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Findings

Dear….

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 & 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.

Tests we do not have back
a) ERMI test

List of findings

Primary Findings:

1. Dopamine deficiency
2. Paroxysmal Leg Movements of Sleep

3. Immune dysfunction/infection (2 species of Lyme); low immunocglobulins (IgG and IgA), low lymphocytes, Low NK cells, C4a and TGF-Beta-1 elevated; ANA positive, mixed connective tissue disease; MSH undetectable
4. Very elevated lead and mercury levels
5. Pyrolluria (genetic)→ low zinc, low B6, low copper,
6. Toxins: High Ochratoxin, as well as 3 organotoxins (items 10, 16, 17)
7. Nutrition: Inadequate protein, low Vit D, B6, Vit C, Glutathione, B5, biotin, DHA, DGLA; inadequate protein, iodine
8. qEEG-
    a. Frontal disconnection (functional not structural) from the temporal, parietal parts of the brain
    b. Excess Theta (T5/T6)-sensory motor dysfunction, (imbalance of DA/NE)
    c. Occipital cortex, cerebellum, reticular activating system (alertness/REM sleep behaviors), posterior cingulate can be related to migraine, or dopamine dysfunction

Secondary Findings, occurring as a result of the above findings

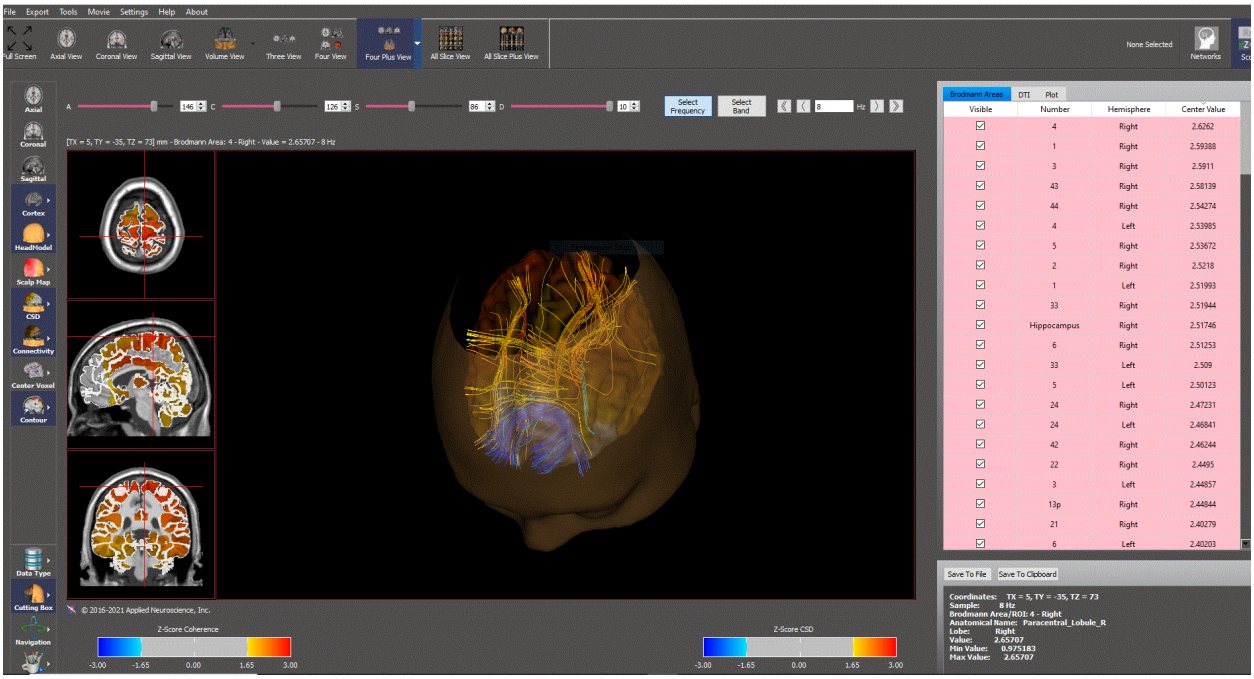
9. Hormones-low free T3, low testosterone, low melatonin, low pregnenolone
10. Cholesterol/APO B elevated
11. GUT: EXCELLENT-but some yeast, possible low bile acids
12. CNS testing: low working memory, and motor speed
13. Methylation: low B12 (moving in the direction of macrocytic anemia, with increased homocysteine), folates, inadequate reduced glutathione (neuroprotection)

Overview of the abnormal findings:

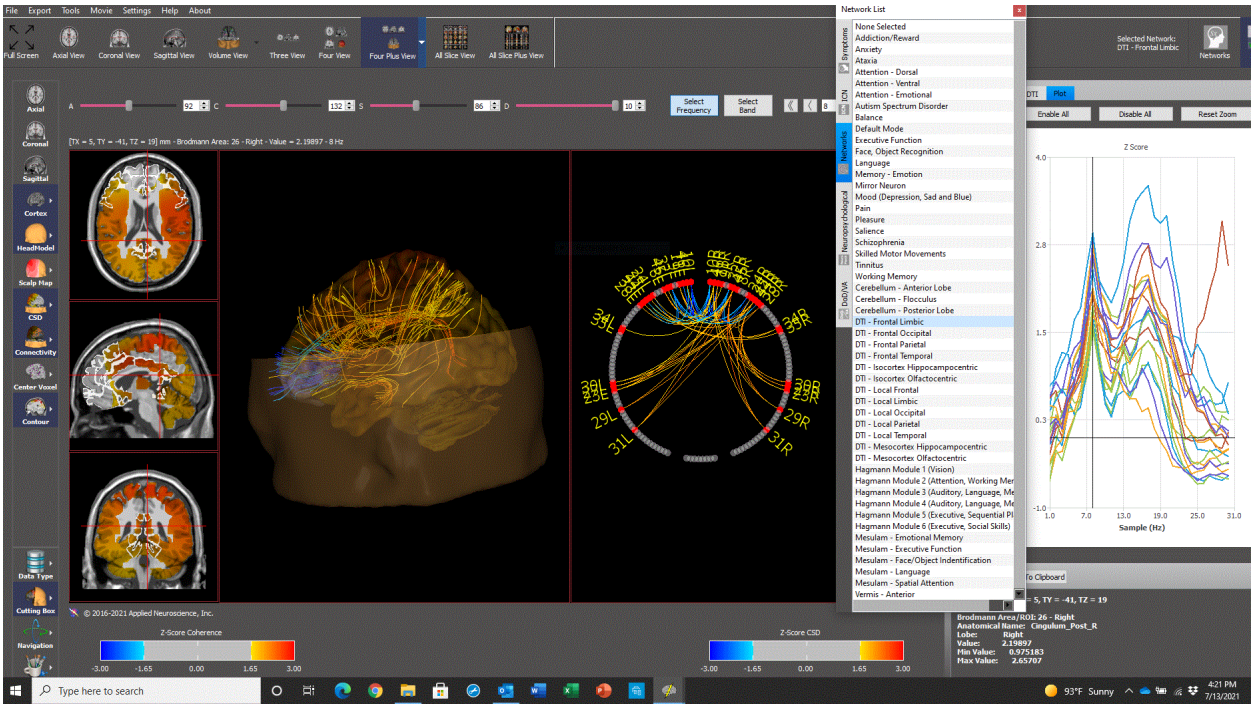
The Brain: We measure the neurons that fire from once per second (1 Hertz, also referred to as 1Hz) to 30 times per second (30Hz). All the neurons firing from 10 times per second (10 Hz) and upward, are normal. The neurons that fire @ 1-4 Hz are involved with unconscious processes such as slow wave sleep, 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) In the image below the crosshairs are focused on the area of the cortex (surface of the brain) that is most abnormal. This is the Sensory-motor strip. This image is at 4 Hz which reflects unconscious processes. Also in this image you can see that multiple areas are

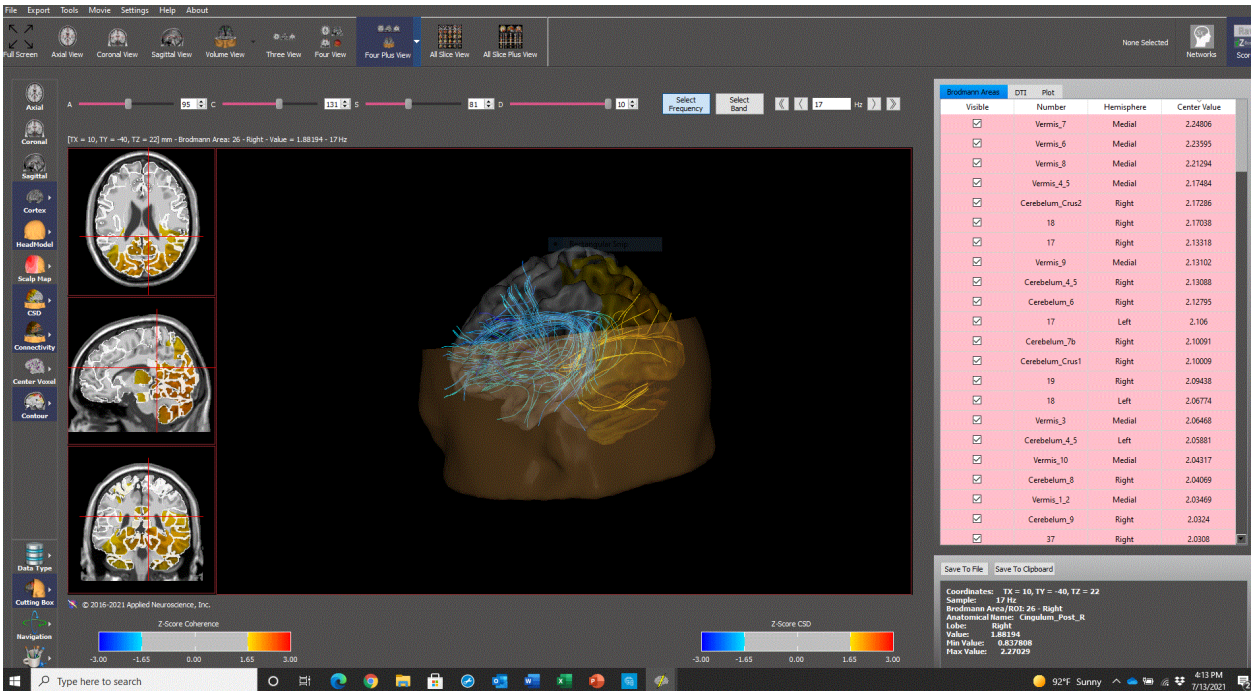
also overly activated which means they are not functioning properly. In addition you'll see the blue horseshoe pattern in the frontal area which reflects depression and poor communication between the frontal lobes



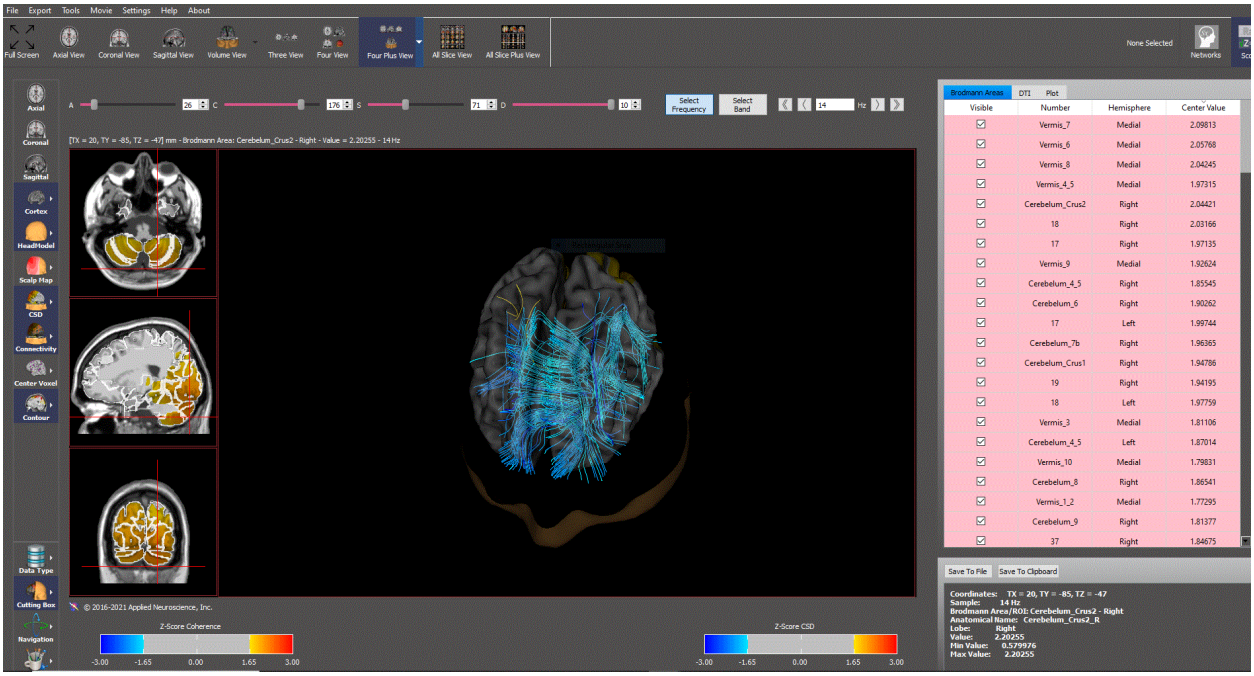
B) In the image below there is high theta, which is NOT in the frontal area, but involved the pre-cuneous temporal areas (affecting personality, self-efficacy, self-concept, confidence, sense of 'wholeness'), the posterior cingulate (involved in movement disorders, and dopamine related disorders such as TOURETTE'S Syndrome), and again the sensory motor area. You can also see that there is a functional disconnection between the frontal area (mostly normal, grey) and the posterior areas which are red/orange (this was also evident on the phase slope index). Additionally the frontal horseshoe pattern indicating poor communication between the left and right frontal lobes is still evident.



C) In the image below you can see the rear (occipital) areas of the brain in the beta frequency (17Hz) that are unstable. The involvement of the cerebellum, occipital cortex, posterior cingulate (see better in image B), and the reticular activating system (talking in your sleep, as well as the paroxysmal leg movements of sleep) represent failure of the descending motor tract inhibition. We know we can prevent progression of this, as we by correcting all of the identified abnormalities, as well as using HBOT, and neurofeedback.



D) In this image (14Hz) you see much of the same as the above image, but note that the frontal horseshoe pattern of frontal to frontal disconnection related to depression continues to be present.



Summary of qEEG: All areas will respond to neurofeedback; and hyperbaric oxygen therapy; 3 issues:

a) disconnection of frontal areas of the brain, from the back, as well as from each other (left and right);
b) excess theta affecting ability to handle a high cognitive load, and sense of self efficacy;
c) Occipital (rear of brain) abnormality related to either migraine, or a dopamine dysfunction (PLMS' apathy). Again, this is all treatable;

The Terrain: Functional Medicine

Sleep Study:

a) Paroxysmal Leg Movements of Sleep

Periodic limb movements of sleep (PLMS) are defined as periodic episodes of repetitive and highly stereotyped limb movements that occur during sleep. Specifically, polysomnography demonstrates repetitive movements that are 0.5 to 10 seconds in duration, typically separated by an interval of 20 to 40 seconds (range 5 to 90 seconds). PLMS may be directly responsible for complaints of excessive sleepiness or insomnia. PLMS accompany many sleep and neurologic disorders, including restless legs syndrome (RLS), obstructive sleep apnea, rapid eye movement (REM) sleep behavior disorder (e.g., talking in sleep), narcolepsy (you do not have the genetics for this), and Parkinson disease. PLMS increase in frequency with age. I suggest treatment with

a) a dopamine agonist, such as pramipexole, or
b) an alpha-2-delta calcium channel ligand (e.g., gabapentin), or
c) clonazepam (this is effective, reduces anxiety, but can cause daytime sedation, and depression in some people).

If the medications are effective for you, you should feel much more rested and alert during the day; Given the likely dopamine dysfunction, you should definitely not be on Abilify (or any of the antipsychotic medications) which actually inhibits dopamine signaling in specific parts of the brain. It can also worsen the sleep related disorders as well as increase the loss of motivation and apathy.

Obstructive Sleep apnea-only when on the back; You should find a way of avoiding sleeping on your back such as a slumber bump vest, night balance Lunoa device, sewing a tennis ball into a night shirt, or sleeping with a fanny pack on your back.

Toxins:

a. You levels of mercury 42 (normal < 1.3) and lead (29, normal < 1.2) may be causative of the dopamine deficit , and are of concern. Dopamine deficit is well known to be related to toxins such as lead (which affects dopamine function, and therefor affects motivation, apathy, mood, pleasure, novelty detection), and organotoxins (see your Great Plains Laboratory Toxin report, as some of these are elevated). We will need to detoxify your system of these two heavy metals, and the organotoxins.
b. You have elevated levels of two mold toxins; Ochratoxin (environmental mold) is most neurotoxic, and is associated with neurodegeneration , decreased dopamine and you will need to determine the source of this in your home. You should actually be out of the mold environment ASAP to avoid further injury to your brain. Sauna is a useful method particularly far infrared sauna, for detoxifying from mold.

c. You have elevated levels of free Organotoxins on the Great Plains Laboratory toxin report. Pay attention to items 10, 16 and 17 which are all related to neurological function. You will need to identify the sources of these and illuminate the sources, have liver support to detoxify them, and this can also be accomplished via the far infrared sauna.

Immune/Inflammation:

The primary finding here is that you have two forms of Lyme disease with the possibility of other co-infections. As a result of this you have immune suppression and inflammation. Your immunoglobulins are low. Immunoglobulins fall into 4 categories immunoglobulin G (IgG-bacterial and viral immunity), immunoglobulin A (IgA-lungs and gastrointestinal tracts) and immune globulin M (IgM-recent infections) and immunoglobulin E (IgE-parasitic and allergic reactions). The IgG is divided into 4 subclasses, each with its own function. Your total IgG is low normal and class one is also low normal. Class two and three are subnormal, and class four is low normal. This is very likely due to immune suppression from the mold toxins, as well as the Lyme infections. Your immunoglobulin is also low (32, N=87-352). Testing for auto immune disease showed a positive anti-nuclear antibody and, RNP antibodies which indicate a mixed connective tissue disease. I believe that this is secondary to the Lyme, mercury, and lead, and perhaps other factors in with this will clear up with treatment. Other markers of inflammation, such as C4a and TGF-beta 1 elevated. These can be related to mold toxins, and/or Lyme disease.

Hormones:

a) Melatonin levels are low normal; Since this is a brain protector and antioxidant as well as sleep regulator, we will give you a low dose every evening at the same time. Hormones are best used at the same time each day as they synch and work best with the light/dark cycle.

b) Your level of free T3 is low normal and this has been correlated with increased risk for depression. It is also connected with dry skin loss of hair, cold hands muscle weakness, fluid retention. I'd like to re-check this and make sure is a consistent finding before we treat this.
c) Testosterone levels are low. Your total testosterone is undetectable and your free testosterone is 0.4 with a normal of 0 to 4.2. This fits with your low libido and can also affect your general sense of well-being. Because zinc is necessary to make testosterone we should normalize your zinc and then recheck your testosterone and see if that has been normalized before attempting to supplement you with this.

Metabolic Issues:

a) **Methylation**: levels of folate metabolites (making neurotransmitters etc.) are low, and levels of SAH are high; High SAH inhibits methylation reactions affecting neurotransmitters; This will normalize over time (9-18 months) as we provide you some folates. Additionally, you are making antibodies against the cells in the stomach that absorb B12. This is fairly common particularly as we get older. You are showing signs of B12 deficiency such as low red blood cell count in a slightly larger than normal size of your red blood cells as well as elevated homocysteine. B 12 is necessary to make blood cells, as well as to make myelin, which allows the brain to process in a quick and efficient manner.

b) **Pyrolluria**: You have a genetic vulnerability to low zinc and vitamin B6. Your copper level was 85 and it should be 100. Your zinc level was 63 and it should be 100. Low levels of zinc are also vulnerability factors to immune system, mood and obsessiveness issues. Measurement of urinary pyrolles indicates high levels (you are 14.98—normal <10). The result of this is altered heme production (heme is made of an iron molecule bound to a porphyrin ring), which is required for normal neuronal function. Pyrolles bind to B6, and zinc, reducing availability of these nutrients for the body. The brain relies on zinc more than any other organ. Manganese, biotin, and magnesium levels can be affected as well. Additionally, GABA (relaxation) and serotonin function are reduced. Finally, zinc is necessary for serotonin signaling, which affects mood, as well as testosterone production. Copper is necessary to make adequate Dopamine.

c) **Gastrointestinal:** Your GI Effects test (Stool test) one of the best I have seen. Great job just a few items to treat.
    i. Candida overgrowth
    ii. Borderline increased inflammation in the intestinal tract
    iii. Food sensitivities: Eggs
    iv. Nutritional deficits

d) **Genetics:** You do not have genes for narcolepsy. Your daytime sleepiness is secondary to your disrupted sleep, due to the paroxysmal nocturnal leg movements of sleep. I've sent you a genetic report which details the genetic vulnerabilities. The primary vulnerability that I see is:
    - Difficulty manufacturing serotonin.
    - Possible difficulty manufacturing active thyroid hormone in the brain (free T3). Four of your eight genes that control this are variants and it is likely that this is contributing to your mental alertness and processing speed as well as mood regulation. Normally I would treat this right away however your TSH is low normal and if we use thyroid hormone your TSH will become overly suppressed. This could increase the risk for osteoporosis as well as atrial fibrillation. It is something we could do, if necessary, but we need to discuss this thoroughly. There are potential great benefits to this type of treatment and people with recurrent mood disorders. It is likely that you will benefit from some thyroid support as you do have a number of symptoms consistent with low thyroid function at the cellular level.

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:

- LabCorp tests
- ERMI in your living environment to determine source of the mold toxins
- IGNEX test to determine any other tick-borne co-infections might require treatment. There were suggestions on the DNA connections test of other coinfections. Please contact Jill to arrange for this.

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 bed time compartments, and fill it weekly.

5. For a meal plan, work with Kat Osario, who can be reached at our office, and via email: nutrition@wholepsychiatry.com

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?crid=1RIAGU8MEGU46&dchild=1&keywords=jumbo+pill+organizer&qid=1605049239&sprefix=jumbo+pill+%2Caps%2C238&sr=8-14

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
	Mycotoxins: • Do the home ERMI test ASAP • Identify the source and remediate; Get out of the environment ASAP To reduce ongoing damage to your nervous system.	
	Test your house water to be sure lead levels are not high…identify sources of lead	
	You can start medication for PLM's (pramipexole or gabapentin)…or you can re-do the sleep study in 8 months to one year to see if it has cleared up without medication. I would suggest a trial of medication (Pramipexole 0.125mg @ 5PM, increasing to as many as four tablets every 3 to 4 days depending on your response) to see if correction of the PLMS proves the quality of your sleep and your life. Keeping your brain and body under stress while we work to correct the underlying problems might not be the best idea. Using the medication as a bridge for the next several months to one year depending on the speed of your progress, might be reasonable and protective to your system.	
Specialty pharamcy (contact Jill)	Thymosin Alpha 0.15 cc injected subcutaneously in the AM; It is a natural peptide which helps to rebalance the immune system and will help replenish your lymphocytes and immunoglobulins while you work on correcting the underlying cause of the dysfunction which appears to be tick borne infections.	Check the Immunoglobulins at labcorp after on this for 8 weeks
	B6 Pure Encapsulations Brand P5P (pyridoxal-5-phosphate) 50mg -2 in the morning with breakfast	
	Zinc-picolinate 50mg-one with breakfast and one with lunch	
	Copper-Thorne Brand -2 mg-one with dinner	
	Solaray Brand Vitamin D with K2-1000mg with dinner	

	We will increase this dose gradually by 1000 IU per month, to 5-7,000 IU	
	B5-VitaCost pantothenic Acid 500mg with dinner	Stop after 3 months
	B-50-Puritans Pride Brand-one with lunch	
	B-12 sublingual lozenges-1000mcg -dissolve under the tongue 5 per day...do not swallow	
	Vitamin E gems-one per day	
	Vitamin B1 (Thiamine)-500mg before lunch or dinner	
FS	5-HTP-Jarrow Brand 100mg three times per day-preferably on empty stomach. Watch for muscle tension, feeling warm, nausea.	
	Dopamine Assist 2 caps on an empty stomach twice per day (can take with the 5-HTP)	
FS	Glycine (NOW Brand) ¼-1/2 tsp in 1/3 glass of water ½ hour before bed. (helps sleep, increases glutathione production)	Optional for sleep
	Work with Kat to modify your diet per these directives a) Increase protein b) lower saturated fats (APOB is high, cholesterol is high) c) Avoid the +2-+4 food sensitivities d) Increase Iron e) Avoid caffeine and stimulants, and alcohol f) Candida diet g) USE: garlic, ginger, onion 6-8 glasses of water per day Add small fish to your diet (herring, mackerel, trout, sardines)	
	Detoxification Support-step 1	
	N-Acetylcysteine (NAC): Doctors best NAC Detox Regulators with Seleno Excell-600mg per cap 2 three times per day. You can stop this when you start the detox qube (below)—then re-start when you are done with chelation	

	ENERGY	
	Morning Shake: Mix the items below, with the non-dairy milk of your choice (low glycemic index), a serving of a protein powder (rotate different types, such as pea, rice, but NOT whey), sunflower seeds, flax seeds, and pumpkin seeds blended with FROZEN organic blueberries and or blackberries. The frozen stuff doesn't have fungicide on it (even organic stuff has fungicide, in the Washington area). You can add flavorings (no chocolate due to high copper), such as vanilla, cinnamon, stevia. Additionally, one day per week, buy lots of colorful veggies (preferably limit those that grow below ground, and in accordance with your food restrictions, or if restricted on oxalates), chop them up, and put them in the freezer; Put two tablespoons into the shake daily; The Phosphatidylcholine will carry the nutrients from the veggies into your body and brain. Add in the following powders: • GNC Brand Creatine Monohydrate 1 tsp • L-carnitine- Bulk Supplements-5 grams • Jarrow Brand L-Glutamine 1/3 tsp • Vitamin C powder (GMO Free Vitamins Brand)-one scoop 1-766-505-6543 shop@gmofreevitamins.com	
FS	Nordic Naturals DHA 1 gram twice per day	Ongoing
	BodyBio Evening Primrose Oil-one twice per day	
FS	Folinic Acid 800mcg per day (Seeking Health or Source Naturals)	Check methylation panel in 18 months

	Detoxification Support Step 2	
	Far Infrared Sauna Work up to 30 minutes-45 minutes 4-5 times per week	
	Exercise, regularly when you begin to have the energy; this increases mitochondrial # See below for options	
	Hormones-Adrenal support	
FS	DaVinci Melatonin 1.5mg 1 spray @ 8PM	Brain anti-oxidant (protection)
	Re-test testosterone , DHEA, pregnenolone after zinc is normalized Re-test thyroid now (See requistions)	
	GI Support	
Online	Lactobacillus Plantarum One twice per day with lunch and dinner-keep refrigerated https://www.professionalsupplementcenter.com/Lactobacillus-plantarum-rhamnosus-salivarius-by-Allergy-Research-Group.htm?referrer=googleshopping&gclid=EAIaIQobChMI0p2ZnM7O4wIVDp-fCh1RdgK8EAQYAiABEgLtqPD_BwE	Increases dopamine Ongoing
FS	Culturelle One per day	Reduce to once per day after 12 weeks
RX	Nystatin tabs 2 with each meal –in the middle	Continue for 12 weeks, then stop
	DETOXIFICATION -Step 3	
	Lead and Mercury Detoxification QuickSilver Detox QUBE with EDTA—we will have to order for you.	Repeat the heavy metal test

	DO LEVEL 1 (TAKES 3 MONTHS) https://www.quicksilverscientific.com/all-products/detox-qube-w-edta/	AFTER THIS HAS BEEN COMPLETED
	LYME TREATMENT will follow detoxification	
	Photobiomodulation and Neurofeedback We will institute these as indicated, depending on need for mood regulation (laser)	
	Exercise Options	
Exercise	**Exercise:** Exercise does hundreds of good things. It is critical to your recovery. Start with light exercise if that is all you can tolerate. The goal: High intensity interval training daily for 20 minutes. If you are too tired to do it on consecutive days you know you are over doing it. Here is how to do it: a) Determine the maximum level on the bike/treadmill b) Warm up for 10 minutes starting at the lowest level, and slowly ramping up at a comfortable level until you get to 50% of the max level. c) Stay at 50% of the max level for 5 minutes d) Do 30-seconds to one minute at maximal exertion e) Reduce to 50% of the max level for 1-3 minutes f) Repeat maximal exertion and rest 2 more times g) You are done!	
	Exercise: 9 minute workout High intensity interval training daily for 9 minutes. • Warm up for 3 minutes • Sprint (like a tiger is chasing you) for 20 seconds • Slow down a lot (very slow) for 3 minutes • Sprint (like a tiger is chasing you) for 20 seconds	

	• Cool down for 3 minutes	
	Trainer (on Zoom) for elderly patients **Mac Dodds** His email is: mac@livegoodfitness.com I have his prices for working in person in his exercise studio with patients (zoom could be different): $50/half hour Cell (619) 606-2541	

Simple Candida Diet

Dietary Suggestions for Patients with Yeast Sensitivity	
Eliminate:	Acceptable:
Sugar in all forms, including honey. No artificial sweeteners.	
Beverages such as coffee, tea, soda, and milk.	Beverages limited to water, decaf tea, and decaf coffee.
Alcohol and caffeine prohibited.	
Breads, rolls, pastries with yeast.	Bean Pasta and noodles:
Processed and smoked meats such as sausage, hot dogs, corned beef, cured ham, pickled tongue.	All other meats, fish, fowl, eggs.
Cheeses, cottage cheese, sour cream.	Plain yogurt, tofu if allowed
Mushrooms.	All other vegetables, potatoes.
Limit fruits to one daily. No dried fruits such as raisins, figs, prunes.	One fruit serving (berries) daily.
Vinegar products such as mayonnaise, salad dressing, catsup, mustard, olives, sauerkraut, relish.	Olive –lots Butter in limited quantity.

LEAD

- Lead Toxicity: What is the Biological Fate of Lead in the Body?
  - https://www.atsdr.cdc.gov/csem/csem.asp?csem=34&po=9#:~:text=Most%20of%20the%20lea. d%20that,ultimately%2C%20in%20the%20feces).
- Dietary Strategies for the Treatment of Cadmium and Lead Toxicity
  - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4303853/