Help, My body Is Killing Me!

Solving the connections of autoimmune disease to thyroid problems, fibromyalgia, infertility, anxiety, depression, ADD/ADHD and more

By Dr. Kevin Conners
“Anyone who proposes to do good must not expect people to roll stones out of his way, but must accept his lot calmly, even if they roll a few stones upon it.”

Dr. Albert Schweitzer

Treatment

***Either contact our office (we DO see patients at a distance via phone/skype), or contact a competent local doctor for help in this section

How do you treat autoimmune conditions? That is the question of the day! We will assume that we have identified the antigen, identified the Th1 / Th2 dominance, understood all of the body’s adaptive processes taking place in the cardiovascular, gastrointestinal, eliminatory, hormonal, and neurological systems. We’ve also identified problems in fuel delivery systems to the cells, cell membrane and receptor site health, nutrient deficiencies, absorption and utilization problems, developmental disturbances and the like. Are there brain-based imbalances, cerebellar deficiencies, neurotransmitter imbalances? These need to be addressed. The autoimmune patient MUST be treated in a very holistic manner because of the intimate interconnections of all the systems. There is a delicate interpersonal relationship between everything that goes on in the body – you cannot separate the systems.
Where we have failed in treatment of patients and not achieved the level of success desired has ALWAYS been in this – we didn’t look at everything at the same time. You have to get all the tests done! Look at everything; leave no stone unturned, don’t assume anything!

Obviously, the first and arguably the most important piece of the treatment program involves getting rid of the antigen. If it’s a food, stop eating it; if a chemical seek out possible exposures and limit that, if a bio-toxin, look at exposures. Once present exposures are eliminated we need to detoxify the antigens that you have currently lodged in your tissues. This is a process that takes time and is specific to the antigen in question.

**Detoxification**

Everyone wants to know if they are toxic; it’s a question that is answered with proper testing. Heavy metals and chemicals collectively are often referred to as xenobiotics (Gk. Xeno = foreign; biotics = bodies). This is an even more important question to answer as far as autoimmune disorders are concerned. We will examine a number of ways that we may test for different toxicities; some we have already covered, but first let’s get a basic understanding of how it is possible to measure these xenobiotics in the body.

There are a variety of complex and sophisticated measuring instruments called spectrometers such as ICP-MS, ICP-OES, AF and GC-MS that can be used to measure the levels of xenobiotics in blood, urine, feces, hair, sweat and other body tissues. First, let’s begin with a blanket statement that is important to understand:

**THERE IS NO WAY OF DETERMINING THE TOTAL TOXIC LOAD IN A LIVING HUMAN!**
We mentioned LIVING HUMAN here, as it is possible to determine the total load of xenobiotics in a dead human – you would simply incinerate the person and measure the total load of xenobiotics in the ashes! We have yet to have a patient volunteer for this study.

Some in the medical field believe that serum testing revealing toxicity is a measurement of toxic load. Serum testing only reveals what is circulating in the blood at the time of the draw; it does not measure what is lodged in the tissue and the volume lodged in the tissue is the problem in autoimmune conditions. Serum and/or urine testing simply measures acute exposure! They also believe that they can measure the effectiveness of a chelating agent – for example, they take a chelating agent for x months and re-measure the amount of toxin in the blood or urine. If it decreases, they believe the treatment is working – hogwash! Time passed and the level of toxicity in the measured specimen has changed but we have no way of knowing if it exited the body or was deposited in the patient’s frontal lobe.

When measuring toxins in the blood or urine, the first pre-sample is taken; this will tell us whether there are metals that are CIRCULATING in the blood and/or being filtered through the kidneys into the urine. If a reading of zero comes back from the lab, this does not mean that the person does not have metals STORED in their body tissues and organs – it simply means that there are no active metals running around the blood. Generally the body does not like these lethal toxins in the blood, so stores them in body tissues at the earliest opportunity. In order to determine whether there are metals STORED in the tissues and organs, another type of test has to be conducted using hair, feces, or Kinesiological means.

To determine what is being eliminated from the body’s organs and tissues we can do a challenge test where we use a chelating agent that has the ability to “push-out” the metals into the blood where they can be collected in the urine – the post-sample. If indeed our chelating agent is doing this, then we would get a percentage increase of metals in this
post-sample, compared to the pre-sample, taken before using the chelating agent. This is simply a brief of the complexities of biochemical testing and can help to determine whether a chelating agent is working or not.

Dr Georgio’s research has shown conclusively that HMD™ (Heavy Metal Detox product that he sells) is an effective chelating agent for eliminating many different metals, and possibly other xenobiotics. There are other well-known chelators (EDTA and DMSA) for detoxing chemicals that need to be used with caution. This is why I am strongly against nutritionists peddling detoxification kits to people – if not monitored properly, herbal detoxification agents and chelators can simply circulate toxins out of tissues into the blood to be deposited at another site. This makes the patient sicker than before they started! Proper testing and case management must be done. These tests are expensive for the patients and their interpretation requires the wisdom of an experienced practitioner. Should everyone get tested and go through the expense or is it better to just assume you have xenotoxins? Rule number one – NEVER guess! One can use the pre-post provocation testing described above, hair analysis and blood work described in chapter 2, or the help of a skilled Kinesiologist. Regardless, there are issues of sensitivity and downfalls of each testing procedure.

Personally, as a clinician we use both kinesiology and laboratory testing; I prefer to be doubly certain when ever possible. One could argue that EVERYONE is toxic, so it really is a decision between getting the patient to run expensive tests only to conclude that they are toxic and require chelation anyway, but I think it is CRUCIAL to know EXACTLY what toxin you are dealing with. This is NOT something to play around with and honestly, I had reservations in writing this book because of this fact alone – there are those who will experiment themselves in treating their own autoimmune case just to save a few bucks! Well hear me – I do NOT advocate this practice and this book, as well as my seminars, are NOT to educate the patient so they can treat themselves. I desire to bring knowledge into a field darkened by
ignorance so people are empowered to seek help in the right direction. If you try to treat your own autoimmune disorder without the skilled guidance of a trusted practitioner, then I wash my hands of you case. I know this sounds mean but I have just seen too many horror stories in 25 years of practice.

Is Everyone Toxic?

In September 2005, Greenpeace International with the World Wildlife Fund published a document entitled, “Present for Life: Hazardous Chemicals in Umbilical Cord Blood.” The research was a real eye-opener as it showed convincingly that newborns tested for hundreds of different toxins showed high levels of numerous toxins. Specifically, the blood tests showed that these newborns had an average of 287 toxins in their bodies, 180 of these are known carcinogens.
This study was conducted in America where the level of toxicity is arguably getting higher every year. A similar study conducted on pregnant women living in the North Pole which most people feel is a clean part of the earth. The research was published in The Science of the Total Environment that showed high concentrations of heavy metals, such as mercury, and organochlorines in the blood and fatty tissue of the Inuit Indians. This is attributed in part to their high consumption of the meat and blubber of marine mammals. In this study, 180 pregnant women and 178 newborn babies were studied, amounting to 36% of the total number of births in the Disko Bay area during 1994-1996.

Pesticides were found in the high concentrations in maternal blood, as were concentrations of organochlorines, mercury and selenium. Concentrations of mercury and cadmium increased with the consumption of marine mammals, and cadmium was associated with smoking. The contaminants are potentially toxic for several organ systems but the high concentrations of pollutants have so far not been shown to influence health as far as pathology is concerned. This means that no one’s death has yet been attributed to the higher level of toxicity in our overall environment. The problem is in WHAT the toxicity does to us; it becomes an antigen that kills us slowly by diseases we call Diabetes, Heart Disease and Cancer. Similar studies have also shown that wildlife is also being killed due to high levels of toxic chemicals in their environment. One study showed that several arctic mammal and bird species that indicate chemical exposures are likely adversely affecting the health of these species. Some of the effects seen are potentially quite serious (e.g. immune suppression, hormone disturbances, altered behavior).

A further study published in the journal Environmental Research has shown that there is a correlation between the levels of methylmercury in the pregnant and lactating mother’s blood and urine and that of her newborn child. It is clear that toxins from the mother can pass through the placenta and the baby. Another study published in 2001 in Neuro
Toxicology showed that the level of mercury in baby’s hair was quite high and argues that this is probably a consequence of vaccinations that contain mercury.

There is a lot of research indicating the health effects of high mercury levels on children, including the relationship of these chemical toxins to the levels of mercury found in adults due to amalgam fillings and there is further conclusive evidence that “we are all toxic.”

We can all search the internet for ample proof of environmental toxicities that have invaded our food supplies and our bodies, but just because a person may have a toxic substance in their body does not necessarily mean they should attempt to detoxify it. Sometimes it may be best to ‘let a sleeping dog lie.’ It is when the toxin is recognized by the body that issues arise. This is how a heavy metal, that was present in
a person’s brain since 2 years of age, suddenly causes depression and panic attacks at 40 years old. The metal may not have been recognized by the body and never elicited an immune response until something seemingly unrelated caused the body to fire an immune response against the metal that has now become an antigen. This inflammatory, autoimmune attack must now be addressed!

Toxicologists studying chemical toxicity usually have a reference range of values which indicate the “safe levels” of these chemicals. New research is showing, however, that even low-dose exposure is accumulative over time and can lead to children having decreased performance in areas of motor function and memory. Similarly, disruption of attention, fine motor function and verbal memory was also found in adults on exposure to low mercury levels.

Mercury has been found to be a causative agent of various sorts of disorders, including neurological, nephrological (kidneys), immunological, cardiac, motor, reproductive and even genetic. Recently heavy metal mediated toxicity has been linked to diseases like Alzheimer’s, Parkinson’s, Autism, Lupus, ALS, etc.

Mercury Fillings

Mercury used in amalgam tooth fillings is a big issue of contention. Amalgam was found to be a cheap and long lasting substance to fill teeth with, but the danger of mercury poison was overlooked or ignored. The use of amalgams is now prohibited in many – though not all – countries. Dr. Engel, a holistic dentist, has written an interesting paper on the “Health Observations Before and After Amalgam Removal” The International Academy of Oral Medicine and Toxicology has produced a very interesting video describing the amount of mercury that is released from amalgam fillings, even though they may be over 30 years old. Chewing gum, drinking hot drinks and brushing teeth can increase the amount of methyl mercury released from amalgam fillings. If you ever
have doubt about how lethal mercury is for the nervous system, and particularly the brain, you have to see the video produced by the University of Calgary, Faculty of Medicine, Department of Physiology and Biophysics – it clearly shows how mercury completely degenerates neural fibers in a Petri dish in zero time – it’s a fascinating video to watch!

Vaccinations

The drugs used in vaccines and inoculations have for many years used mercury and aluminum as preservatives. There is an interesting article published in Medical hypotheses entitled, “Autism: A Novel Form of Mercury Poisoning” showing how exposure to mercury can cause immune, sensory, neurological, motor, and behavioral dysfunctions similar to traits defining or associated with autism. Although Thimerosal (the mercury preservative) has been phased out of many vaccinations,
the effect – because it is cumulative and stays in the body – is with almost all adults today. The problem is that the heavy metals are not the only toxin in the vaccination. Service personnel who are subjected to many different injections for their tours of duty are particularly at risk from toxic poisoning.

The point is that toxicity is ubiquitous; we can run, but we cannot hide. Treatment MUST be based on identifying the specific antigen, getting it out of the body, calming the immune dysregulation, and balancing the other dysfunctional systems. There is no easy way around it and it should NOT be attempted without a skilled practitioner to help guide the way.

Dr. Boyd Haley
Toxicologist
Retired Professor of Chemistry, University of Kentucky

“A single vaccine given to a six-pound newborn is the equivalent of giving a 180-pound adult 30 vaccinations on the same day.”

Diets we use as handouts:
Eating God’s Way

This is a general diet I use in our office. It is a good Diet for everyone!

NO Pork, scale-less fish, shellfish, shrimp, lobster or ‘bottom-feeders’. Read Lev. 11

Meat (grass-fed organic)
- meat bone soup or stock
- liver and heart (must be organic)
- lamb, buffalo, elk, venison, beef, goat, veal
- jerky (with no chemicals, nitrates, or nitrites)
- beef or buffalo sausage (with no pork casing)
- beef or buffalo hot dogs (with no pork casing)

Fish (wild-caught ONLY, and the fish must be fish with fins and scales. Eg: No catfish)
- fish soup or stock, salmon, halibut, tuna, cod, scrod, grouper, haddock, mahi-mahi, pompano, Wahoo
- trout, orange roughy, sea bass, snapper, sardines (canned in water or olive oil only), herring, sole, whitefish

Poultry (pastured, free-range and organic)
- poultry bone soup or stock, chicken, Cornish game hen, guinea fowl, turkey, duck
- chicken or turkey bacon or sausage (with no pork casing)

Lunch Meat (organic, free range, and hormone free ONLY)
- turkey, chicken, roast beef

Eggs (high omega-3/DHA or organic is best)
- chicken eggs (whole with yolk) UNLESS Egg intolerant

Dairy (organic and UN-Pasteurized (RAW) ONLY – NON if Dairy Intolerant!!)
- Really NO Dairy for everyone is BEST!!!!!!!!!!!!
- homemade kefir made from raw goat’s milk or raw cow’s milk
- raw goat’s milk hard cheeses, raw cow’s milk hard cheeses
- goat’s milk plain whole yogurt, organic cow’s milk yogurt or kefir
- raw cream, raw butter

**Fats and Oils (organic is best)**
- Oil: coconut oil, extra virgin (best for cooking) olive oil,
- Spread: Ghee butter; RAW butter
- avocado, coconut milk/cream (canned), oil,

> “You shall walk after the Lord your God and [reverently] fear Him, and keep His commandments and obey His voice, and you shall serve Him and cling to Him.” Dt 13:4

**Vegetables (organic fresh or frozen is best)**
- ALL veggies – especially lower carb, organic (broccoli, artichokes, asparagus, beets, cauliflower)
- Brussels sprouts, cTh1ge, squash (winter or summer), carrots, celery, cucumbers, eggplant, pumpkins
- Garlic, onions, leafy greens (kale, collard, broccoli, mustard greens)
- salad greens (radicchio, escarole, endive), okra, lettuce (leafs of all kinds), spinach, mushrooms, peas
- peppers, string beans, tomatoes, sprouts (broccoli, sunflower, pea shoots, radish, etc.)
- sweet potatoes, sea vegetables (kelp, dulse, nori, kombu, and hijiki),
- STRICTLY LIMIT white potatoes and corn

**Fruits (organic fresh or frozen is best)**
- Stone fruits are BEST – fruits with a pit
- Blueberries, strawberries, blackberries, raspberries, lemons, limes, apples, apricots, grapes, melons
- Peaches, oranges, grapefruit, pears, plums, kiwis, pineapples, bananas, mangos, papayas
- dried fruits (no sugar or sulfites), raisins, figs, dates, prunes

Grains and Starchy Carbohydrates (organic is best, and whole grains and flours are best if soaked for six to twelve hours before cooking)

***Brain-Based Therapy patients MUST stay off Gluten!!!

- Gluten-FREE oats, rice, millet
- Pamela’s Mix brand flour for baking, waffles, pancakes
- UDI bread is a good gluten free brand that makes bread and muffins

Sweeteners
- Unheated raw honey; honey; date sugar; stevia; pure maple syrup; NO ARTIFICIAL SWEETNERS!!!!!!

Beans and Legumes (best if soaked for twelve hours)
- miso, lentils, tempeh, natto, black beans, kidney beans, navy beans, white beans, pinto beans, red beans
- split peas, garbanzo beans, lima beans, broad beans, black-eyed peas

Nuts and Seeds (organic, raw, and/or soaked is best)
- RAW almonds, pumpkin seeds, hemp seeds, flaxseeds, sunflower seeds, almond butter, tahini,
- hemp or pumpkin seed butter, sunflower butter, walnuts, macadamia nuts, pecans, hazelnuts, Brazil nuts

Condiments, Spices, and Seasonings (organic is best – MUST BE GLUTEN FREE)
- salsa (fresh or canned), tomato sauce (no added sugar), guacamole (fresh), soy sauce (wheat free, tamari)
- apple cider vinegar, raw salad dressings and marinades, herbs and spices (no added stabilizers)
- Herbamare seasoning, Celtic Sea Salt, sea salt, mustard, ketchup (no sugar), salad dressings (no canola oil)
- marinades (no canola oil), omega-3 mayonnaise, natural extracts such as vanilla or almond

Snacks (organic is best – MUST BE GLUTEN FREE)
- healthy food bars (Designs for Health), Organic milk protein powder, Gluten-free crackers, raw food snacks
- healthy macaroons, healthy trail mix, organic cocoa powder, organic chocolate spreads, carob powder

**Beverages**

- Reverse osmosis purified water; unsweetened or honey-sweetened herbal teas
- raw vegetable or fruit juices, lacto-fermented beverages, coconut water

*Limit Carbohydrates to less than 75 grams/day or less than 50 grams per day if Glucose over 100*

*Detox Diets I recommend may severely limit some of the above for a period of time*

*Consider Coffee Enemas to flush out the intestinal tract and cleanse the body (NO if you are TH2 Dom)*

*Add ONLY supplements that Dr. Conners has instructed – never buy things from store!*

*Study and meditate on Scripture daily, focus on what is good, holy and righteous; keep away from the negative, bad thoughts and disease-oriented thinking. Focus on the PROCESS not the outcome.*

1. You HAVE to eat breakfast and it MUST be a protein!
2. Become a grazer – eat multiple small meals throughout the day
3. Keep Carbohydrates to a minimum
Dr. Conners’ Metabolic Syndrome Diet

-this is really a good diet for everyone!

Def: Metabolic Syndrome or Syndrome X is a condition where a patient has fasting glucose levels between 100 or above. I like to see fasting blood glucose levels between 85-90, anything creeping up past 90 prompts a person to follow this diet:

**Note – if this is a chronic condition, you MUST be checked for Autoimmune, pre-diabetes which changes this diet significantly!

Morning: With Metabolic Syndrome you MUST eat breakfast!!! It needs to be a high protein, low carbohydrate breakfast. You’ve just gone a long time since you ate last and your adrenal gland is going to ‘kick-in’ to get you going. It is very common for Metabolic Syndrome patients to get poor sleep or wake up at 3am and not be able to get back to sleep. This is due to an over-firing midbrain and adrenal gland. You need to calm down your system by eating a low carbohydrate, high protein and fat breakfast. Usually these patients have little or no appetite in the morning (they are flying off of adrenal hormones). No appetite and even nausea are symptoms of adrenal fatigue, the worst thing you can do is eat sugar and drink coffee! Force yourself to eat protein and fat.

Snacks: Eat small amounts of proteins frequently. It is best if you have some protein at each meal. It need not be a large amount at any one time. In fact, it is best if you stick to smaller amounts (< 2–4 ounces of meat, fish, foul, or eggs at a time). Both animal and vegetarian sources of protein are beneficial. Choose a variety of meat products and try to find the healthiest options available; i.e., free range, antibiotic free, and/or organic, whenever possible. Eggs for most people are an
excellent source of protein. Eat the whole egg, the lecithin in the yolk is essential to lower blood fat and improve liver and brain function. With any protein, the way in which you prepare it is critical. (The closer to raw or rare the better as long as you have proper HCl production in your stomach – get it evaluated!). Remember, any time meats and vegetables are heated over 110° Fahrenheit; crucial enzymes are damaged and lost. Avoid frying. Grilled, boiled, steamed, soft boiled, or poached are best methods for preparing foods.

**Vegetables:** Eat more, more, more. This is the one area where most everyone can improve his/her diet, and it is an especially important area for you. Always look for a variety, although make the green leafy types your preference. This includes spinach, chard, beet greens, kale, broccoli, mustard greens, etc.

As stated above for proteins, the quality of your produce (fresh and organic preferred) and the method of preparation is critical. Raw is preferred with lightly steamed or sautéed as your second choice for all vegetables. Use only butter or olive oil to sauté. When eating salads try not to eat iceberg lettuce. Rather, use lettuces with a rich green color, sprouts and raw nuts. Don’t make salads your only choice for vegetables.

**Fruits:** Most people wrongly try to drink their fruits. Fruit juice is loaded with the simple sugar fructose, which is shunted into forming triglycerides and ultimately stored as fat. Without the fiber in the fruit, juice sends a rapid burst of fructose into the blood stream. When you do eat fruit, only eat one type of fruit at a time on an empty stomach; second, avoid the sweetest fruits/tropical fruits, except papaya which is very rich in digestive enzymes (fruits from colder climates are preferred); and third, eat only the highest quality, fresh and organic when possible. With Metabolic Syndrome, stone fruits are best!
Carbohydrates: This is a very tricky area. Most people have one classification for carbohydrates when in reality there are really three different types — complex, simple, and processed. Unfortunately, for most patients suffering with Metabolic Syndrome, almost any carbohydrate is a no-no. It is a physiological fact that the more carbohydrates you eat the more you will want. Craving carbohydrates is a symptom of an imbalance, so you can use this craving to monitor your progress. Overall, eat vegetables as your carbohydrate choice and limit grains (even the whole grains can be trouble). When you do eat whole grains, take them in moderation (rice is best). If you start the day with carbohydrates, you are more likely to crave them throughout the day, and then you’ll eat more and it’s downhill from there. Absolutely stay away from gluten breads, muffins, cookies, candies, crackers, pastas, white rice and most baked goods.

If your 12 hour fasting glucose levels are above 110, I recommend that you start COUNTING your CARBS! You should not go over 50 grams of carbs per day; that’s pretty stiff so you better think of it like a bank account that you cannot go over! If you simply refuse to watch this little detail, you have Diabetes to look forward to, along with heart disease and kidney failure – good luck with that! Sorry to sound so nasty, but only YOU can make this decision.

There’s another dark side to processed carbohydrates that isn’t talked about much — the connection to weight gain, elevated cholesterol and triglycerides, heart disease, and cancer. You don’t even need to know the details to get the idea how much trouble carbohydrates can be.

Grains: There has been a tremendous amount of debate regarding grains. Whole unprocessed grains can be rich sources of vitamins and minerals, but with soil depletion and the special strains of grain that modern agriculture has developed, it isn’t clear what nutrients remain. The two predominantly used grains in this country are genetically engineered and have five times the gluten content and only 1/3 of the
protein content of the original wheat from which they were derived. This high gluten content is to blame for many patients’ allergic reactions. When scholars have studied disease patterns and the decline of various civilizations, many of the degenerative diseases developed when cultivation of grains became a major part of their diet. Chemicals naturally found in certain grains, lack of the appropriate enzymes, and the carbohydrate content of grains make them a source of trouble for many individuals. My opinion at this time is to **ELIMINATE ALL grains such as wheat, rye and barley** even if you are not gluten sensitive. Unprocessed, **gluten-free** oats and brown rice can be considered on occasion to give you more variety.

**Sweeteners:** Use only a small amount of pure maple syrup, raw Tupelo honey or Stevia as sweeteners. Absolutely NO Nutri-Sweet®, other brand names of artificial sweetners and high fructose corn syrup; limit corn syrup and table sugar. If you cheat, be smart and use only small amounts with a meal with added fiber but NEVER cheat with sugar substitutes!

**Fats:** Fats don’t make you fat \( \Rightarrow \) they save your life! The bad news is you probably do not get enough of the right fats in your diet. So, please use olive oil (cold pressed, extra virgin), walnut oil, coconut oil and grape seed oils. These are all actually beneficial, as long as they are cold-pressed. When cooking, use only raw butter, coconut oil, and olive oil — they are the only three oils safe to cook with. Avoid all hydrogenated and partially hydrogenated fats. They are poisons to your system. **Never eat margarine again.** Also, avoid peanut butter (use different nut butters). Eat all the avocados and raw nuts you desire.

If you think eating fat will make you fat, think again. When you eat fat, a chemical signal is sent to your brain to slow down the movement of food out of your stomach. As a result, you feel full. It is not surprising that recent research is showing that those who eat “fat-free” products tend to actually consume more calories than those who eat foods that
have not had their fat content reduced (low fat usually means high sugar/high calories). In addition, fats are used not only for energy, but also for building the membrane around every single cell in your body. Fats also play a role in the formation of hormones, which of course make you feel and function well. It is far worse to be hormone-depleted from a low fat diet than it is to overeat fat. The sickest patients we see are the ones who have been on a fat-free diet for a long period of time. Like carbohydrates, choose your fats wisely — this program is not suggesting fried or processed foods.

**Milk Products:** Forget *pasteurized* cow milk products (milk, certain cheeses, sour cream, half & half, ice cream, cottage cheese and yogurt). If you only knew all the potential problems from pasteurized milk, you’d swear it off forever. Milk is actually more detrimental than sugar for many people (man is the only mammal that continues to drink milk after weaning). Avoiding dairy products will make it much easier for you to attain your optimal level of health and hormonal balance. *Raw butter and Kefir* (liquid yogurt), however, are excellent sources of essential nutrients and vitamins. Raw milk cheese, goat and sheep cheeses and milk products are great alternatives because their genetic code and fat content appear to be more like those of humans.

There has been a lot of hype about using soy milk and rice milk to replace dairy products. They sound like healthy alternatives, but in reality, they are highly processed foods that are primarily simple carbohydrates. You’re better off doing without these as well, especially the soy – it is horrible for women especially. Use hemp milk or almond milk, they are more complete proteins.

**Liquids:** Water is best, about a half to one gallon a day, and herbal tea. Avoid all soda. No coffees until you are fully recovered. Fruit juices are forbidden because of their high fructose content and dumping of sugar into the blood stream. An occasional small glass of vegetable juice with a meal is probably okay, but water really is best.
If you enjoy wine or beer and still insist, there are some guidelines. First, drink only with meals. Red wine has less sugar and more of the beneficial polyphenols than white wines. Most of the good foreign beer is actually brewed and contains far more nutrients than the pasteurized chemicals called beer made by the large commercial breweries in the United States. Trader Joe’s usually has a good selection. Less is better. Because coffee and alcohol force you to lose water, you’ll have to drink more water to compensate.

The most important life-giving substance in the body is water. The daily routine of the body depends on a turnover of about 40,000 glasses of water per day. In the process, your body loses a minimum of six glasses per day, even if you don’t do anything. With movement, exercise, and sugar intake, etc., you can require up to over 15 glasses of water per day. Consider this: the concentration of water in your brain has been estimated to be 85% and the water content of your tissues like your liver, kidney, muscle, heart, intestines, etc. is 75%. The concentration of water outside of the cells is about 94%. That means that water wants to move from the outside of the cell (diluted) into the cell (more concentrated) to balance things. The urge water has to move is called hydroelectric power. That’s the same electrical power generated at hydroelectric dams (like Hoover Dam). The energy make-up in your body is in part hydroelectric. I just know you wouldn’t mind a little boost in energy.

**Eat Smaller Amounts More Frequently ...become a ‘grazer’**

Eating a smaller amount reduces the stress of digestion on your energy supply. Eating small meals conserves energy. Give your energy generator a chance to keep up with digestion by not overwhelming it with a large meal. (The average meal time in the United States is 15 minutes. In Europe, the average meal time is 1 to 1½ hours. Little
wonder Americans suffer such a high rate of digestive disorders.) When
digestion is impaired, yeast overgrowth, gas, inflammation, food
reactions, etc., are the results.

Another reason for eating smaller meals is to prevent the ups and downs
of your blood sugar level, so you end up craving less sugar. As
mentioned earlier, you can overwhelm your digestive capacity. You can
also overwhelm your body’s ability to handle sugar in the blood. Since
the body will not (or should not) allow the blood sugar level to get too
high, insulin and other hormones are secreted to lower the blood sugar.
Often times, the insulin response is too strong and, within a short period
of time, insulin has driven the blood sugar level down. As a result of
low blood sugar, you get a powerful craving for sugar or other
carbohydrates. You then usually overeat, and the cycle of ups and
downs continues, resulting in yo-yo blood sugar results (depression and
the lack of energy are all part of this cycle). Eating a small meal again
will virtually stop this cycle.

Eating smaller meals also has advantages for your immune response to
ingested food. It turns out that a small amount of food enters the blood
without first going through the normal digestive pathway through the
liver. As a result, this food is seen by the body not as nourishment, but
as a threat and you will stimulate an immune reaction. Normally, a
small immune reaction is not even noticed, but if a large amount of food
is eaten (or if a food is eaten over and over again) the immune reaction
can cause symptoms. Over time, disease develops.

By eating smaller amounts, the size of the reaction that occurs is small
and inconsequential. A large meal, and thus a large assault of the
immune system, could cause many symptoms of an activated immune
system including fatigue, joint aches, flu-like symptoms, headaches,
etc... This reaction was called the Metabolic Rejectivity Syndrome by
the late nutritional pioneer Arthur L. Kaslow, M.D. Through thousands
of his patients’ food diaries, he compiled a list of high risk foods that is
much the same as Dr. Page’s.
Important Note:

Each of your meals must include some protein. The easiest sources are meat, fish, poultry, or eggs. (Count two eggs as equal to 3 oz). Vegetarians must combine proteins carefully and consistently using a different calculation. An easy way to calculate the amount of protein you need is to divide your ideal body weight by 15 to get the number of ounces of protein to be consumed per day. This is not a “high protein diet.” Like many people, you already eat this much protein during a day, but you eat it mostly in one or two meals instead of spreading it out evenly over three to five meals. If you are more physically active, eat more protein. The following chart shows how much protein you will be allowed if you eat from three to five meals a day:

- 90 lb. IBW = 6 ounces a day or 1 ¾ - 2 ounces of protein per serving
- 105 lb. IBW = 7 ounces a day or 1 ¾ - 2 ¼ ounces of protein per serving
- 120 lb. IBW = 8 ounces a day or 2 - 2 ¼ ounces of protein per serving
- 135 lb. IBW = 9 ounces a day or 2 ½ - 3 ounces of protein per serving
- 150 lb. IBW = 10 ounces a day or 3 - 3 ¼ ounces of protein per serving
- 165 lb. IBW = 11 ounces a day or 3 ¼ - 3 ¾ ounces of protein per serving
- 180 lb. IBW = 12 ounces a day or 3 ¾ - 4 ounces of protein per serving
- 195 lb. IBW = 13 ounces a day or 4 - 4 ¼ ounces of protein per serving
YEAST PROTOCOL to decrease Candida

This protocol is used for patients struggling with Candida Albicans overgrowth.

Yeast overgrowth (Candida Albicans) is potentially a serious issue. Much has been written (Yeast Connection) that touts Candida as the culprit behind many ills. This may or may not be true. However, Candida is an opportunistic organism that grows rapidly if given the perfect condition and may be the cause of many problems.

Some reasons one gets Candida overgrowth:

1. Use of antibiotics – antibiotics kill off all the antagonists for Candida and allow the yeast to grow like crazy. Greatest defense – attempt at all costs to NOT take antibiotics. If needed, take an Acidophilus/Bifidus supplement along with it.
2. Other medications and surgeries

Ways to re-florize the gut (get the good, needed nutrients back):

1. Take Acidophilus orally through tablets, powder, capsules. (1-3/day)
2. Take Acidophilus mixed in an organic, raw yogurt – open a capsule and mix into yogurt, leave to sit on counter 30-45 minutes, eat/drink, swishing around in mouth so some can be absorbed through bucal mucosa (skin of cheeks). (1-3/day)
3. Women can mix Acidophilus with plain yogurt, water down and douche with it. This same liquid/mixture recipe can be used in an enema for both men and women.

***The idea is to get this Acidophilus into as many orifices as possible so your body may absorb as much as possible.
Your Body can’t live without Glutathione

All autoimmune patients need increased glutathione. The problem is that oral consumption doesn’t absorb well. We use nebulized glutathione in our office and have patients use a glutathione cream from Apex Energetics called Oxicell that absorbs directly through the skin and into the bloodstream.

You can now have a naturally occurring substance that acts as a powerful antioxidant, immune system balancer, and a detoxifier. Glutathione can help your body repair damage caused by stress, pollution, radiation, infection, drugs, poor diet, aging, injury, trauma and burns.

What is Glutathione? Also called GSH, Glutathione is the most powerful, prevalent antioxidant in your body. The most well known antioxidants are vitamins C and E. Glutathione is a tripeptide molecule composed of the amino acids glutamic acid, cysteine and glycine, which exists in almost every cell of your body. Our glutathione level actually indicates our state of health and can predict longevity. Scientific evidence has found that glutathione is needed by our body to enhance the immune system response. There are more than 60,000 published papers on the beneficial effects of glutathione replacement; unfortunately, it is still largely ignored by mainstream medicine. Normal glutathione levels are important for good health because they neutralize free radicals, which can build up in cells and cause damage.

The Bad News… Your body’s cellular supply of glutathione begins to decline 10% to 15% per decade beginning with the age of 20. If you are over age 20, you have a glutathione shortage! Lower levels of glutathione can result in chronic illness such as; lowered energy or fatigue, a weakened immune system, cellular damage, accelerated aging,
and higher cellular inflammation, which results in increased muscle and joint aches and pains. Free radicals constantly are attacking our cells, which is why antioxidants are so vital to protecting our health. Glutathione has been called the World’s Most Powerful Antioxidant, and is found in every cell in the body, but, most people need some help.

The Good News! Research shows that increasing your Glutathione levels has the following benefits:

- **Increase Your Energy**
- **Slow Down the Aging Process**
- **Detoxify Your Body, Improve Liver Function**
- **Reduce the Risk of Cancer**
- **Strengthen Your Immune System**
- **Improve Mental Function, Clarity**
- **Fight Inflammation on Organs and Muscles**
- **Improve Heart / Lung Function**

Uncontrolled inflammation is a root cause of most major health issues ranging from heart conditions to joint and muscular conditions. Abundant glutathione levels will off-set the effects of this inflammation at the cellular level. Because glutathione is in every cell, it can regulate inflammation throughout the body.

Your Brain CRAVES FAT

Did you know that your brain is about 60 percent fat? The fats you eat strongly influence your level of brain function. Some nutritional anthropologists believe the human brain would not have developed as it did without access to high levels of DHA (a type of fat) found in fish and wild game. Just two generations of high omega-6 and low omega-3 fats can lead to profound changes in brain size and function.

Back in the 1930's, a dentist named Dr. Weston Price traveled throughout the South Pacific, examining traditional diets and their effect...
on dental and overall health. He found that **those eating diets high in coconut products were healthy and trim**, despite the high fat concentration in their diet.

Similarly, in 1981, researchers studied populations of two Polynesian atolls. Coconut was the chief source of caloric energy in both groups. The results, published in the *American Journal of Clinical Nutrition*, demonstrated that both populations exhibited positive vascular health. There was no evidence that the high saturated fat intake had a harmful effect in these populations.

1. Use Butter (Raw is best) or Coconut oil (solid at room temp) as a spread. You obviously cannot use butter if you have a dairy allergy or are autoimmune to casein.
2. Use Coconut oil to fry with and Olive oil to cook and bake with
3. Take 2 tsp Coconut oil per day orally
4. Take Omega-3 capsules every day

**Coconut Oil -- Your Smart Alternative to Those Other Oils**

Coconut oil is finally beginning to get the respect it deserves as a smart alternative to other oils. The many benefits of GOOD FATS are finally reaching the mainstream:

- **Promoting your heart health** – YES, good fats are good for your heart
- Promoting weight loss when and if you need it – good fat makes you full
- **Supporting your immune system health** – Th1 and Th2 response
- Supporting a healthy metabolism – which helps regulate weight issues
- **Providing you with an immediate energy source**
- Helping to keep your skin healthy and youthful looking – you can rub Coconut oil on your skin as well!
• Supporting the proper functioning of your thyroid gland AND Hormones
• Good fats HEAL your brain and your cell membranes

Fixing the Barriers

As stated in the previous chapters, a break in the barriers is what causes problems. Think of your skin; it is a barrier against infection that protects your body from the outside world. Should you cut your arm, a local immune response ensues to kill any possible infective pathogens from damaging the tissue, collagen fibers gather to heal the wound, growth factors (IGF-1) are released to stimulate rapid recovery until the barrier is rebuilt. This is exactly what happens in your gut barrier and your blood-brain barrier (also in your alveoli of your lung but we won’t talk about that now).

If you decided to repeated slash your arm, the barrier is continually breached and pathogens will definitely enter the bloodstream. So it is with the rest of the barriers. Continual damage equals enemy entrance regardless of the gallant efforts of the king’s guards attempting to protect the castle.

Healing the gut barrier should be the first intent of the practitioner. 2000 years ago Hippocrates said it well, "bad digestion is the root of all evil." More recently, Nobel laureate Elie Metchnikoff said: "Death begins in the colon." As I stated in the above chapters, every doctor must first check patients for hypochlorhydria (decreased HCl production) and supplement with HCl and digestive enzymes.

Compromise in the integrity of the gut barrier causes increase intestinal permeability, or Leaky Gut Syndrome (LGS), causing the tight junctions of the intestinal mucosa to become compromised. The space between the cells become widened and permeable so that large, undigested
compounds, toxins and bacteria can pass through the intestinal mucosa and into the circulatory system.

The foreign compounds and organisms then react with the immune system which sees them as antigens (enemy invaders) that need to be broken down and destroyed. These antigens challenge the immune system and trigger the production of antibodies to neutralize the antigens which then begins a cycle of inflammation and self-cell damage.

The immune responses, resulting in the production of pro-inflammatory cytokines, are attempting to kill the foreign invaders and this is where we really have problems as many of the foreign invaders (antigens) are NOT living. What if protein particles (peptides) of food (like gluten) are the invaders that pass through the damaged gut wall?

Huge amounts of pro-inflammatory cytokines can flood the system to kill something that CANNOT BE KILLED leading to accelerated destruction of the GI tract cells themselves, other organs and tissues of the body, and (it gets worse), your Th2 response starts making
antibodies against your OWN tissue. This is then, by definition, an autoimmune disease!

We spoke about what happens to the immune response when we get gut border damage, but what causes the damage? Below is a list of some of the things that can initially set this vicious cycle in motion and depending on the cause in your case, will dictate the treatment. By this I mean that if casein is a cause of inflammation, you must remove casein for the diet as well as taking the appropriate steps that I outline below if you are going to have success. I can’t tell you how many patients have tried to circumvent this obvious fact because they refuse to change their...
diet. It’s a bit like trying to rebuild the dike in the middle of Katrina –
good luck with that.

- Gluten: In genetically pre-disposed people, a single dose of gluten,
a dietary protein found in wheat, rye, spelt, barley, and malt can
cause increased intestinal permeability.
- Casein: It is a protein found in large quantities in cow’s milk.
- Fast Foods: Chemicals in processed foods are extremely irritating.
- Alcohol: Promotes intestinal bacterial growth and permeability.
- Antibiotics: Dramatically upset the intestinal environment.
- Cortico-Steroids: Decrease systemic immune reactions and cause
all sorts of problems
- Antacids: They upset acid levels in the stomach necessary for good
digestion.
- H Pylori: This extremely common bacteria is the major cause of
gastric and duodenal ulcers, cancer, heart disease, and all
endothelial damage.
- Intestinal Dysbiosis: This is a condition where microbial
imbalances develop in the gut. In small amounts, microbial
colonies found in the gut are usually benign or beneficial. When
the balance is disturbed due to factors like antibiotic exposure or
alcohol misuse, an overgrowth of one or more of the disturbed
colonies can develop into a chronic and pervasive imbalance
allowing pathogenic microbes to take control.
- Intestinal viruses, mold, Lyme, parasites, and other pathogens.
- Stress: Even normal life stress can predispose us to gut
inflammation.
- Blood Sugar Imbalances: They can alter our stress response and
trigger multiple pathways leading to leaky gut. Everyone should be
tested for dysglycemia. Fasting (morning) blood sugars over 90 can lead to gut problems.

- Sleep disturbances: When we have a normal night sleep, our brain secretes IGF-1, a growth hormone that stimulate a Th1 response in the gut to kill off pathogens that may be present from the day. Poor sleep equals poor gut. We see this commonly with those on swing shift work schedules. This is also part of a common vicious cycle with cortisol, the hippocampus and glucose creation in the liver which we’ll discuss when we talk about testing.

- Hormone Imbalances: They have a major influence on GI Function.
  - The thyroid hormones T4 and T3 have been shown to protect the intestinal mucosal lining from injury.
  - Low levels of T4 and T3 can cause decreased stimulation of gastric and intestinal cells leading to ulcers (from H. pylori infiltration not being killed by the HCl), intestinal permeability, decreased secretion of pancreatic enzymes, impair gall bladder function and decreased bowel motility.
  - Decreased HCL can allow parasites and bacteria to pass through the stomach into the intestines since proper pH of the stomach is the first line of defense against pathogens.
  - Proper levels of Estradiol decrease colonic permeability.
  - Progesterone protects the intestinal lining.
  - Lack of testosterone delays intestinal healing.

Increased cytokine and antibody production in turn, increases intestinal barrier permeability and a vicious cycle ensues due to an exaggerated immune response both within the gut and systemically. These very cytokines, circulating in the blood can then damage the blood-brain barrier even in the absence of circulating toxins!
Some Foods to avoid if you have Leaky Gut

- Remove all potentially irritating foods and potential allergens. Most common is gluten, casein (dairy), and soy but should you have a gluten sensitivity, it is common to have immune responses against gluten-like foods as well (chocolate, sesame, hemp, buckwheat, sorghum, millet, amaranth, quinoa, yeast, tapioca, oats, corn, rice, and potato)
- Processed Foods: including canned, boxed and bottled foods
- Sugars: including corn syrup, molasses, honey, chocolate, candy
- High Glycemic Fruits: like potatoes, watermelon, mango, pineapple and raisons
- All Grains: including wheat, oats, rice, soy, corn, wheat germ, quinoa (look up Paleo Diet)
Gluten Containing Compounds: such as processed salad dressing, ketchup, soy sauce, barbecue sauces, mayonnaise, condiments and modified food starch

- Cow’s milk products: including whey, cheeses, creams, yogurt
- Soy: including soy milk, soy sauce, soy protein, etc.
- Eggs
- Alcohol: including beer, wine, etc.
- Lectins: including nuts, beans, soy, potatoes, tomatoes, eggplant, peppers, peanut oil and soy oil

**Foods to eat that can Help Leaky Gut**

- Most Vegetables: except tomatoes, potatoes (sweet potatoes are okay) and mushrooms
- Fermented Foods: like sauerkraut, kimchi, pickled ginger, kombucha tea, homemade coconut yogurt and pickles
- Meats: including fish, chicken, beef, lamb, etc.
- Low Glycemic Fruits: including apricots, plums, apples, peaches, pears, cherries and berries
- Coconut: including fresh coconut, coconut oil, coconut milk
- Herbal teas, olives, olive oil

The following are some possible things to consider to treat gut pathogens. However, we strongly suggest that you consult your doctor before attempting any protocols in this book. Again, this book is meant to be a guide for your doctor to test and treat your condition. Finding out WHY you have a barrier problem is essential in our mind and must not be overlooked. If your doctor doesn’t know how to properly test may I
suggest that you find another doctor? Rarely a week goes by that we don’t have a doctor call our office asking to spend a week here to ‘pick our brains’. Personally, I just don’t have much left up there and this is one reason we put this book together and why we hole Clinicals in our office for practitioners. Have your doctor register under the “Doctors only” tab on our website for more in-depth information and details on implementing correction.

Yeast/Candida Intestinal Dysbiosis

- Undecylenic Acid
- Caprylic Acid
- Uva Ursi
- Cat's Claw
- Pau D'Arco

Parasites and other Pathogens

- Olive Leaf Extract
- Garlic Extract
- Wormwood
- Black Walnut
- Medicinal Mushrooms
- Nopal
- Rhubarb root
- Astragalus
- Echinacea
- Licorice root
H Pylori

- Golden Seal Root Extract
- Medicinal Mushrooms
- Oregano Oil Extract
- Barberry Extract
- Grapefruit Seed Extract
- Oregon Grape Root Extract
- Berberis Extract
- Coptis Chinensis Extract
- Yerba Mansa Extract

Intestinal Microbial Support

- Saccharomyces Boulardii
- Lactobacillus Sporogenes
- Lactobacilli Acidophilus
- Arabinogalactin

Restoration and Healthy Maintenance of the Intestinal Mucosa

- L-Glutamine
- Deglycyrrhizinated Licorice
- Aloe Leaf Extract
- Spanish Moss
Gluten Sensitivity

Gluten Sensitivity is a systemic autoimmune disease attacking everywhere the gliadin peptides (protein particles) can be found. Gluten, a long-chain protein found in many grains is a key factor in most GI and autoimmune conditions. It has been said that the majority of the US population have undiagnosed Gluten Sensitivity. We FIRMLY believe, even if you test negative for gluten sensitivity, that all patients with brain-based issues REMOVE ALL GLUTEN FROM THEIR DIET. It is just too inflammatory!
So, it is essential to learn what foods contain gluten. I’ll include a list below but I strongly suggest that you simply Google “gluten free diet” or “gluten free living” and you will get a plethora of information.

Gluten Containing Grains: Wheat, Spelt, Kamut, Oats (technically not a gluten, but usually gluten contaminated when not from gluten-free farms so you MUST eat only certified Gluten-free oats), Rye, and Barley.

Some Hidden Sources of Gluten: Soy Sauce, Food Starches, Food Emulsifiers, Artificial Food Colorings, Malt extract, flavor and syrup, Dextrins

Chronic Stress leads to a breakdown of immune tolerance.

Who should think about Gluten?
Anyone who is sick!
- Dr. Tom O'Bryan
Gluten Sensitivity Testing

For the most part, Gluten Sensitivity testing is insufficient and misses many cases of Gluten Sensitivity. Most lab testing, (whether it be blood, saliva or stool) measures only antibodies to Alpha-Gliadin (one specific component of wheat protein). However, wheat protein consists of other components, all of which have the capacity to challenge the immune system.

A new, state-of-the-art test from Cyrex Labs, measures immune reactions to 24 different components found in gluten-containing grains, including the de-aminated glutens found in processed wheat and wheat germ. Another Lab – EnteroLab measures genetic markers that are ‘turned-on’ with gluten sensitivity and can be helpful in diagnosing the entire family with one test.

If sensitivity to gluten or any of its components is discovered, total abstinence is necessary. The inflammatory responses to even a single portion of gluten, in a sensitive individual, can set forward a cascade of immunological reactions that can last upwards to eight months.

Once the gut barrier has been breached, enemies are circulating in the blood and can damage the next barrier – the vessel endothelial layer. The blood vessel’s barrier is a single-celled intimal layer that has thousands of different receptors that ‘turn-on” different functions and allow nutrients to pass.

Vascular injury can come from a near infinite number of sources. Chemical insult can come from Bio-toxins, Nutritional Toxins, and Metabolic Sterile Antigens (normal cellular waste). Bio-Mechanical insult can result from changes in hemodynamics (BP, Blood flow…). Any insult results in three possible outcomes: Local inflammation, Oxidative stress, or autoimmune dysfunction; all three of these are
actually correct, though exaggerated responses attempting to heal the vessel wall.

We believe that though the patient may not need to understand the mechanisms involved, the doctor should become familiar with endothelial dysfunction to better think-through strategic methods of repair. So I’m going to bore you with a lot of cellular biology for a few pages.

More for the Doctor

Local Inflammation – is increased in vessels and kidneys as demonstrated with lab values showing increased hsCRP (IL-1b, IL-6, TNFalpha), leucocytosis, increased Neutrophils, and increased Lymphocytes. Increased RAAS (renin-angiotensin-aldosterone system) reveals inflammation in the Kidneys commonly due to endothelial damage. It is helpful to measure these markers.

Oxidative Stress (ROS (Radical Oxygen Species) and RNS (Radical Nitrogen Species)) is increased in arteries and kidneys along with a decreased oxidative defense. Autoimmune dysfunction of the arteries and kidneys will reveal increased WBCs, involvement of CD4+ and CD8+, Th1/Th2 dominance as measured by cytokines and elevated CRP.

As stated, the intimal lining is a continuous parallel sheet of cells, an interface between the blood vessel and blood (lumen). It releases vasoactive substances that regulate all endothelial function, vascular smooth muscle (VSM), and affecting the circulating blood.

Its major function is to maintain appropriate vasomotor tone, especially in the coronary arteries and systemic resistance arteries. It is a living barrier maintaining vascular homeostasis allowing selective
permeability, acting as a monitor and transducer of blood-borne signals, is a source and target of physiological response modifiers, an integrator of local pathophysiological milieu, and offers dynamic regulation of hemostasis and thrombosis, vascular growth and remodeling, and inflammatory and immune reactions. So, please don’t tell me it’s not important in brain-based patients! For the sake of this discussion, we will keep content associated to the intima’s role in inflammation and autoimmune control.

Endothelial receptors are transmembrane proteins on the cell membrane that specifically or selectively bind to extracellular (intraluminal) ligands. Several types of receptors have been identified as frequent participants in signaling endothelial hyper-permeability, including receptor tyrosine kinases (RTKs), G-protein-coupled receptors (GPCRs), and integrin receptors. An example of RTKs would be the receptors of many growth factors, e.g., fibroblast growth factor (FGF) and VEGF. VEGF (vascular endothelial growth factor) is an angiogenic cytokine (increases growth of new vessels) that was initially identified as a potent endothelial permeability-increasing factor. VEGF-induced hyper-permeability is involved in tumor development, diabetic retinopathy, and ischemia/reperfusion injury. VEGF binds to tyrosine kinase receptor subtypes. Practically speaking, healing the BBB would involve down-regulating VEGF-RTKs.

Many permeability-increasing agents (e.g., histamine, thrombin, or bradykinin) signal through GPCRs. Each type of GPCR is coupled to a specific subtype of G-protein, which will initiate specific series of intracellular signaling events. Thrombin is a serine protease that cleaves fibrinogen into fibrin forming the base for blood clots during intrinsic or extrinsic (caused by injury) activation of coagulation. Thrombin also
induces endothelial hyperpermeability by binding to protease-activated receptors (PARs) on the endothelial cell surface.

Bradykinin is produced during inflammation or ischemia/reperfusion injury. Occupancy of the bradykinin B2 receptor on microvascular endothelial cells increases cytosolic Ca2+ via similar mechanisms to those of the histamine H1 receptor or PAR-1, and activates membrane-bound phospholipase A2 (PLA2) to produce arachidonic acid (AA). AA metabolism by lipoxygenase and cyclooxygenase (COX) produces leukotrienes, prostanglandins, and thromboxin A2. Most of these metabolites have been shown to cause endothelial dysfunction.

Peroxidative mechanisms have consistently been implicated in demyelinating diseases, and the application of antioxidants has been shown to offer clinical improvements. Though the majority of investigations into the role of these redox imbalances have focused on direct damage to the myelin (in MS and ALS patients) the initial oxidative stress is happening at the vascular level, then the astrocyte border, followed by direct attack on oligodendricytes. Increased BBB permeability does result from increased free radicals entering the CNS, so the subsequent administration of antioxidants can restore balance at all three levels.

Sources of oxidative stress need to be identified and addressed as the initial cause is usually distant from the BBB. An often overlooked source of oxidative stress is imbalanced hepatic detoxification, wherein Phase I detoxification exceeds the capacity of Phase II detoxification and a buildup of exudate follows. As a result, numerous free radicals are generated. Think of things like Alpha-lipoic acid (ALA), N-Acetyl L Cysteine, Cordyceps, Gotu Kola, Fish Oils (I suggest a balanced mix), Quercetin, Stinging Nettle, Rutin, Bromelain, and Curcumin.
Intracellular messenger cAMP improves endothelial barrier function and protects microvasculature from hyper-permeability. Nitric oxide (NO) is a short-lived free radical produced in response to phosphorylation and activation of nitric oxide synthase (NOS). Three isoforms of NOS have been implicated in inflammatory responses: endothelial (eNOS; NOS1), inducible (iNOS; NOS2), and neuronal (nNOS; NOS3). The role of NO in regulating endothelial barrier function is controversial. NO has opposing effects on endothelial permeability depending upon the endothelial tissue examined but is thought to have a role of vasodilation in both the heart and the brain.

Protein phosphorylation regulated by protein kinases and phosphatases is a major determinant of endothelial barrier function. However, kinase-dependent signaling can be exceptionally complex being that there are more than 500 protein kinases in the human genome.

Inflammatory eicosanoids, such as prostaglandin E2 (PGE2) derived from arachidonic acid, may be responsible for disrupting the BBB. Research shows a significantly higher production of PGE2 in patients with chronic progressive brain-based disorders. Lab lipid profiles of these patients reveal staggering deficiencies of omega-3 fatty acids, precursors of the less inflammatory PGE3. It makes one think that dietary changes in fatty acid intake to modulate prostaglandin production remain essential to integrative treatment protocols. Also, agents that block the actions of cyclooxygenase (COX) and 5-lipoxygenase can help prevent BBB disruptions. Nutritional considerations that block these enzymes include bromelain, pancreatic enzyme, curcumin, ginger, quercetin, and other bioflavonoids.

Matrix metalloproteinases are a family of 29 proteases that are dependent upon metal (zinc) ions for their proteolytic activity. Activated MMPs cleave components of the endothelial extracellular matrix during
normal remodeling and maintenance of the basement membrane and can cause microvascular barrier dysfunction under pathophysiological conditions like local infiltration of antigens or cytokines from a distant inflammatory process. Here is another example of cell barrier damage downstream from a primary immune stimulation event.

ADAMs (a disintegrin and metalloproteinases) are a family of 40 known genes, encoding at least 21 human functional proteins involved in tumor metastasis, angiogenesis, and inflammation. During inflammation, ADAM15 mediates endothelial hyper-permeability via a mechanism that does not require the proteolytic activity of its extracellular domain [435]. Rather, the cytosolic C-terminus initiates signaling through Src kinase and ERK1/2 to signal endothelial hyperpermeability. This signaling mechanism contributes to microvascular fluid leakage in the lungs of mice in response to systemic exposure to bacterial endotoxin (lipopolysaccharide), and is involved in pneumonia-induced lung injury in humans.

Matrix metalloproteinases (MMPs) are enzymes, secreted by immune cells, which can dissolve components of the extracellular matrix. For most parts of the body, these actions are useful in allowing white blood cells access to areas of injury or infection. However, release of these enzymes in CNS capillaries can result in BBB breakdown. Inhibition of these enzymes should be considered.

Flavonoids, well-known for their capillary-strengthening effects, can inhibit the activity of MMPs. Flavonoids, particularly proanthocyanidins and anthocyanins, are taken up into the cellular matrix. Receptor sites on the flavonoids bind metalloproteinase enzymes, thereby preventing their liquefying effect on the matrix. Bilberry anthocyanosides have been shown to restore damaged BBB permeability. Flavonoids are also highly anti-inflammatory and potent...
antioxidants, giving you another reason to eat your fruits and vegetables. Supplementation consideration should include bilberry (with 25% anthocyanin content, 80-160 mg. tid). Grape seed or pine bark extracts (150-300 mg/day) can be added for their proanthocyanidin content, Bugleweed, Calendula, and Green Tea extract.

Understand that etiological theories of brain disorders, let’s use MS as an example, concentrate on a systemic immune response damaging intra-CNS structures. Research has shown that the development of myelin-sensitized lymphocytes as a causative factor but if the patient had an intact BBB, this would be irrelevant, because normally the blood-brain barrier (BBB) denies these cells access to the brain and spinal cord. This brings us back to a dysfunction of the BBB contributes to MS.

Also understand that the vascular barrier that first must be penetrated undergoes moment-to-moment changes at the cytoskeleton, cell–cell junction complexes, and cell attachments to extracellular matrix and basement membrane. Appropriate regulation of these events maintains a low and selective permeability to fluid and solutes under normal physiological conditions. As we discussed, endothelial barrier dysfunction occurs during stimulation by inflammatory agents, pathogens, activated blood cells, endogenous cytokines, heavy metal or other toxins (vaccinations), or other disease states.

This explains why two individuals given the same dose of toxin would/could react very different as far as the effect on the CNS. If the blood-brain barrier is not working properly to screen out and prevent entry of unwanted immunological agents/toxins into the CNS, that individual will experience greater influx of toxic substances in the brain. Hence, a person with myelin-sensitized lymphocytes, who also experiences a weakening of the BBB, is likely to develop MS symptoms
with the severity of symptoms depending on the extent of BBB disruption. Individuals with a rapid, “galloping” progression of MS may actually be displaying a pronounced BBB dysfunction. In contrast, those who have a slow, relapsing/remitting course may have periods of better BBB integrity. Carry this same example to any brain based disorder.

Thiamin is known to strengthen the blood-brain barrier, and thiamin deficiencies have been demonstrated to result in problems. Who in the world would have a thiamin deficiency today? Well, it’s worse than you’d think. Supplementation of synthetic B vitamins as are used in nearly every OTC B supplement as were as added B vitamins in foods that are ‘fortified’ is exactly what can cause a B vitamin deficiency! Counter-think? Well, though synthetic B vitamins (made from coal tar derivatives) may act similar to natural B vitamins in some people, in many they do not. BBB compromise due to hypothiaminosis is manifested by loosening cell-to-cell adhesion of vascular endothelial cells and allowing immunoglobulins to pass across the BBB. Every brain-base patient should consider a natural source B vitamin – we use Premiere Research Labs and Standard Process Labs. These give the patient the added benefit in supporting liver detoxification pathways as well.

Elevated blood homocysteine levels are known for their association with cardiovascular disease, but homocysteine is equally a vascular toxin in cerebrovascular damage. As with thiamin deficiency, the B vitamins along with folate in the form of 5-methyltetrahydrofolate are key homocysteine-reducing nutrients.

Platelet activating factor (PAF), and inflammatory cytokine, is produced by endothelial cells (also by platelets, monocytes, and macrophages). PAF increases BBB permeability. Some natural agents to consider that
have been shown to inhibit PAF include decosahexanoic acid (DHA) from fish oil, and Ginkgo biloba which are potent PAF antagonists. One experimental study of 10 patients with MS in acute relapse who received therapy with Ginkgo (80mg, tid) led to improved neurological scores in 80% of patients.

Summary for Patients

Our understanding of the anatomy and physiology of the BBB is still in its infancy. There is much to learn about the role of the BBB in the pathogenesis of MS. Certainly, it still makes sense to focus on the modulation of the immune aspects of the disease. However, addressing the dynamics of BBB integrity may improve the efficacy of treatments for MS. Complementary therapies that protect BBB integrity may provide an excellent adjunct to conventional therapies.

Natural supplements to consider to help heal BBB permeability:

- Whole-food Vitamin B (we use Premiere Research Labs and Stand Process – these have the proper type of folate in them)
- Phosphatidylserine (PS)
- Ginkgo
- Alpha Lipoic Acid (ALA)
- Whole-food Vitamin C
- Vitamin E (gamma tocopherol and the tocotrienols)
- Bilberry
- Grape seed extract
- Pine bark extract
- Pycnogenol
What WE typically do:

Since we see patients from all over the world (most never step foot in our office) we had need to develop a testing protocol based on specific testing:

1. We always begin with a Doctor phone/Skype CONSULTATION. This enables the doctor and potential patient to communicate and see if our method would be a “good fit”. For this Consultation, we require our initial paperwork (available for download on our website www.ConnersClinic.com) be completed.
2. Should both decide to continue, we require even more detailed History/Questionnaires be completed to prepare for what we call an EXTENDED CONSULTATION. This usually includes an hour with the doctor (usually on phone/Skype).

3. When we complete our EXTENDED CONSULTATION with a new patient, we make some clinical decisions based upon our communication as well as the paperwork completed. We then order testing to determine the answers to our FOUR NECESSARY QUESTIONS. The patient is sent specific test kits with detailed collection instructions.

4. When ALL test results have come in, another DETAILED PROTOCOL CONSULTATION will be scheduled where the patient will receive a complete PLAN OF ATTACK with all of the doctor’s recommendations.

5. Every patient is then enrolled in our PATIENT FORUM where answers to questions, supportive information, and relationships with like-minded, fellow patients can be found.

Simply contact our office for more information – 651-739-1248.
Final Remarks

Regardless of what you choose about healthcare, I pray that you make wise, rational decisions based on facts (though often hidden) and not fear. You need to take responsibility and not hand it over to any practitioner, conventional or alternative. Get advice from many, weigh it all against their biases, and pray for peace about your decisions.

Kevin Conners, Pastoral Medical Association, Fellowship in Integrative Cancer Therapy and Fellowship in Anti-Aging, Regenerative and Functional Medicine, both through the American Academy of Anti-Aging Medicine.

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