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## **Findings-DRAFT**

### **8/4/21**

As you know, in Functional Medicine we assess and treat chronic illness by looking at antecedents of illness, triggers of illness, and mediators of illness (things that maintain dysfunction). We consider the systems (digestion, nutrition, immune/inflammatory/infectious, detoxification and biotransformation, oxidative stress/mitochondrial function, endocrine function, genetics, epigenetics, and lifestyle and psychosocial factors) which, when dysregulated, cause disease. We then test suspected systems and determine a personalized treatment plan based on the whole picture (symptoms, signs, history and lab data).

In addition to this functional medicine approach, we now have the advanced capability to look at what is happening inside the brain at functional nerve tracts, networks, as well as the surface of the brain, using the quantitative electro-encephalogram (qEEG).

By assessing and treating the terrain (the functional medicine systems described above) and treating the brain directly (based on the qEEG data), we can effectuate much greater recovery than functional medicine alone.

What follows is a personalized and highly specific plan developed for you, based on the history, physical exam, and laboratory data, review of records and in-depth analysis of your qEEG.

### **Overview of the findings:**

You are remarkably healthy, and your hormonal system is surprisingly normal. The abnormalities (20,000-foot view) include:

- a) Lyme disease, and possible bartonella (both tick-borne diseases--TBD)
- b) Traumatic brain injury (TBI) with secondary traumatic epilepsy (and poor connectivity within the brain), and a secondary (to the brain trauma and TBD) mood disorder (traumatic Bipolar II, with a mixed state of high energy and irritability)

- c) Nutritional deficits and gastrointestinal inflammation/infection
- d) Copper excess-we removed the NuvaRing-will follow copper/zinc etc. to make sure they are normalized
- e) Neuronal and blood brain barrier antibodies
- f) Toxins
- g) Genetic vulnerabilities- you do NOT have classic narcolepsy. See the report. Treatments for the genetic vulnerabilities are woven into the plan.

**The overall sequence of treatment will be:**

**First:**

- a) Correct nutrition/gut and start hyperbaric oxygen (HBOT), consider lithium for mood regulation/brain protection temporarily- *achieving emotional stability is essential before treating the infections*
- b) Repeat qEEG now to determine efficacy of ketosis and treatments in 'a' on seizure/connectivity; Consider anticonvulsant if needed temporarily...*achieving emotional stability is essential before treating the infections*
- c) Re-check after HBOT, re: the healing of the TBI, if necessary
- d) Transcranial photo biomodulation (laser) if needed for mood regulation

**Second:**

- e) Challenge test for Bartonella
- f) Treat Bartonella (if indicated) and Lyme

**Third:**

- g) Clear the mold (holding off because the mold may actually be helping to keep your inflammation down-see below)
- h) Clear the mercury and lead (retest the Great Plains test, and doctors' data test)

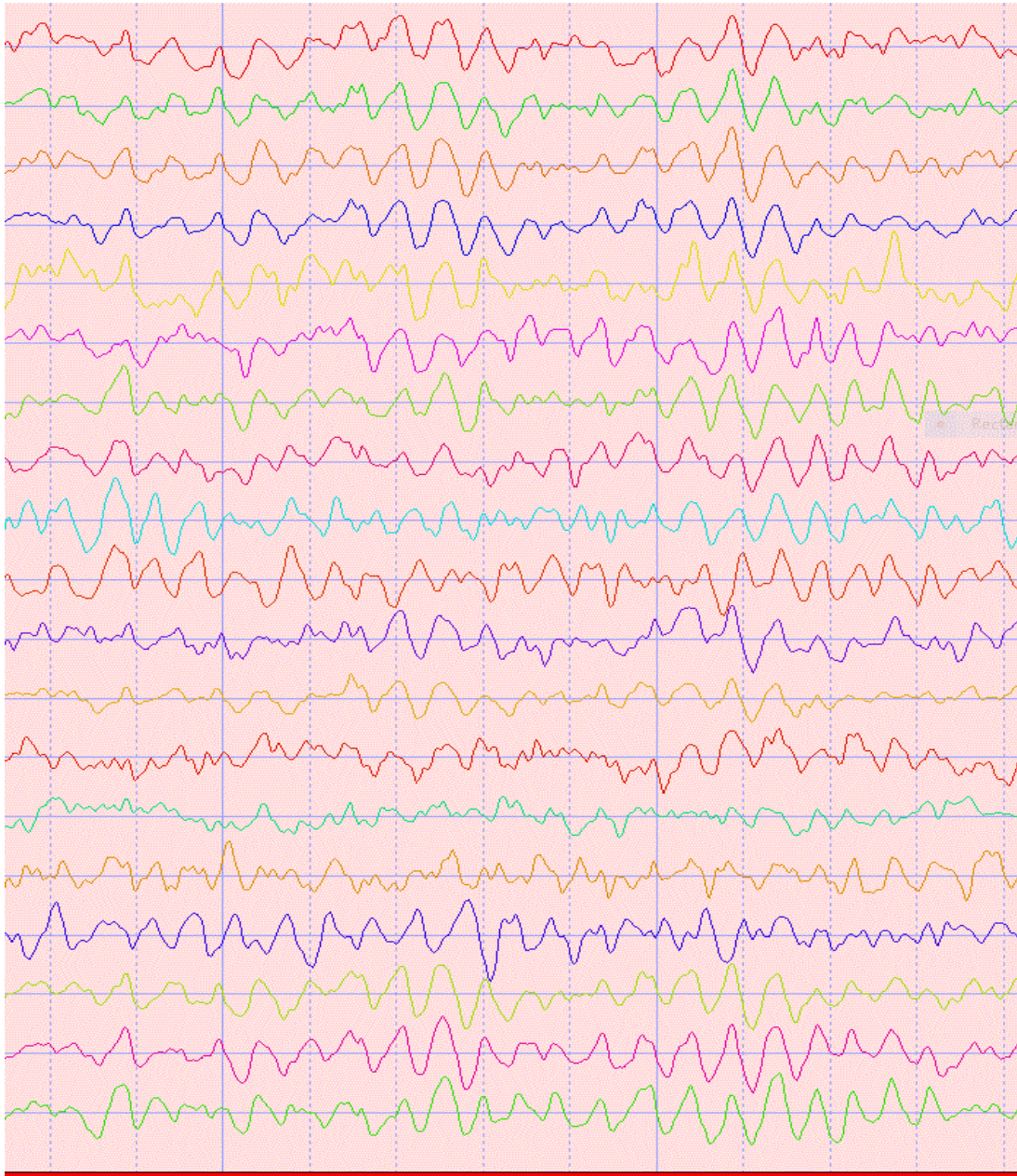
While you have some genetic vulnerabilities, it seems clear that the traumatic brain injuries, combined with the tick-borne infections are the major source of your problems. These are treatable, and even the genetic risks can be managed. Your PTSD is a natural outgrowth of the psychiatric trauma (e.g., the brief psychotic episodes) you underwent.

**Here is a more detailed breakout of the findings:**

**The Brain:** We measure the neurons that fire from once per second (1 Hertz, also referred to as 1Hz) to 30 times per second (30Hz). The neurons that fire @ 1-4 Hz are involved with unconscious processes such as slow wave sleep, and abnormality here is often due to head injury. The neurons that fire 5-9 times per second (theta) are involved in emotional processing. Neurons that fire 10-12 Hz, are active in states of relaxation while awake. Those that fire from 13 and upwards are involved in solving problems, interacting with the world, and when

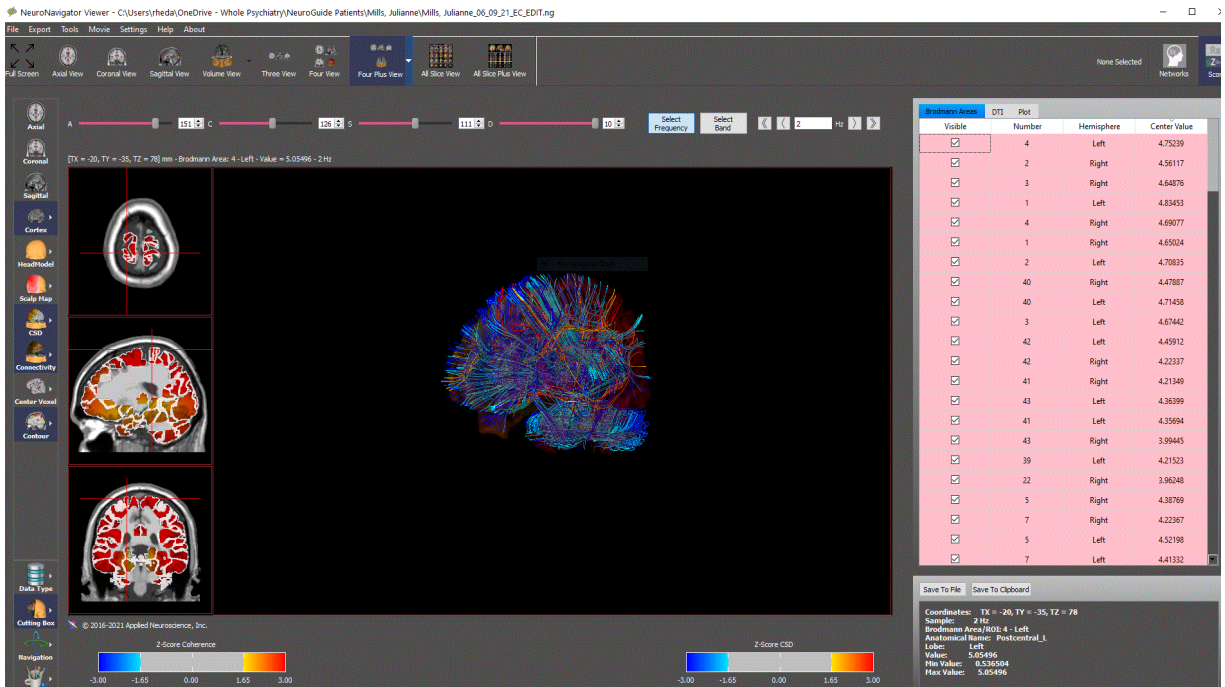
overactive, anxiety. In addition, we look at how the different parts of the brain connect (or talk) to each other; Sometimes the communication is normal, and sometimes it is excessive or deficient. If the activity or communication is either excessive (orange or red in the images) or deficient (light or dark blue) it is considered abnormal and inefficient leading to problems the nature of which depends on which areas of the brain are involved.

- a) The qEEG strongly implies temporal (or fronto-temporal) lobe epilepsy, and this is consistent with your symptoms (staring spells, absences (loss of awareness of time when driving), feeling paranoid, rare rage episodes, jamais vu, déjà vu, unusual spiritual experiences,), and mood instability/irritability. In the image below, you will notice that all the waves (on the right side of the red area) are moving together. This means that for that second (and this was happening every few seconds throughout the recording) your brain loses its ability to use its specialized functions, and instead it is all firing at the same time. A poor analogy would be that you are doing some handwork, and every other second, all your fingers temporarily turn into thumbs. Obviously would make it very difficult to work. The ketogenic diet should be helping this, but we will have to repeat the qEEG to make sure it is effective.

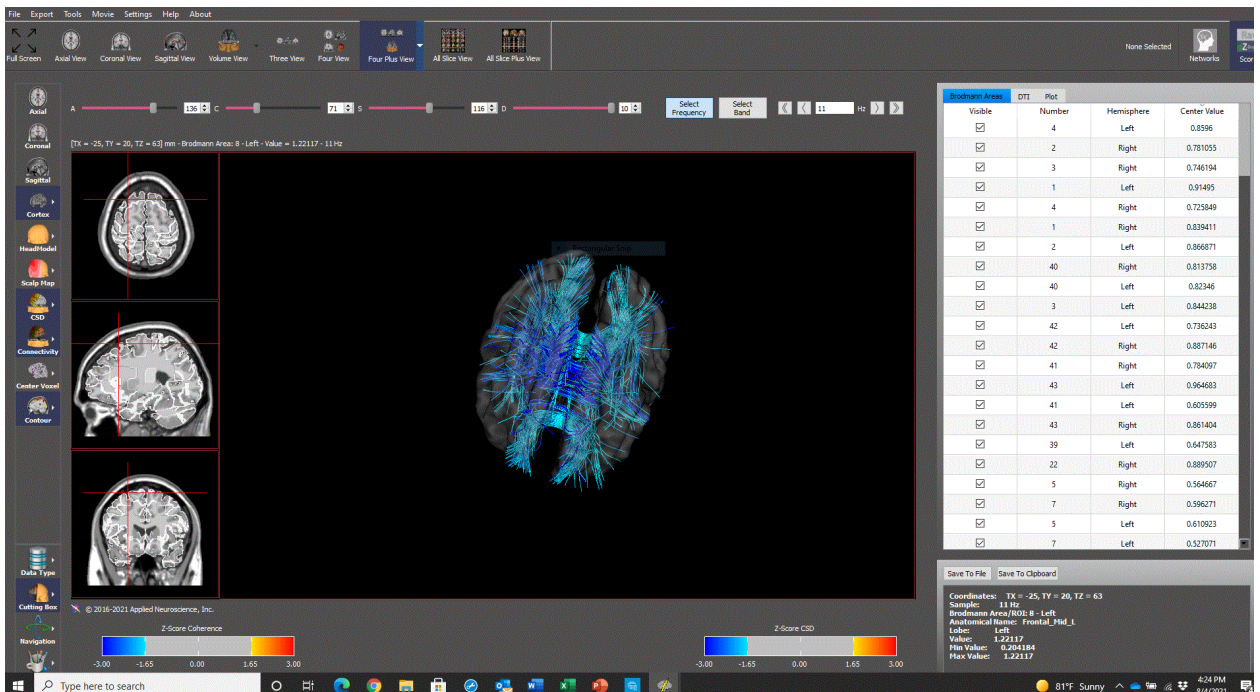


b. There is global hyperactivity of the cortex (surface/thinking/awareness) of the brain in the delta and theta frequencies.

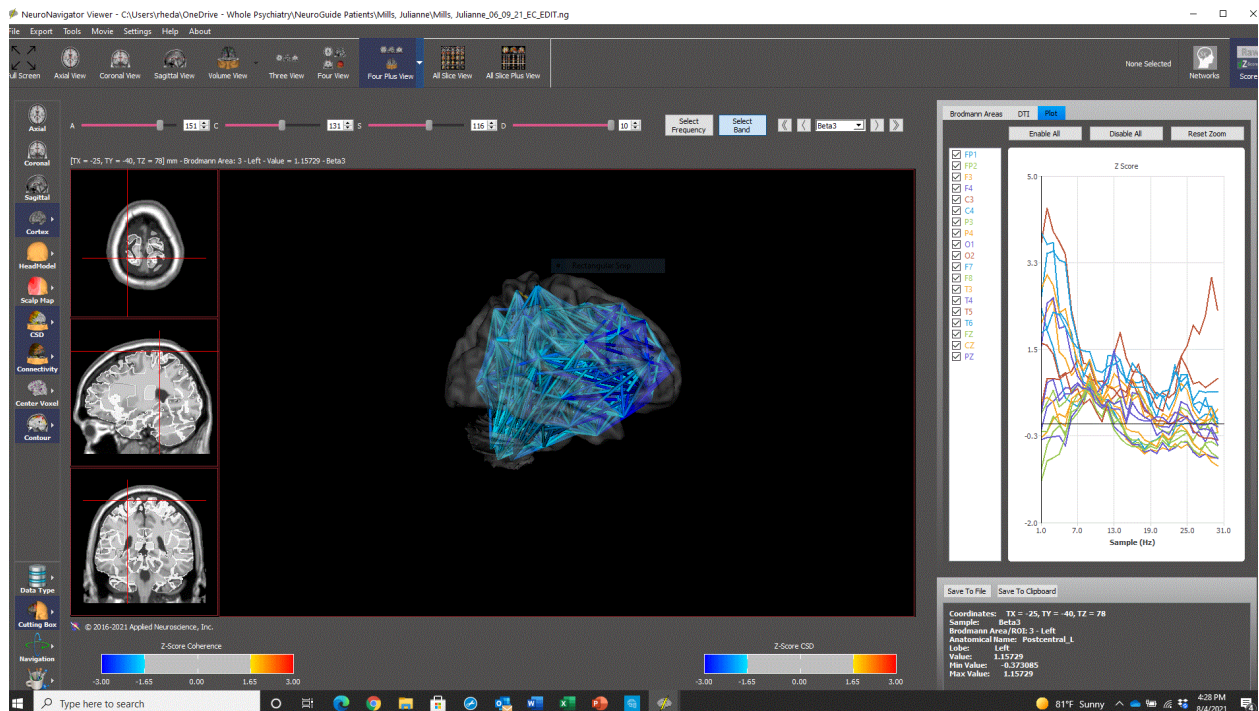




c. There is poor connectivity between the frontal lobes (depression) throughout the recording. This can be treated with Photobiomodulation, or medications.



d. There is poor connectivity between the front of the brain (dark blue in the image below, and on the right side) and the rear (grey, on the left side at the rear portions of the head/brain), affecting many cognitive functions; This is evident on the CNS vital signs Peter Rowe's test which showed many areas of strength however your cognitive flexibility, attention, visual memory, and executive function were all below average in a significant manner. I expect this to normalize with treatment. You are above average in a variety of other areas and expect your scores to reach above average with treatment.



## The Terrain: Functional Medicine

### Metabolic Issues:

**Methylation:** methylation is a foundational element of physiology. It affects genetic read-out, neuro-transmitter production, control of cancer genes; you are under methylated which is pretty common. Because of your MAO genetics we have to correct this gradually. This takes about 18 months to two years to correct. The complete blood count and homocysteine show a clear deficiency of B-12. Among other functions, vitamin B 12 is necessary for neurons in the body and brain to make myelin which enables them to communicate with each other in a normal fashion and a normal speed. We will treat you with vitamin B 12, a form that does not have methyl groups so that you do not have agitation; you also need certain types of folic acid which we will add towards the end of your program. In part the B12 deficiency is masked by your low iron. Your reaction to the Bactrim could have been related to a methylation problem,

however the genetics did not support this hypothesis. It is also possible that the Bactrim caused a Herxheimer reaction. This reaction would cause a worsening of your cognitive function due to the killing of the infection, the release of cytokines causing an inflammatory and excitatory state in the brain.

**Low Iron:** the measures of iron are clear and indicating that you are deficient in iron. I am going to recommend an iron supplement and also that you increase iron containing foods in your diet. Iron is necessary to carry oxygen to the tissues to make hemoglobin, the oxygen carrying molecule.

**Copper:** Your copper levels were exceedingly high. We discussed this and removed the NuvaRing which is responsible for this problem. This has an effect on mood regulation as we discussed. We will be following your copper levels to make sure they come down.

**Cholesterol:** your cholesterol is somewhat elevated and more importantly your apolipoprotein be is elevated. Given your genetics you should be on a diet that is high in monounsaturated fats. You should avoid saturated fats thoroughly.

**Glutathione:** your levels of glutathione which is the most important antioxidant in the brain and body are quite low. Part of this is related to diet, stress, but also genetics. See the genetic report which identifies difficulty converting oxidized glutathione which has been already used, into reduced glutathione. (the good glutathione) We can correct this with supplements (NAC, glycine, B2, r-lipoic acid) over the course of time. This will give you brain protection. We will recheck the methylation panel in nine months to make sure you are making progress on this. Following that we will recheck it approximately 12 to 15 months later.

**Gastrointestinal:**

The intestinal epithelial lining, together with factors secreted from it, forms a barrier that separates the host from the environment. In pathologic conditions, the permeability of the epithelial lining may be compromised allowing the passage of toxins, antigens, and bacteria in the lumen to enter the blood stream creating a “leaky gut.” In individuals with a genetic predisposition, a leaky gut may allow environmental factors to enter the body and trigger the initiation and development of autoimmune disease. Growing evidence shows that the gut microbiota is important in supporting the epithelial barrier and therefore plays a key role in the regulation of environmental factors that enter the body. Several recent reports have shown that probiotics can reverse the leaky gut by enhancing the production of tight junction proteins. Conversely, pathogenic bacteria that can facilitate a leaky gut and induce autoimmune symptoms can be ameliorated with the use of antibiotic treatment. Modulating the gut microbiota serves as a method for regulating intestinal permeability and to alter the course of autoimmune diseases in susceptible individuals.

The stool test, organic acids test, metabolomix and food sensitivity tests indicate the following:

- i. Candida overgrowth
- ii. Increased inflammation in the intestinal tract
- iii. High oxalates (contributes to risk for calcium oxalate stones, pain)
- iv. Two pathogenic bacteria, and one parasite
- v. Food sensitivities
- vi. Wheat and Gluten Sensitivity
- vii. Nutritional deficits

### **Immune:**

Most of your immune system markers were normal. I believe that this is related to the micro phenolic acid. The abnormalities were as follows:

- a) The Cyrex 7X testing looked at neuronal antibodies: your myelin basic protein, (IGM-immunoglobulin M), was elevated at 3.24, (with a normal .3-2.0). Additionally, alpha and beta tubulin, IGM antibodies were elevated at 1.48. The normal is 0 to 1.3. Finally, synapsin IGM was elevated at 2.08 (normal of .1 to 1.5). IgM generally indicates a recent inflammatory reaction.
- b) Cyrex 20: blood brain barrier protein (BBB): showed an abnormal elevation of IGM at 2.04 (normal of .2 to 1.3). This indicates some increased permeability or leaking us of the blood brain barrier.
- c) We tested your total I GM at LabCorp and that was elevated at 221 (normal of 26 to 217).
- d) Melanocyte stimulating hormone was undetectable. This can be associated with moldy environments.
- e) The level of natural killer (CD-57) cells is low normal, and this is a common finding with chronic infections.

### **Infections:**

- a) The medical diagnostics laboratory (MDL) western blot showed that you have a positive IGM for bands 41, 39 and 34. These fill criteria, although at low levels, for both the standard CDC definition of Lyme as well as the alternative definition of Lyme. The only question here is that your optical density of these bands is lower than the standard threshold. This could be because it's been a recent infection and the protein levels responsible for the bands may still be rising. It could also be due to the fact that the bacteria (the Lyme spirochete) continually changes its antigenic coat to evade the immune system, so the levels never really rise to full strength. Finally, it could possibly be related to immune suppression secondary to the mold toxin-mycophenolic acid,



however this is the least likely, in my opinion, given that your total production of IGM is actually elevated, so the immune suppression is not sufficient to keep your IGM down.

- b) We tested for Bartonella both at LabCorp and Galaxy labs (both negative). In addition, we tested at DNA connections for genetic fragments of Bartonella (PCR). This came up suggestive but not conclusive. Bartonella is known to be transmitted by ticks, and you have had three tick bites. In addition, Bartonella is well known to cause psychiatric conditions. We will probably want to challenge you with some herbs and high levels of exercise and retest this just before we are ready to treat these infections. If we can demonstrate that this is positive we will have a firm basis for treating Bartonella. We may elect to treat it anyway, based on the clinical picture.
- c) You have 4 infections in your gastrointestinal tract: yeast overgrowth, a parasite (blastocystis), and two bacteria; the stool test also shows elevated levels of inflammation.

#### **Toxins:**

- a) The ERMI test shows that you have some sources of mold in the home. In particular mycophenolic acid is elevated. This is actually marketed as an immunosuppressant medication. I believe it may be helping keep your inflammation markers in the normal range despite the fact that you have Lyme and other inflammatory conditions. I would suggest that you remove this from the home as we get into the Lyme, Bartonella treatment.
- b) Levels of mercury are elevated at 11 with a norm of less than 1.3. And your lead level is somewhat elevated at 4.5 with the norm of less than 1.2. This is important because mercury is known to act on tubulin and you are making antibodies against tubulin. To learn more about this google "University of Calgary, mercury, neurotoxicity".
- c) You have three Organo-toxins that are more than the 75<sup>th</sup> percentile in the Great Plains Laboratory toxin report. Please look this over and try to eliminate the sources of these three toxins.

#### **Genetics:**

- a) You do not have the classic form of narcolepsy as your genetics are normal. Most likely your sleepiness and fatigue are related to all of the above issues.
- b) As mentioned, you have genetics that make it difficult for you to make adequate amounts of glutathione.
- c) Additionally, you have genetics (PEMT) that make it difficult for you to convert phosphatidylethanolamine (PE) into phosphatidylcholine (PC). PC is one of the most important fatty acids for membrane function. Because it affects membranes it affects cellular signaling throughout the body and brain. We can work around this genetic vulnerability by giving you PC, either as the direct oil, or as lecithin. Collecting this will

take approximately one year and then this supplement would be ongoing as you have a genetic vulnerability.

- d) You have several genes, which are outlined in the report, that affect neurotransmitter production. We can work around these with nutrients.

We can very substantially and significantly correct these problems so that you will have a restoration of function using the modalities below.

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**Please do the following tests:**

- Brain MRI-with neuroquant to determine any focal causes of the seizures; This may help us with the Bartonella diagnosis. No contrast is used, and there is no radiation.
- LabCorp tests-see dates on the sheets
- qEEG now
- Parasitology testing at [parawellnessresearch.org](http://parawellnessresearch.org) and repeat GI Effects: 4 weeks after the GI program is done.
- Metabolomix-December 2021
- Methylation panel-May 2022

**General Instructions**

1. Add the items in the chart below **as close to the order in which** they are listed as possible.
2. Register with Valisure.com to get medications -they check each batch for potency and some contaminants.
3. All supplements are taken in the **middle** of meals unless otherwise instructed.
4. I can place most of the supplements on a central Fullscript website (easy ordering) where you will get a discount. Let me know if you would like this to be done. Once you know you are tolerating a supplement, you can eventually order a few bottles at a time. Get a vitamin pill organizer with breakfast, lunch, dinner bedtime compartments, and fill it weekly.
5. For a meal plan, work with Kat, who can be reached at our office, and via email:

6. At any time after you are on the hormonal aspect of the program, you can begin a light exercise program, then work up as tolerated;
7. Put all to do items (tests to be done in 1 month, 3 months, etc.) on your calendar now.
8. Get a binder to organize your materials --and make sections:
  - a. Recommendations,
  - b. Quest/LabCorp results,
  - c. Lab requisitions,
  - d. Specialty Lab test results,
  - e. Plan,
  - f. Tracking
9. Here is a link for a 7 day Pill Planner

[https://www.amazon.com/Dose-Weekly-Classic-Pill-Planner/dp/B0000537JP/ref=sr\\_1\\_14?crd=1RIAGU8MEGU46&dchild=1&keywords=jumbo+pill+organizer&qid=1605049239&sprefix=jumbo+pill+%2Caps%2C238&sr=8-14](https://www.amazon.com/Dose-Weekly-Classic-Pill-Planner/dp/B0000537JP/ref=sr_1_14?crd=1RIAGU8MEGU46&dchild=1&keywords=jumbo+pill+organizer&qid=1605049239&sprefix=jumbo+pill+%2Caps%2C238&sr=8-14)

**General directions for herbs if we use them:**

- a. Mix Tinctures in a small amount of unsweetened organic Pomegranate Juice-can mix all doses for one day in a jar.
- b. Avoid sweets, high glycemic index foods completely.
- c. Can mix all herbs together; can take with food, but best on empty stomach
- d. To avoid the alcohol (which is how the herbs are prepared) please prepare the next days dose (or 2-3 days of herbs) at night, add some boiling water, and let the herbs sit overnight. The alcohol will evaporate by morning.

**Ordering Key:**

**FS**=FullScript

**Rx**=routine prescription

**VG**=Village Green (301—530-0800)

**ONLINE**-I provide the link when I have it, otherwise do a google search

Where to order	To Do	Comments
	<ul style="list-style-type: none"> <li>Brain MRI-with neuroquant to determine any focal causes of the seizures; This may help us with the Bartonella diagnosis. No contrast is used, and there is no radiation.</li> <li>LabCorp tests-see dates on the sheets</li> <li>qEEG now to determine efficacy of the ketosis/need for medication</li> </ul>	
	Consider "Bridge" Medications: Gabapentin, Lithium Valproic acid.	
	<ul style="list-style-type: none"> <li><b>REPEAT GPL MYCOTOXIN test ASAP (under a different name-e.g., your husband's name)</b> to confirm the mycophenolic acid finding. This is important because this is a critical decision point in the treatment.</li> </ul>	
	Mycotoxins: Identify the source(s) and get ready to remediate;	
	Do a test HBOT in the office -schedule with Jill...to determine how you tolerate it.	
	<b>Remainder of plan deleted</b>	



# THE WHOLE PSYCHIATRY & BRAIN RECOVERY CENTER

Specializing in Advanced Treatment Methods