinical practice utilizing primary natural approaches.

For more information about assessments related to fatigue and energy production call 800-522-4762.



DYSGLYCEMIA

SUGAR—The White Death

**AND SYNDROME X - OBESITY AND INSULIN RESISTANCE
ASSOCIATED WITH CHRONIC DISEASE IN AGING PATIENTS**

By T. Michael Culp, N.D.



Over 5% of American adults (10,000,000) have been diagnosed with diabetes. Another 5,000,000 are diabetic without knowing it, and an estimated 13,500,000 adults have

frankly impaired glucose metabolism (fasting glucose between 110-126 mg/dl). Altogether nearly 30 million Americans suffer from some form of overt dysglycemia. The number of people with subclinical dysglycemia may be triple that number, which would be consistent with current estimates of the incidence of obesity in the United States. Making matters worse, dysglycemia and even diabetes can exist for years with few evident signs or symptoms.

One clinical sign that should alert us to the possibility of disrupted glucose metabolism is obesity, especially central obesity. Recent statistics suggest that one-half of all Americans are overweight and one-third are medically obese. Central obesity is easy to diagnose: simply divide waist size by hip size. If the ratio is greater than 1.0 in men or greater than 0.8 in women, that person is centrally obese. The Iowa Women's Health Study demonstrated the importance of a simple waist to hip ratio: it was the single greatest anthropometric predictor in women of death from cardiovascular disease, cancer, and all other causes. Not only that but it was also strongly associated with incidence of cancer, heart disease, diabetes, and hypertension.

Such dramatic associations should not really surprise us. Gerald Reaven, M.D., at Stanford University was the first researcher to propose a

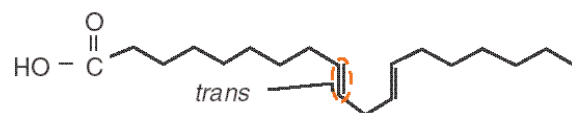
physiologic link between central obesity, diabetes, heart disease, and hypertension: the link being insulin resistance. He coined the term Syndrome X to describe this constellation of symptoms and diseases, at least some of which are seen in the majority of our aging patients.

While there is undoubtedly genetic predisposition, the true cause of insulin resistance probably lies in the standard American diet (acronym: SAD). The average adult eats twice as many calories every day as she or he needs to thrive. The analogy I use with patients is that it's like trying to put 10 pounds of bologna into a 5-pound bag. To make matters worse, we get a large percentage of those excess calories from refined sugar and processed flour - foods that are devoid of all nutrients. We eat too much saturated and hydrogenated fat and too little essential omega-3 fat (found in cold water fish), the deficiency of which is known by itself to lead to insulin resistance. Finally, we eat far too few vegetables, the main source of essential minerals in our diet. Did you know that 25% of all vegetables consumed in this country are in the form of French fries? Combine this kind of diet with a lifestyle that includes lots of stress and little exercise, and you've created the exact conditions researchers can use to induce insulin resistance in laboratory animals.

Fortunately, there is laboratory testing available to diagnose early as well as late insulin resistance and can monitor a patient's progress in regaining his or her

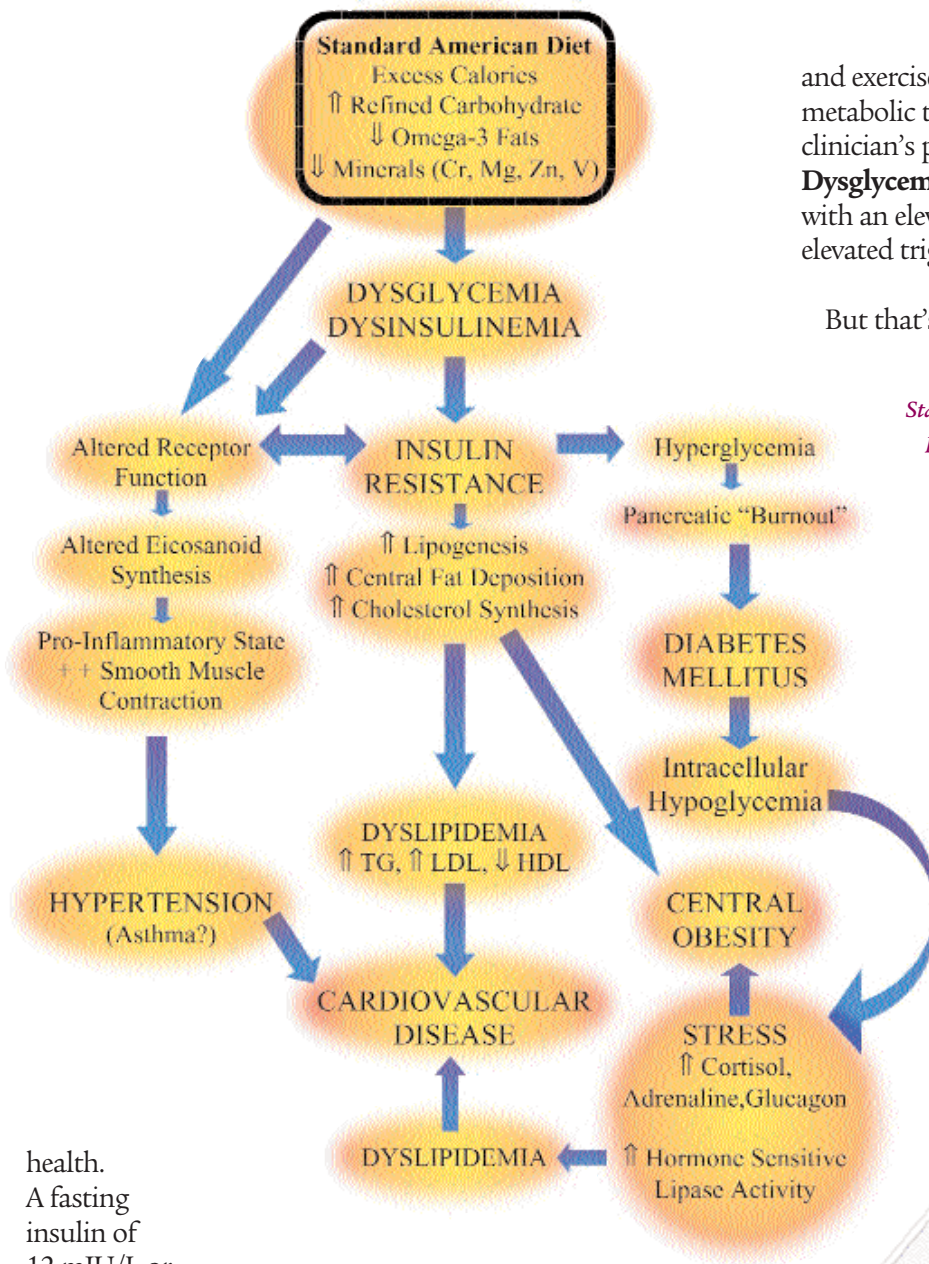
"... nondiabetics appear to have an elevated risk of colorectal cancer as their fasting insulin and glucose rise, even if glucose levels do not reach levels defined as consistent with diabetes."

Schoen RE et al. J Nat Cancer Inst 1999;91:1147-54



Linoleic Acid (trans fat)

Possible Pathophysiology of Syndrome X



and exercise, it's certainly worth assessing the metabolic triggers as early as possible. From a clinician's perspective, I believe the **Metabolic Dysglycemia Profile** is indicated for any patient with an elevated waist:hip ratio, hypertension, or elevated triglycerides.

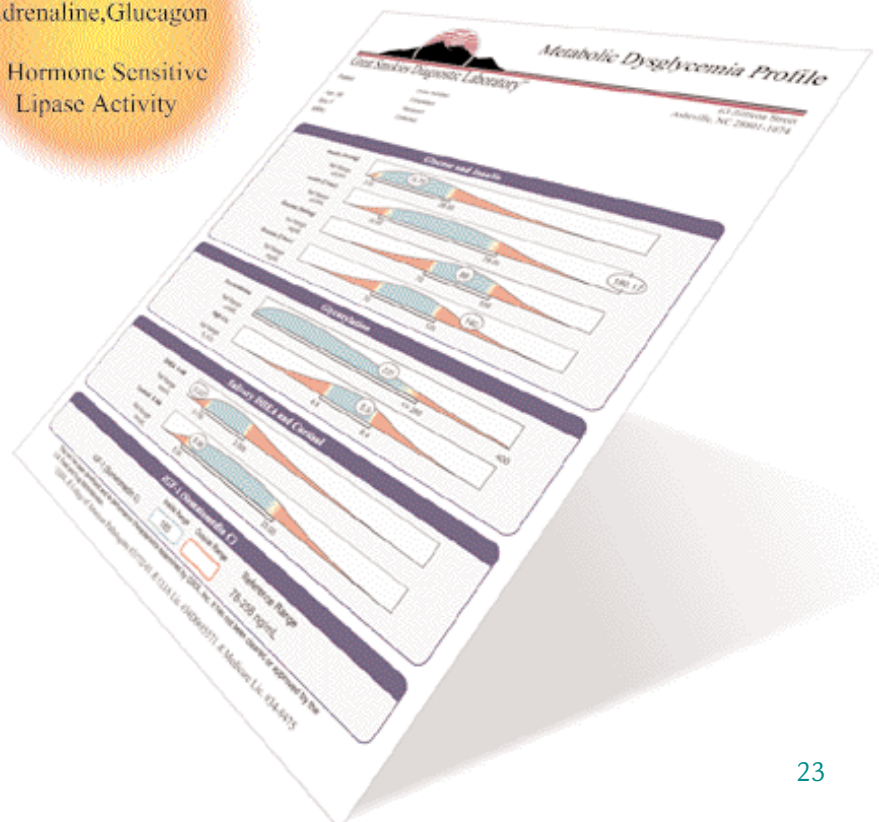
But that's only what, 70 or 80% of our patients?

Staff Physician T. Michael Culp, N.D., practiced as a family doctor in Seattle and taught nutritional biochemistry and other courses at Bastyr University prior to joining Great Smokies in 1998. Along with writing educational materials, consulting with practitioners, and lecturing throughout the world, Dr. Culp maintains a small practice in Asheville, N.C.

Our laboratory physicians help you get the most benefit from functional testing. Call 800-522-4762.

health. A fasting insulin of 12 mIU/L or greater indicates some degree of insulin resistance (bear in mind that the average laboratory "normal" reference range is 6-26 mIU/L). With its 2-hour post-challenge insulin, a fasting and 2-hour glucose, markers of glycosylation, DHEA, cortisol, IGF-1, and the optional add-on **Metabolic Lipid Profile**, the **Metabolic Dysglycemia Profile** offers the clinician a diagnostic tool of remarkable sensitivity and specificity to develop a comprehensive treatment protocol for Syndrome X.

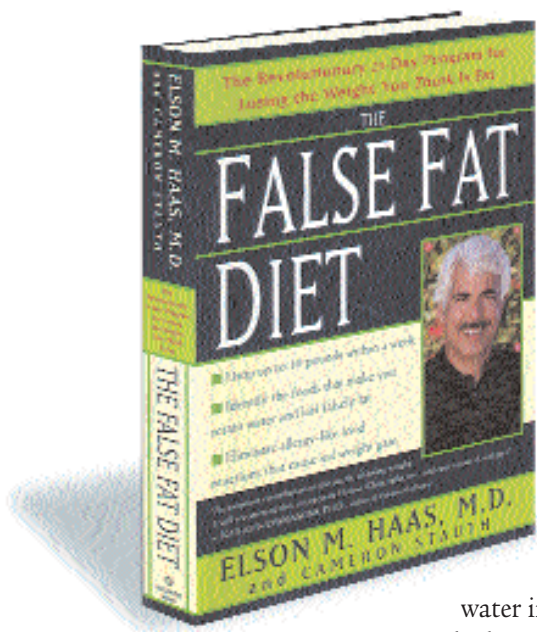
With increasing clinical evidence that dysglycemia can be prevented or modified by diet



Doctor's Bookshelf

Featured Book Review

Elson Haas, M.D., and Cameron Stauth. *The False Fat Diet: The Revolutionary 21-Day Program for Losing the Weight You Think is Fat*. New York: Ballantine Books, 2000. ISBN 0-345-43711-A



The False Fat Diet

by Elson Haas, M.D.

Reviewed by Mary James, N.D.

Elson Haas has done it again—written a book on health that is not only easy to follow, but packed with helpful tips for improving one's health. This one—*The False Fat Diet*—is directed to the frustrated individuals out there who continually struggle to lose extra pounds—yet the weight refuses to budge, no matter how much they diet or exercise.

Most of us automatically assume that excess weight means excess adipose, but in many cases what appears to be “fat” is actually bodily swelling in response to food-induced chemical reactions. “False fat” may be edema resulting from the body's cellular inflammatory response to allergenic foods. Other “false fat” may be due to hormonal responses to foods, including oversecretion of adrenal hormones. In either case, the body's tissues produce and retain excess

water in response. If food reactions lie at the bottom of persistent pounds, then they are likely contributing to other health problems as well, such as fatigue, arthritis, headaches, asthma, mood disorders, and digestive dysfunction. *The False Fat Diet* is really about food reactions, in general, and offers a comprehensive plan for cleansing the body and restoring health.

Dr. Haas proposes a 3-phase balancing program that begins with a week-long detoxification period. This is followed by the “false fat week,” in which all suspect food allergens are removed. Here, a blood allergy test is useful for identifying problem foods. Much “false fat” is quickly lost during this elimination diet period. In over two decades of clinical practice, Dr. Haas has repeatedly observed patients lose 10-20 pounds in a matter of weeks, simply by eliminating reactive foods. The third phase of the program consists of continued allergen-elimination, food challenges, and further health restorations.

What's great about this book is that it goes beyond a theoretical discussion of the topic to include menu plans and recipes and a practical step-by-step approach to reversing these sensitivities. Adjustments in diet and lifestyle are enormously challenging. Dr. Haas describes an approach that is easy to follow and likely, in most cases, to produce rapid results—the same practical and easy-to-follow approach featured in his previous books. *The False Fat Diet* offers practical information for practitioner and patient, alike. Sharing this book with a patient would also be a great way to educate, as well as improve compliance in a weight-loss or general health enhancement program.

Ordering Books

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Conquer Fatigue: A Wellness Program to Increase Your Energy, Vitality & Productivity in 30 Days

by Dr. Elizabeth Walker

Reviewed by John H. Furlong, N.D.

This is truly a “Wellness Program” that Dr. Walker has a right to be proud of. The book is thorough, well organized and, most importantly, inspirational in

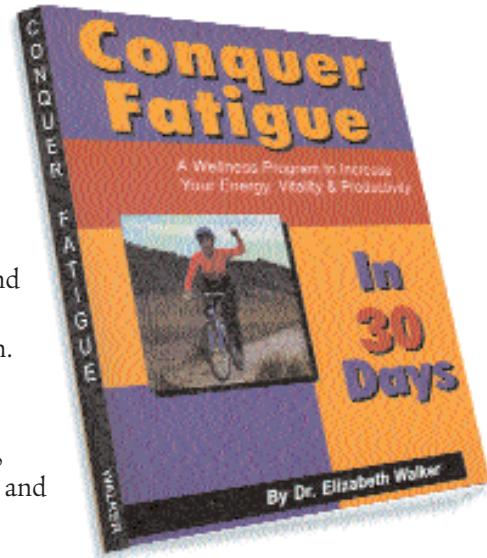
content. Years of networking with top practitioners are apparent in the book. This instills a well-deserved confidence to the layperson and physician alike that these are indeed tried-and-

true methods. Dr. Walker also uses an Internet-friendly approach to help readers find the resources most helpful to them as individuals. There are sites here that I will certainly use and refer to for my own needs. This winning combination illustrates the eclectic approach with which this book was written and researched. Laboratory tests, which may be helpful, are woven into the discussions, as are specific products WITH their sources to further simplify individuals' use of this workbook.

I appreciated how the more technical aspects of toxicity, intestinal function and bacterial balance along with mental/emotional factors are woven into the reader-friendly format. The discussion of hormonal problems and the functional approach to treatment round out this informative, yet very accessible presentation of important facts. Charts, quotes and an unabashed discussion of the modern realities of diet, environment, and societal pressures complement the more medical aspects of the book. And let's not forget the exercises, which range from alternate nostril breathing (I'd been looking

for that one!) to suggested experience and reflection on forgiveness.

Dr. Walker expresses the compassion with which fatigue and its frustrations need to be addressed, and she provides the concrete tools for people to take their recovery in hand and get to the root cause of their condition. The hard-won experiences of her own journey and the dedication with which she has written this book are apparent throughout. The astute discussion of the functional systems for healing a chronic debilitating condition is the epitome of balance. The book is relevant and well organized, with supportive quotes, data, and case studies to optimize success using her approach. The strength of *Conquer Fatigue* is its breadth of material, clinical relevance, abundant documentation, and user-friendly (indeed user-inspirational) format.

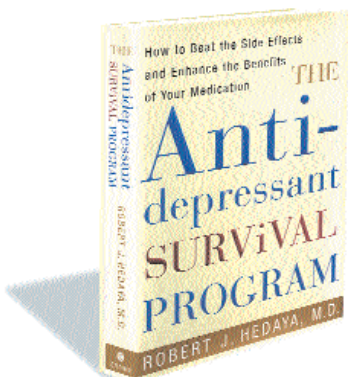


Featured Book Review

Dr. Elizabeth Walker. *Conquer Fatigue: A Wellness Program to Increase Your Energy, Vitality & Productivity in 30 Days*. Ft. Collins, CO: Vitality Doctor, 2001. ISBN 0-9704348-0-4

Recommended Reading

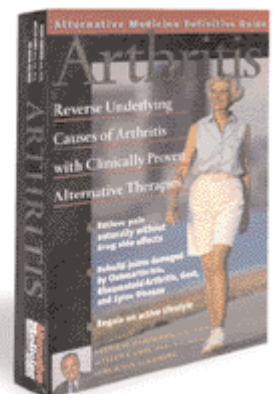
Robert J. Hedaya, M.D., with Deborah Kotz. *The Anti-Depressant Survival Program*. New York: Crown Publishers, 2000. ISBN 0-609-60465-1



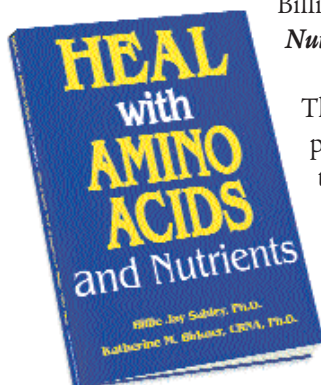
As powerful and beneficial as the arsenal of antidepressant drugs may be, according to Georgetown Professor Robert J. Hedaya, M.D., they also mask other problems and can lead to some very unpleasant side effects. This leading psychopharmacologist and clinical psychiatrist outlines a comprehensive mind-body program to reduce or eliminate the side effects of these wonder drugs with balanced nutrition, supplements, and lifestyle changes. With the wealth of information in this valuable book, if you can't keep your patients drug-free, at least you can establish a solid physiological foundation to minimize side effects and reduce the patient's need for SSRIs, tricyclics, and other antidepressants.

Eugene Zampieron, N.D., A.H.C., and Ellen Kamhi, Ph.D., R.N., H.N.C., with Burton Goldberg. *Arthritis: An Alternative Medicine Definitive Guide*. Tiburon, CA: AlternativeMedicine.com, Inc., 1999. ISBN 1-887299-15-7

For many people, arthritis is the tarnished lining of the silver and golden years, and most think of it as an inevitable part of aging. Doctors Zampieron and Kamhi, however, quickly deflate that fatalistic assumption with this fresh take on the underlying causes of arthritis and

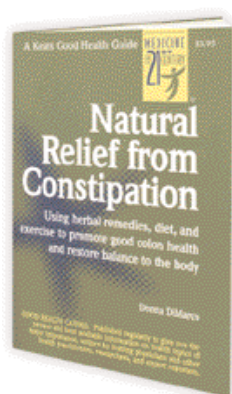


how to reverse them. Their patient-friendly guide features helpful aids for the busy, lay reader as it negotiates the wide range of mind and body therapies for the various forms of arthritis – presenting a workable alternative to the pain medications and anti-inflammatory drugs usually prescribed to cover up the symptoms of arthritis.



Billie Jay Sahley, Ph.D., and Katherine M. Birkner, C.R.N.A., Ph.D. ***Heal with Amino Acids and Nutrients***. San Antonio: Pain and Stress Publications, 2000. ISBN 1-889391-19-0

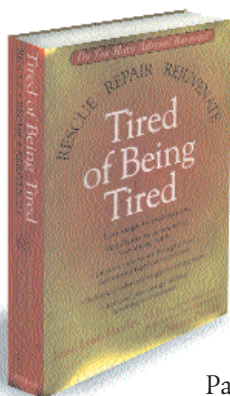
The biochemistry of amino acid metabolism is difficult enough for many healthcare practitioners to grasp themselves – and almost impossible to communicate effectively to the average patient. The real beauty of this new book on amino acids is its detailed, yet down-to-earth explanation of how amino acids work in the body – which is just what you might expect in a book initially written by Drs. Billie Jay Sahley and Katherine M. Birkner for their own patients. As a patient handbook for orthomolecular treatments, it would be hard to find anything more convenient and clearly organized than *Heal With Amino Acids and Nutrients*.



Donna DiMarco, L.N.C. ***Natural Relief from Constipation: Using Herbal Remedies, Diet, and Exercise to Promote Good Colon Health and Restore Balance to the Body***. Keats Good Health Guide Series. Los Angeles: Keats, 1999. ISBN 0-87983-958-9

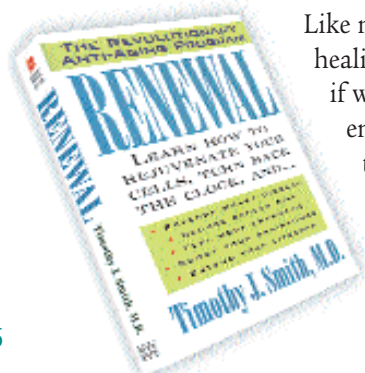
The Keats Good Health Guides series offers about twenty short (50 to 60 pages) and very readable guides to specific conditions. The series distinguishes itself by selecting a respected practitioner, such as south Florida nutrition counselor and writer/talk show host Donna DiMarco, L.N.C., and honing in on common health conditions. Some patients can read a guide in one sitting, and all patients seem to benefit from these handy, inexpensive guides to better health. For this discussion of colon health, DiMarco manages to make things many patients would rather not think about very understandable and interesting.

Jesse Lynn Hanley, M.D., and Nancy Deville. ***Tired of Being Tired: Rescue, Repair, Rejuvenate***. New York: G. P. Putnam Sons, 2001. ISBN 0-399-14749-7

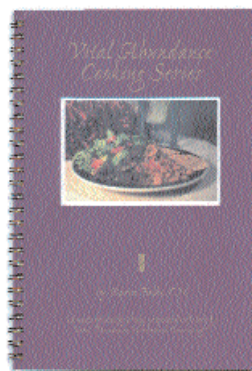


More and more healthcare practitioners are seeing patients who are stressed, literally and figuratively burned out, overweight, under-rested, and over-stimulated by adrenaline rushes and artificial agents. Dr. Hanley's new book on stress and exhaustion takes a refreshingly reader-friendly look at how patients can rescue, repair, and rejuvenate themselves by following Ten Simple Solutions to break the modern addiction to the adrenaline rush – at the same time returning to healthy levels of cortisol and DHEA. This handy companion features a revealing self-assessment of lifestyle and lots of helpful suggestions, nutrient regimens, and checklists to help motivate patients to turn their lives around.

Timothy J. Smith, M.D. ***Renewal: The Anti-Aging Revolution***. New York: St. Martin's Paperbacks, 1998. ISBN 0-312-97209-1



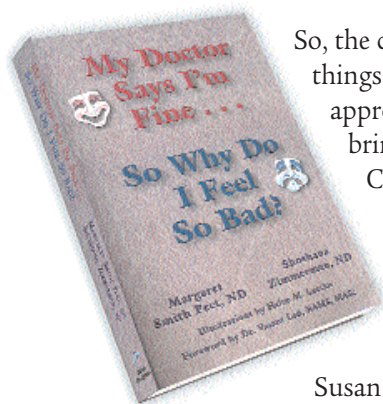
Like many of his colleagues in the anti-aging medical community, Dr. Smith approaches healing with the conviction that Nature has allotted us a 120-year, maximum life span. And, if we take care of the traumatic events that modern medicine treats so effectively, we can empower ourselves to maximize our health and longevity with a comprehensive program to overwhelm the destructive potential of free radicals. The 684-page *Renewal* outlines a healthy foundation with a wealth of information about diet, supplements, hormone support, and exercise to prevent cancer and promote healthy aging – valuable guidance, even if your patient doesn't manage to outlast Jeanne Calumet.



Karen Falbo, C.N. *Vital Abundance Cooking Series. Vol. I.* Denver: Vital Abundance Nutritional Counseling, 2000. ISBN 0-615-11786-4

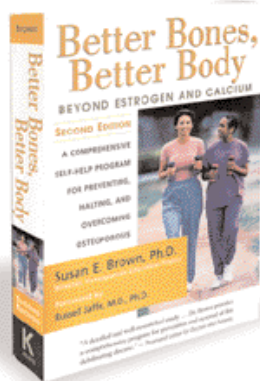
All of our patients know how important good nutrition is, but getting their jaded pallets to accept whole grains and fresh fruits and vegetables (let's not even consider soy yet) can be a challenge. That's where Karen Falbo, C.N., comes in. Falbo is a Denver-based nutritionist who's put together a book of doable recipes for tasty and nutritious fare for every diet, from cleansing broths and soups to tofu pumpkin pie. Falbo even sneaks in important nutrients where you'd least expect them: just check out the way a teaspoon of omega-3 fat-rich flaxseed oil with its taste disguised shows up in fruit smoothies.

Margaret Smith Peet, N.D., and Shoshana Zimmerman, N.D. *My Doctor Says I'm Fine... So Why Do I Feel So Bad?* Nevada City, CA: Blue Dolphin, 2001. ISBN 1-57733-085-4



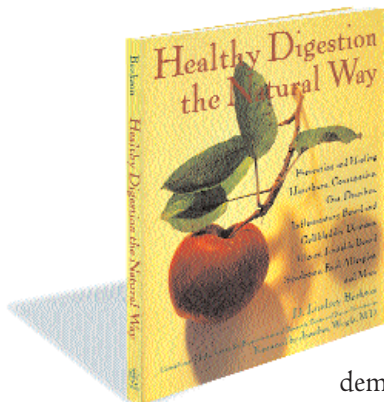
So, the doctors can't find anything wrong? Maybe they're looking for the wrong things in the wrong places. That's the message in this collection of divergent approaches to hidden chronic disease by two naturopathic physicians who bring the wisdom of the East and West together in a blend of Ayurvedic, Chinese, naturopathic, and functional medicine. The foundation of their approach is the notion that disease progresses through at least six stages before it becomes "manifest" by conventional western standards; the best way to stop it in its tracks is to ferret out the early stages as quickly as possible.

Susan E. Brown, Ph.D. *Better Bones, Better Body: Beyond Estrogen and Calcium.* 2nd. Ed. Los Angeles: Keats, 2000. ISBN 0-658-00289-9



Susan Brown, Ph.D., knows osteoporosis well: she directs the Osteoporosis Education Project in Syracuse, N.Y., and she's written extensively and lectured widely about prevention and treatment. This detailed (over 400 pages) treatment of bone health should be required reading for women of every age, but especially those in their middle and later years. Dr. Brown's comprehensive guide covers exercise, nutrition, hormone therapies, supplements, lifestyle changes, and the important role of the body's overall health in preventing and overcoming this modern-day scourge – everything a woman needs to know for optimal bone health as she ages.

D. Lindsey Berkson, M.S., D.C. *Healthy Digestion the Natural Way.* New York: John Wiley & Sons, Inc., 2000. ISBN 0-471-34962-3



From the beginning of this excellent examination of digestive health, it's clear that Dr. D. Lindsey Berkson is attuned to the "big" picture, the elegant workings of the GI system and its interconnect-edness with the rest of the body, the mind, and even the spirit. In addition to her enlightened look at common digestive problems, Dr. Berkson offers important insight into diet, supplements, herbs, exercise, and spirituality. Along the way, she also includes discussions of detoxification, hormones, allergies, "good" fats, and cancer – all presented in a very reader-friendly format and in a style that demystifies the intricate physiology and biochemistry of digestion.

New ACE One-Day Clinical Intensive Scheduled for Fall 2001

Great Smokies concluded the first series of Achieving Clinical Excellence (ACE) Clinical Intensives on healthy aging in June with over 325 practitioners throughout the country attending. Our upcoming series is scheduled in seven cities during October and November 2001. This second Clinical Intensive series will focus on the topic, "Understanding Fatigue: Addressing the Molecular Basis of Chronic Metabolic Disorders."

• CME and CEU credits can be earned through this program

The price for each ACE Clinical Intensive is \$129.00. Pay only \$95.00 by pre-registering and save \$34.00! Sign up online now at http://www.gsdl.com/education/ace/reserve_new1.html or contact an ACE representative at 888-201-2185.

Practitioners who are new to the ACE educational series and veterans of earlier seminars are welcome to register. The Clinical Intensive seminars are self-contained units, and there are no prerequisites required for enrollment.

Schedule

October 13 – Westbrook, CT

October 28 – San Francisco, CA

November 4 – Houston, TX

November 11 – Ft. Lauderdale, FL

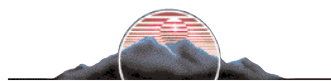
October 27 – Seattle, WA

November 3 – Indianapolis, IN

November 10 – Washington, D.C.



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