

COMPANION GUIDE

COMPILED BY

DR. AMY YASKO

ERIN GRIFFIN

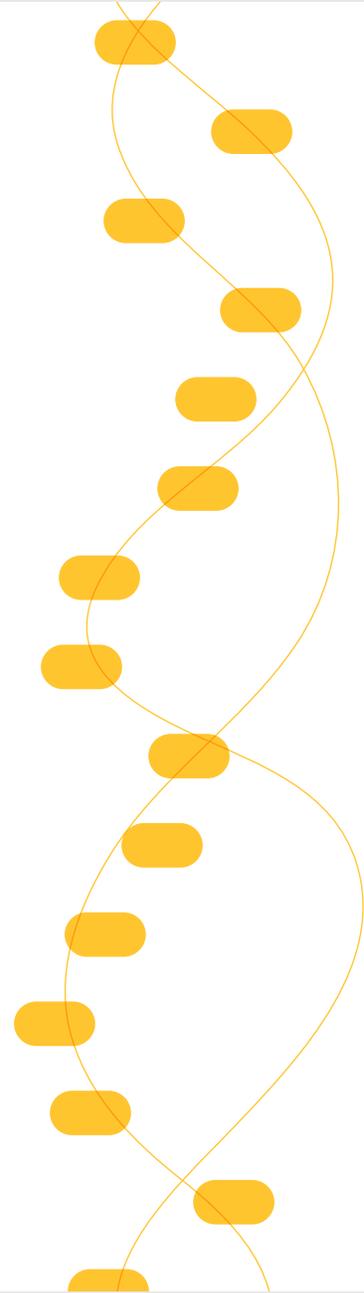
CINDY WEBBER

FEEL

GOOD

NUTRIGENOMICS

YOUR ROADMAP TO HEALTH



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The information expressed in the following pages is not meant to replace you working with a physician or health care practitioner when implementing any protocol discussed throughout the book. Laboratory test results and comprehensive discussions or analysis of the laboratory results are intended to provide additional sources of information for you, and your physician or health care practitioner. Always seek the advice of your physician or other qualified health care practitioner with any questions you may have regarding your medical condition or as it specifically relates to implementing any protocols or suggestions discussed throughout the book.

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Introduction

I believe that Chronic Fatigue Syndrome (CFS), Autism, Asperger's, and Fibromyalgia as well as other chronic neurological conditions are multifactorial in nature, comprising or combining or involving an underlying genetic susceptibility with an infectious disease component as well as environmental toxins. I feel that it requires time and patience to slowly unravel the pieces of this complex puzzle for each individual. ***This is a marathon it is not a sprint***, and while I do not promise any magic bullets I do promise to be here to help you to understand the pieces of this puzzle and to continue to work to find any missing pieces that we need, even if it is only needed to help one individual.

My approach is somewhat different than others in these fields. I do not believe in telling you **what** to do; I believe in **teaching** you to decide what to do. I believe that knowledge is power and that the more well informed you are about the processes going on in the body, that you are in a better position to make informed choices towards optimizing your health and wellness. For this reason I spend a lot of time talking about the "why" behind a choice or a suggestion as well as looking at a great deal of biochemical test data to help you to learn how to monitor and follow progress on this program. We also rely heavily on molecular biology and biochemistry to help to guide you on the choices that you make. The tools that we use are not meant to replace the need to consult with your doctor. They are meant instead to serve as additional tools to help you while you **work in conjunction with the doctor of your choice**.

I am delighted to offer this Companion Guide, as the newest tool towards optimizing your health. It is a step-by-step approach to help you begin the journey to take those important first steps in the marathon. It includes ideas on how to get started with removal of dietary excitotoxins, supplementation, biochemical testing, and offering links to encouragement and support you will need along the way.

I fully recognize that many of you may be working with doctors who are not as familiar with this program and therefore I have made my new online book ***FEEL GOOD BIOCHEMISTRY Your Roadmap To Health*** www.feelgoodbiochem.com edited by Dr. Nancy Mullan, available at no cost. This is a comprehensive resource to aid you and your doctor with interpretation of biochemical test data choices concerning supplementation. I do continue to volunteer my time and provide individualized comments on biochemical tests that are run directly through our office, giving you personal feedback to help you understand the implications of the results of these tests, and to monitor the progress you are making in the program.

I am glad you have chosen to explore this protocol to improve your health and wellbeing. Take a deep breath and remember that you are taking the first steps of a marathon. Relax and move at your own pace. Try not to stress yourself throughout this process. Stress does bad things to the body, and there is no need to stress or rush. You will get there. Just take it one step at a time and know that you are not alone.

I am willing to make personal comments on biochemical tests, to answer posts on the discussion group, and to read and research to continue to add to the knowledge base until we have the answers we need for wellness.

With love, hope, and a hug, Dr. Amy

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THE METHYLATION CYCLE

The Methylation Cycle that Dr. Amy has focused on in her book ***Feel Good Nutrigenomics Your Roadmap To Health*** describes genetic weaknesses in this particular pathway in the body that are involved in generating and utilizing methyl groups in the body. This central pathway in the body is particularly amenable to nutrigenomic screening for genetic weaknesses. Defects in methylation lay the appropriate groundwork for the further assault of environmental and infectious agents and result in an increased risk for additional health conditions including diabetes, cardiovascular disease, thyroid dysfunction, neurological inflammation, chronic viral infection, neurotransmitter imbalances, atherosclerosis, cancer, aging, neural tube defects, Alzheimer's disease and Autism. As a result of decreased activity in the methylation pathway due to mutations, there is a shortage of methyl groups in the body for a variety of important functions. Methyl groups are "CH₃" groups that are moved around in the body to turn on or off genes. There are several particular sites in this pathway where blocks can occur as a result of genetic weaknesses. Supplementation with appropriate foods and nutrients will bypass these mutations to allow for restored function of the pathway.

An extension of these concepts is that most health conditions that we see today will in fact be multifactorial in nature. While we cannot change your genetic susceptibility, we can look at your genetic profile and use nutritional supplementation to help to bypass underlying genetic weaknesses to lower your genetic risk factors. This will help you to achieve optimal health when used in conjunction with a program to reduce some of the other risk factors such as environmental toxins and infectious agents.

While the concept of genetics, toxins, viruses and bacteria may seem overwhelming, this is a program you can understand and master. A Roadmap, which is something we all understand, can be seen as an analogy to the pathways in our body. Visualizing the path to health as a road we traverse in life is a familiar and comfortable concept that allows you to conquer and have control over your own health.

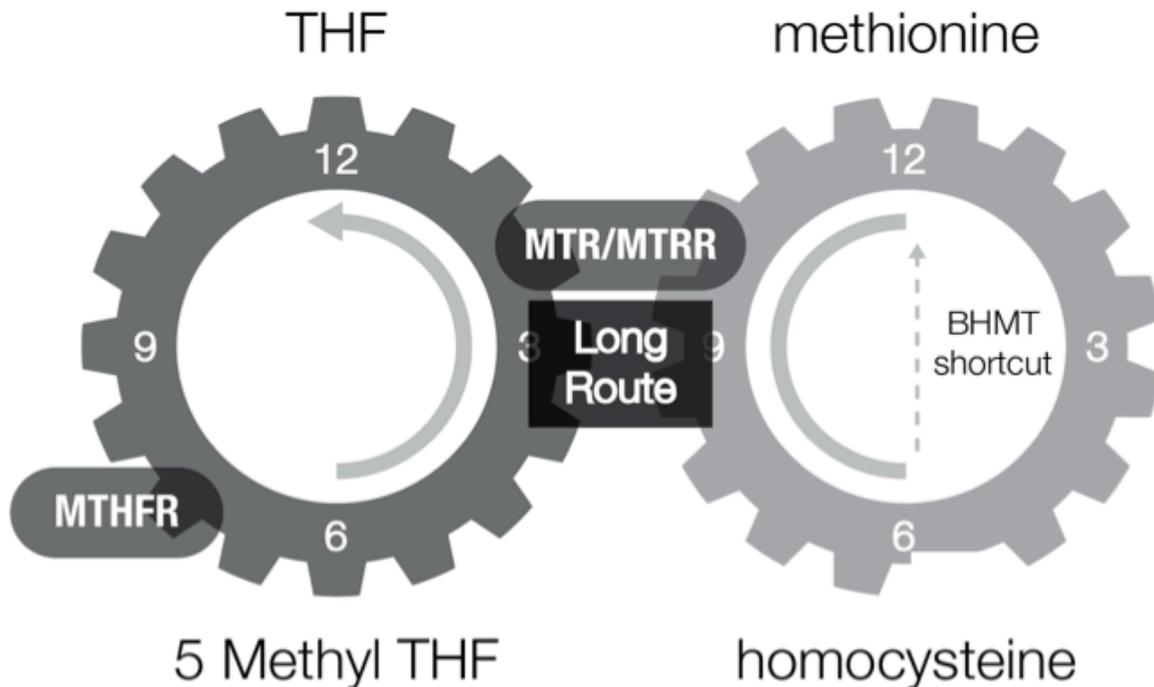
The approach is to try to rebalance a number of pathways in the body simultaneously. If you begin to think about the body as a roadway system, imagine that you are supplementing the main road, the side roads, and the back roads all at the same time. **This requires a small amount of a large number of supplements.** This is the way the body is accustomed to working, having multiple pathways and feedback systems to get to the same point. Using small amount of a large number of supplements is preferable to using high doses of only a few. Understanding this concept is a key to embracing this program. You will gradually layer in low doses of multiple nutrients based on hard biochemical data, **as always working in conjunction with your own doctor.**

The suggested supplementation protocol is broken into categories. It is not necessary to take every supplement in every category. However, depending upon the severity of an individual, it may be necessary to use every supplement listed. It is always possible that a particular individual may be sensitive to an individual herb or supplement. For this reason it is best to slowly add supplements to the program, taking the smallest amount possible, allowing several days before adding more supplements. Yes, it will take a while to introduce all the new supplements. It is important to remember to be calm and patient and not feel rushed to get through the program.

The Methylation Cycle is a series of four connected cycles or traffic circles. Your body needs to navigate these four traffic circles in order to process nutrients properly. If these traffic circles are not functioning as intended non ideal compounds can build up in your system such as high homocysteine.

LONG ROUTE AND SHORT CUT AROUND THE CYCLE

Dr. Amy looks first at two traffic circles/routes on the far right around the methylation cycle: The **Short Cut** through BHMT and the **Long Route** around the cycle via MTR/MTRR and B12. While the ultimate goal is to support healthy function through both routes around the cycle, initially Dr. Amy focuses on short cut support in Step one. Then, long route support is layered in for more complete methylation cycle support, in Step Two.



Dr. Amy does not like to use high dose TMG as it is supporting the shortcut pathway at a high level and may cause imbalances in norepinephrine to dopamine and cause hyperactivity or attention issues. She prefers to support the short cut with the PS/PC/PE complex and a specific source of DHA called Neuromins. PS (Phosphatidylserine) helps to decrease the cortisol stress response and helps with membrane fluidity. She then suggests shifting to DMG once lithium is in balance and one has supported the MTHFR, MTR and MTRR long Route around the pathway with sufficient amounts of B12.

MUTATIONS OR SINGLE NUCLEOTIDE POLYMORPHISM (SNP)

A gene mutation is a permanent change in the DNA sequence that makes up a gene. Mutations range in size from one DNA base to a large segment of a chromosome. A Single Nucleotide Polymorphism or SNP (pronounced "snip") is a small genetic change, or variation, that can occur within a person's DNA sequence. The genetic code is specified by the four nucleotide "letters" A (adenine), C (cytosine), T (thymine), and G (guanine). SNP variation occurs when a single nucleotide, such as an A, replaces one of the other three nucleotide letters: C, G, or T.

Think of mutations in enzymes as breaks that affect the ability of the enzyme to do its job. Homozygous (+/+) mutations are ones where both copies of the gene are affected and heterozygous (+/-) mutations are the ones where only one copy of the gene is affected. Each of us has two copies of each gene that we inherit from each parent. Some mutations speed up the activity of the enzyme (e.g. CBS upregulation) whereas others slow them down considerably (e.g. MTHFR C677T, 3 and A1298C, COMT mutations).

DR. AMY'S DNA METHYLATION PATHWAY PANEL SNP'S

The + or - designation is obtained by comparing the sample to a standard database norm. The database used is a proprietary national database chosen by the laboratory.

- + / + Homozygous and you have 2 copies of the mutation, one from each parent
- + / - Heterozygous and you have one copy of the mutation
- / - No Mutation

COMT V158M, H62H, 61 (catechol-O-methyltransferase)

VDR/Taq and VDR/Fok (vitamin D receptor)

MAO A R297R (monamine oxidase A)

ACAT 1- 02 (acetyl coenzyme A acetyltransferase)

MTHFR A1298C, C677T, 3 (methylene tetrahydrofolate reductase)

MTR A2756G/MTRR A66G, H595Y, K350A, R415T, S257T, 11 (methionine synthase/methionine synthase reductase)

BHMT 1,2,4,8 (betaine homocysteine methyltransferase)

AHCY 1,2,19 (S adenosylhomocysteine hydrolase)

CBS C699T, A360A, N212N (cystathionine-beta-synthase)

SHMT C1420T (serine hydroxymethyltransferase)

NOS D298E (nitric oxide synthase)

SUOX S370S (sulfite oxidase)

DR. AMY'S DNA METHYLATION PATHWAY SNP PANEL SAMPLE REPORT

SNP	Gene	Variation	Result	Call
RS4680	COMT	V158M	-/-	G
RS4633	COMT	H62H	-/-	C
RS769224	COMT	61	-/-	G
RS731236	VDR	Taq	Tt	Hetero
RS2228570	VDR	Fok	FF	C
RS6323	MAO A	R297R	-/-	G
RS3741049	ACAT	1-02	+/-	Hetero
RS1801133	MTHFR	C677T	-/-	C
RS2066470	MTHFR	3	+/-	Hetero
RS1801131	MTHFR	A1298C	+/+	C
RS1805087	MTR	A2756G	-/-	A
RS1801394	MTRR	A66G	+/+	G
RS10380	MTRR	H595Y	-/-	C
RS162036	MTRR	K350A	-/-	A
RS2287780	MTRR	R415T	-/-	C
RS2303080	MTRR	S257T	-/-	T
RS1802059	MTRR	11	+/-	Hetero
RS585800	BHMT	1	-/-	A
RS567754	BHMT	2	+/-	Hetero
RS617219	BHMT	4	+/-	Hetero
RS651852	BHMT	8	+/+	T
RS819147	AHCY	1	-/-	A
RS819134	AHCY	2	-/-	T
RS819171	AHCY	19	-/-	A
RS234706	CBS	C699T	+/-	Hetero
RS1801181	CBS	A360A	+/-	Hetero
RS2298758	CBS	N212N	-/-	C
RS773115	SUOX	S370S	-/-	No Support Needed
RS1979277	SHMT	C1420T	+/+	A
RS1799983	NOS	D298E	-/-	G

THE PROGRAM CONSISTS OF THREE STEPS

Step One Overview: See page 15

The first step is basic preparation, which can be done by anyone, no matter what your SNP's are, and whether you know what they are or not. Everyone would benefit from many of the foundational recommendations in this first step. You can also think of Step One as what you do while you await for your test results, which will allow you to then target support for your own specific SNP's throughout the later steps of this program.

- Focus on a healthy diet, eliminating/limiting excitotoxins (glutamate, glutamine, aspartate, Aspartame etc. see list page 86) that contribute to neurological inflammation. Make dietary changes that help to balance the neurotransmitters GABA and glutamate to lower neurological inflammation
- Balance minerals including lithium
- Short Cut supports for BHMT, SHMT, and CBS (based on UAA, taurine and ammonia levels) and ACAT.
- Organ supports strengthen the digestive organs to help prepare the body for detox, to support impaired systems and aid the body in repairing and generating new neurons including preferred probiotics.

Step Two Overview: See page 60

While continuing to follow many of the recommendations of Step One, you will move on to Step Two, in which you begin the process of natural detoxification due to methylation cycle function.

- Supplementing to bypass mutations included in the Long Route, which allows for natural detoxification: MTHFR, MTR, MTRR, AHCY, COMT, MAO A, SUOX, NOS, and VDR
- Supports to address specific gut bacteria.
- As you begin to slowly and gradually introduce the supplements customized to your own SNP's along with long route, you will naturally begin to detoxify. This occurs because supporting the methylation cycle makes detoxification more efficient.

Step Three Overview: See page 77

Once sufficient detox has occurred via the Step Two process, which may take months or even years, you can then begin Step Three, which helps the body remyelinate nerves and enhances nerve function.

- Re-myelination
- New nerve growth
- Maintenance

*For bare minimum supports consider the All in One general vitamin, BeCalm spray, Short Cut supports (DHA Neuromins, PS/PE/PC complex, Methylation Nucleotide blend RNA), Long route supports (Methylmate A/Folinic Plus and Methylmate B/5 methyl THF drops) and B12 as listed and explained in the **Simplified Program: www.scribd.com**.

- **If you feel that you cannot even handle the Simplified Program, Dr. Amy believes that everyone, should at a minimum, use at least one All in One general vitamin, Be**

Calm spray at night and Black Bear spray in the morning even if you cannot add another supplement. This is based on the very recent article showing that proper methylation prolongs life, lowering ALL CAUSE mortality. In other words, no matter what you will eventually pass away from, you will live longer if methylation is functioning properly. [View Article Here](#)

RESOURCES AND DISCUSSION GROUP

- FEEL GOOD NUTRIGENOMICS *Your Roadmap To Health*** book purchased at www.holisticheal.com or www.amazon.com
- A Complete Series of Lectures** 3 disc DVD set of the most informative previous presentations by Dr. Amy Yasko can be purchased at www.holisticheal.com

----- **The following resources are offered online at NO COST** -----

- FEEL GOOD BIOCHEMISTRY *Your Roadmap To Health*** www.feelgoodbiochem.com
- Discussion Group:** www.ch3nutrigenomics.com
Online support and answers to your questions 24 hours a day.
- Autism: Pathways to Recovery** book located on the CD you received with your DNA Methylation Pathway test kit or www.knowyourgenetics.com
- Previous Presentations** www.vimeo.com/dramyyasko
 - An individualized Approach: Introduction to The Yasko Protocol
 - Stress and Aggression
 - Membrane Fluidity
 - Methylation: Why you should be concerned, Part 1
 - More Pieces to the Puzzle
 - Methylations & Mutations
 - Lithium
 - H. Pylori/Helicobacter part 1 & 2
 - And lots more!
- Go To www.knowyourgenetics.com to view the Genetic ByPass book or to create a no cost/free Methylation Pathway Analysis.

Please join our online Discussion Group at www.ch3nutrigenomics.com for ongoing support, information, updates and replies from Dr. Amy.

You can register as a new member, by creating a username and inserting the relevant information. We have members from all over the world. Please add your location in the box provided. Be sure to click the "submit" button at the bottom of the page. Please note that your registration is subject to approval and can take up to 48 hours (you may **or** may not receive confirmation of activation). If after 48 hours, you cannot log in or need help, contact the Moderator, Erin Griffin at erin.griffin@holistichealth.com

It is suggested that you stick to the following forums until you are comfortable:

- **Welcome from Dr. Amy, Basic Guidelines, Where to Start**
- **The Basics /General Info and Reference Posts**
- **Dr. Amy's Recent Posts and New Findings**
- **New Members /Just got genetic results? Ask Questions here**

*Getting the information is what it's all about so Dr. Amy has generously donated several copies of her books and DVDs to the "Sharing Circle Lending Library" accessed through the Discussion group.

Some of these forums are locked (noted by lock icon on top left of each forum) which means that they are for information only and can only be edited by the moderator. Other forums have a page icon where one can post or respond to a question.

Look through the forums to find the best fit for your question, click to open that specific forum (Genetics, Supplements, etc.). To post on an existing thread, click on that thread to open it. If no existing thread fits your needs, you can start a new thread by clicking on the *New Topic* button above and to the left of the existing thread list.

This entire site may seem overwhelming. DO NOT PANIC. You can do this. It will take time to learn how to navigate through the forums, but over time, this Discussion Group will become your favorite resource in implementing the protocol and will keep you up-to-date with the most recent information.

The following is an example of a question that many have early on, "What do I do for sleep issues such as insomnia?"

Let's go 'step by step' and search for an answer:

1. Log In to www.ch3nutrigenomics.com
2. Click on the Search icon in the top right menu:
3. Enter key word(s) for your search. If you also enter "*griffkoom*" in the author box for an "Advanced search", you will only get responses to your topic that originated from Dr. Amy or the moderator, Erin Griffin.

*Note: Search for Keywords: You can use + to define words which must be in the results, Use * as a wildcard for partial matches.

Search Query			
Search for Keywords: You can use AND to define words which must be in the results, OR to define words which may be in the result and NOT to define words which should not be in the result. Use * as a wildcard for partial matches		<input type="text" value="insomnia"/>	
Search for Author: Use * as a wildcard for partial matches		<input type="text" value="griffkoom"/>	
Search Options			
Forum:	<input type="text" value="All available"/>	Search previous:	<input checked="" type="radio"/> Search topic title and message text <input type="radio"/> Search message text only
Category:	<input type="text" value="All available"/>	Sort by:	<input type="text" value="Post Time"/> <input type="radio"/> Ascending <input checked="" type="radio"/> Descending
Display results as:	<input type="radio"/> Posts <input checked="" type="radio"/> Topics	Return first	<input type="text" value="200"/> characters of posts
<input type="button" value="Search"/>			

Once you hit the search button at the bottom, you will receive all the responses containing the keyword(s) you have entered. You can also limit by Forum and Category, but most do not do this unless they are searching for a very specific post.

Search found 11 matches

	Forum	Topics	Author	Replies	Views	Last Post
	Posts by Dr Amy	Sleep issues	griffkoom	0	264	Tue May 19, 2009 12:17 pm griffkoom →
	Posts by Dr Amy	Hormones	griffkoom	0	442	Sat Jan 24, 2009 3:12 pm griffkoom →
	Posts by Dr Amy	Acetylcholine	griffkoom	0	240	Fri Jan 23, 2009 3:42 pm griffkoom →
	Posts by Dr Amy	Ammonia RNA/Seizure	griffkoom	0	234	Wed Jan 14, 2009 6:40 am griffkoom →
	Posts by Dr Amy	Insomnia and Fatigue	griffkoom	0	221	Fri Feb 22, 2008 11:52 pm griffkoom →
	Posts by Dr Amy	Adult sleep issues	griffkoom	1	309	Fri Dec 14, 2007 3:18 am griffkoom →
	Parents and Adults	recommendations here4correcting sleep cycle havent helped me [Goto page: 1, 2]	ruolin	19	548	Fri Dec 14, 2007 3:18 am griffkoom →
	Behaviors	Wow! Major saliva ,spit smearing !	marie4k	11	480	Sun Jul 09, 2006 6:24 pm Lainie →
	Medicines / Surgery	Naltrexone	princess@juscuz.com	3	712	Tue Aug 16, 2005 8:53 am griffkoom →
	Testing/ Toxic Metals test UTM/UEE, Fecal, Hair, Essentials	Change in Aaron [Goto page: 1 ... 5, 7, 8]	kksokolski	114	3692	Sun Aug 14, 2005 1:55 pm griffkoom →
	RNA	Can RNA cause mouth sores?	alpha	5	259	Sun Aug 07, 2005 3:13 pm alpha →

You can then select the posts that seem to relate closest in title to the issue you are experiencing. If more than 100 results return, you may wish to add an additional + to your search to further limit the results.

How to post a new topic or question:

To post a new topic or a new question, click on the left hand side top or bottom of the appropriate forum in an oval you will see the words "New topic" click on it and it will bring up the box to type your message in, and click submit at the bottom. Make sure to use the search feature first, as chances are your question has been asked and answered already.

How to reply to a previous post:

To reply to a previous post, click on the left hand side top or bottom of the appropriate forum in an oval you will see the words "Post Reply" click on it and it will bring up the box to type your message in, and click submit at the bottom.

Updating signature to include your genetic results:

To add genetic results to your signature, click on 'user control panel' top left of your main forum page screen, go to the profile tab and then hit "edit signature" option, the text box should appear to type in your info. Enter your signature and genetic information. When you are finished, click on submit at the bottom of the form. This helps Dr. Amy, the moderator's and the member's answer your posts with more personalized suggestions.

NUTRIGENOMIC TESTING

To order Dr. Amy's DNA Methylation Pathway with Methylation Pathway Analysis please go to www.holisticheal.com

If you already have genetic results and would like a Methylation Pathway Analysis or an updated Methylation Pathway Analysis please go to www.knowyourgenetics.com. This is a **free** site created by Dr. Amy.

It takes an estimated 6 weeks for results to come back from the lab. You will get your results mailed to you on a CD with suggested supplementation to consider **with your own doctor**, based on your genetics. Nutrigenomics integrates concepts in molecular biology and genomics to study how foods and nutritional supplements may assist in maintaining overall health and wellness.

This nutrigenomic test (DNA Methylation Pathway with Methylation Pathway Analysis) contains more than two dozen SNP's (Single Nucleotide Polymorphisms) and covers the Methylation cycle in a way no other test does. A SNP (pronounced "snip") is a small genetic variation within a person's DNA sequence. Each of these variations can have an impact on an individual's nutritional status, and in combination, these SNP's may have a *significant* impact on an individual's health and wellbeing.

Once ordered your nutrigenomic test kit will arrive in a few days and will include: FedEx return shipping material, Spot Saver Card, alcohol swabs, 2 lancets and 3 forms; All forms need to be filled out and sent back with the sample. You will also receive a computer CD containing the following Information:

- **This Companion Guide**
- **Excerpt from Dr. Amy's Latest Book:** *Feel Good Nutrigenomics, Your Road Map to Health*
- **Autism: Pathways to Recovery - Full Book:** (It's Not Just About Autism)
- **Free Resources & Links:** A guide to Dr. Amy's helpful resources
- **Dr. Amy's Start Up Videos:** Video presentations by Dr. Amy
- **Simplified Protocol:** Condensed version of the protocol
- **Excerpt from Cutting Edge Therapies:** Using Nutrigenomics to Optimize Supplement Choices
- **Sample DNA Methylation Pathway with Methylation Pathway Analysis**

When your test kit arrives, remove all the materials from the box and refer to the instructions that are in the kit for a step-by-step guide on how to obtain a sample. The test is a simple finger prick that you can do at home, and only a few drops of blood are needed. If you are uncomfortable or have questions regarding how to get a good sample, refer to the post in the "New Members" section on the Discussion Group. Here are a few helpful hints that others have shared on getting a blood sample:

- The finger prick can come from multiple sites
- Use the heel for infants
- Prick the side of the finger
- If for a child, try a finger prick while your child is sleeping
- Use a diabetes tester if the lancets do not work for you
- Your doctor or local laboratory might be willing to help you

STARTING STEP ONE AND SHORT CUT SUPPORTS

One of the key starting points for anyone on this program, in parallel with the focus on the Methylation Cycle is the recognition of the role of glutamate and GABA (gamma-aminobutyric acid) in chronic neurological conditions. In many cases, especially when Dr. Amy's focus was adults in her private practice, merely working to balance glutamate and GABA was sufficient for a return to health. Excess glutamate has been illustrated to be a factor in a number of neurological conditions including Parkinson's disease, Multiple Sclerosis, Huntington's disease, ALS (Lou Gehrig's disease), fibromyalgia and CFS amongst others. Balancing glutamate and GABA is the first step of the program. **A number of individuals find that glutamate/GABA balance is all that is needed to relieve a number of symptoms.** To understand this concept it is important to realize that excess glutamate relative to GABA can over excite your nerves. Glutamate works with calcium to stimulate your nervous system. Some stimulation is a good thing, but too much stimulation can leave you feeling nervous, twitchy and unable to sleep. The goal is to keep glutamate in balance so that you gain the benefits from it without having so much that your system is unbalanced.

One way to visualize the impact of excess glutamate in the body is like a car whose gas pedal is stuck, pressed to the floor. Speeding through life, without the ability to put on the brakes virtually ensures that you will either experience a major crash due to excessive speed or eventually run out of gas. Think of glutamate as the gas and GABA as the brake pedal. While you need the gas pedal to move forward in life, you also require the ability to use the brake as needed to be certain that you're able to moderate your speed.

Recognize that we do need glutamate as it helps us to think and process information. But too much glutamate will exhaust your nerves to the point of creating health issues. Glutamate is considered an "excitotoxin". Excitotoxins are compounds that have the ability to overexcite nerves to death. Before you even start to work on your Methylation Cycle you can begin by working on your glutamate/GABA balance. Look to eliminate food and supplement sources from your diet that increase glutamate beyond a healthy level. Look to support with nutrients that help to calm the nervous system including GABA, BeCalm spray, Nerve Calm Nucleotide RNA, valerian root, pycnogenol, grape seed extract, resveratrol spray, CoQ10 spray, All in One general vitamin. For those that are COMT V158M -/- consider theanine.

As with glutamate, calcium is something your system needs. But too much calcium will work with glutamate to overexcite your nervous system. One way to look at the interaction between calcium and glutamate is that glutamate is the gun and calcium is the bullet. In experiments looking at the impact of minerals on excitotoxic death it was found that "Calcium, it appeared, was the culprit. Apparently glutamate opened a special channel designed to allow calcium to enter the neuron, and it was calcium that triggered the cell to die...It appeared that excitotoxins, including glutamate and aspartate work by opening calcium channels, at least on certain subtypes of receptors. When those neurotransmitters are allowed to come into contact with the receptor in too high a concentration or for too long a period of time, the calcium channel gets stuck in the open position allowing calcium to pour into the cell in large amounts" (Russell Blaylock, *Excitotoxins the Taste that Kills*). Thus, you want to strike a healthy balance in terms of the level of calcium support you are using. Look to support with magnesium, zinc and lithium, which may help to balance excess calcium in the system.

According to Dr. Russell Blaylock, we are often unaware of the issues of excess glutamate until more than 80% of our neurons have been impaired. *"What is so unusual about these diseases is that most of the people who are affected by them have lived perfectly healthy lives up until the time the disease strikes, which is usually later in life. The puzzle of what causes these particular neurons to start dying after decades of normal function has intrigued neuroscientists for many years...evidence began to appear indicating that even though the symptoms do not appear until the later years the pathological destruction of neurons begins much earlier, even decades earlier...the symptoms of Parkinson's disease do not manifest themselves until over 80 to 90% of the neurons in the involved nuclei have died. The neurons didn't all suddenly die at the same time but rather they slowly and silently deteriorated over many years. The same is true for Alzheimer's disease. This is why prevention is so important."*

Addressing imbalances in the glutamate/GABA ratio as well as the calcium to magnesium ratio is what I consider the starting point, or Step One of this program. Even in the absence of nutrigenomic SNP information you can begin to work on addressing excitotoxicity in your system. This is a critical ongoing way of life, to keep glutamate and calcium in balance as you move forward to work on the other aspects of multifactorial health conditions. Excitotoxins will continue to damage more nerves and wreak more havoc in the body if they are not addressed. Therefore, the excitotoxin imbalance is the best place to start to put the pieces back together. Once excitotoxins are under control, it is easier to balance the rest of the body.

Key Definitions:

- Excitotoxin: A toxic molecule that stimulates nerve cells so much that they are damaged or killed.
- GABA: A calming neurotransmitter that is essential for speech.
- Glutamate: The main excitatory neurotransmitter in the body, that is essential for learning and for both short-term and long-term memory.
- GFCF: Gluten free and casein free diet

Printed resources relating to excitotoxins:

- Dr. Amy's paper — [The Role of Excitotoxins in Autistic Type Behavior](#) which explains in detail the damage that excess excitotoxins can have on the body and how it relates to our behavior and health. Learning the importance of balancing GABA and glutamate and limiting calcium is essential to beginning the healing process.

DIET/GABA/GLUTAMATE

Removing excitotoxin triggers from the diet, simply involves reading labels and closely monitoring food and supplement intake to avoid excitotoxins. Some choose to follow a more restrictive diet eliminating Casein and Gluten.

While you may already be on the **GF/CF diet** (Gluten Free/Casein Free diet which Dr. Amy recommends), and limiting many excitotoxins in the diet there is an additional step to the diet that needs to be made in order for the inflammatory process to abate and the recovery process to begin. This additional dietary step/intervention is to remove/reduce excitotoxins from the diet and from supplements as well. Excitotoxins are: Glutamate, Glutamic Acid, MSG, Glutamine (which converts to glutamate), Aspartate, Aspartame, NutraSweet, and Cysteine. Foods that are especially high in glutamate are: soy, peas, mushrooms, tomatoes, parmesan cheese, yeast, milk, and wheat. A diet high in fermented foods and/or high protein may also contribute to this issue. It is important to be conscious of the total load of glutamate and to think of your ability to tolerate more glutamate, as if your cup is already full to the brim and about ready to overflow.

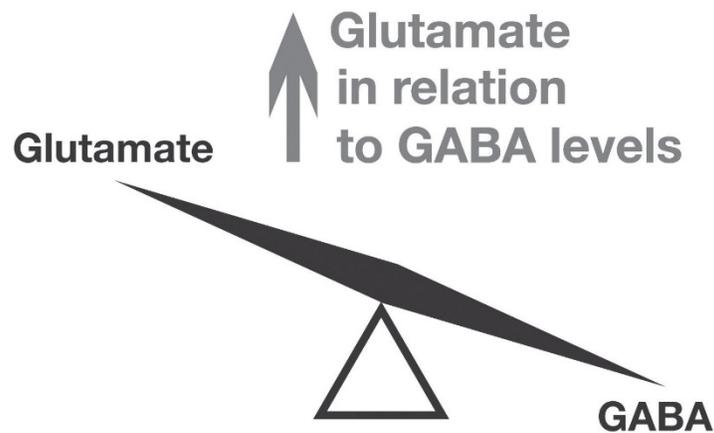
“In terms of diet, while diet is an important piece, in most cases no diet is perfect and no diet is ever going to be enough for recovery and every diet has certain aspects that are counter to the program. Basically, fermented foods are naturally high in glutamate that is why they taste good and people want to eat them. The glutamate in fermented food is enough to actually cause allergic reactions in some cases. The normal bacteria associated with fermented foods can actually produce higher levels of glutamate. Where this program begins at Step One with the glutamate/GABA balance, the bottom line is a low protein, medium carbohydrate diet, and in general lower end fat, plus special digestive enzymes to process those fats. I also prefer low doses of specific sulfur donors (broccoli, garlic, wasabi etc.) and limit glutamate, adjusted based on biochemical levels.”

GF/CF and Low Glutamate Diet Resources:

- The Official GFCF Diet Support Group Website: www.gfcfdiet.com
- Autism Network for Dietary Intervention: www.autismndi.com
- Battling the MSG Myth Site: www.msgmyth.com
- PKU Diet: depts.washington.edu
- Special Diet Special Kids book by Lisa Lewis
- Battling the MSG Myth book by Debbie Anglesey

Since we are viewing multifactorial conditions that have their roots in neurological inflammation, it is critical to understand the pivotal role that glutamate excess along with a GABA deficiency play in setting the stage for the progression of symptoms.

As a starting point, let us think of this balance as if we are looking at a seesaw and when glutamate is too high GABA is too low.



When **glutamate is elevated** we can see the following types of symptoms, please check any that you or your child may be experiencing:

Increased	Decreased
<input type="checkbox"/> Excitotoxin damage	<input type="checkbox"/> Glutathione
<input type="checkbox"/> Opioid effects	<input type="checkbox"/> Sleep
<input type="checkbox"/> TNF alpha (leading to leaky gut)	<input type="checkbox"/> Eye contact
<input type="checkbox"/> Acetylcholine	<input type="checkbox"/> Myelination
<input type="checkbox"/> Bladder contraction	
<input type="checkbox"/> Strabismus	
<input type="checkbox"/> Stims (self-stimulatory behavior)	
<input type="checkbox"/> Seizures	

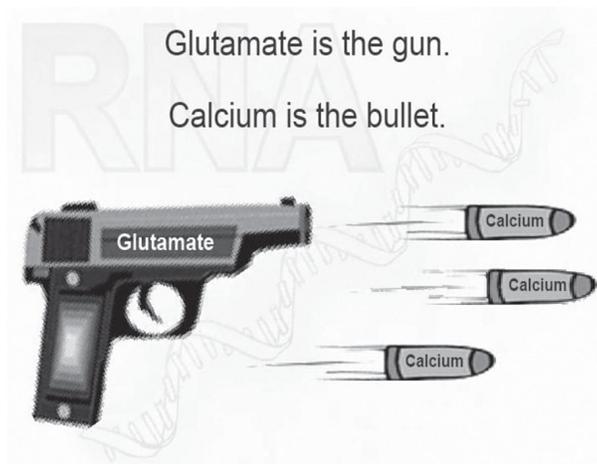
When **GABA is low**, we may observe the following symptoms, please check any that you or your child may be experiencing:

Increased	Decreased
<input type="checkbox"/> Anxiety	<input type="checkbox"/> Language/speech (particularly comprehension) remember that GABA puts the spaces between our words
<input type="checkbox"/> Aggressive behavior	<input type="checkbox"/> Social behavior
	<input type="checkbox"/> Eye contact
	<input type="checkbox"/> Bowel function (retention issues)

Increased glutamate leads to increased calcium flow into neurons, which causes nerve damage. Nerve damage leads to increased inflammation. If glutamate and calcium remain too high and this process of nerve damage is left unchecked, then cytoskeletal and membrane damage can also occur.

Evaluating calcium levels and utilizing vitamins D & K are important to re-establishing this balance as well. Vitamins D & K are fat-soluble vitamins and without a diet high in dark leafy greens, one would need to supplement on a daily basis. A Urine Essential Elements test should be done to establish baseline mineral levels. Controlling calcium levels may be done, by switching to chamomile and/or nettle supplementation, rather than directly supplementing with calcium. Increasing magnesium relative to calcium, using Zinc to limit glutamate damage and watching Lithium, Iodine and Boron levels will all aid in reducing glutamate levels and reversing the flow of calcium into the neurons and back to the bones and teeth.

If you have not already done so, start limiting excitotoxins and switch calcium to natural forms mentioned above.



Ideally more magnesium relative to calcium is preferred as excess calcium can work with glutamate to cause excitotoxin issues. The goal is for calcium to be in the low range of normal with magnesium in the higher range of normal. Since vitamin D and K help with calcium absorption, less calcium support may be needed if vitamin D and K are supported properly. There may be a greater need for calcium with a high protein diet and a high protein diet may be an issue for those who are CBS +. If calcium is higher than 650ppm or 65% it may indicate copper toxicity. Boron deficiency may cause dumping of calcium and magnesium in urine. The Bone Support compound addresses the need for boron as well as calcium, magnesium D&K.

If calcium levels are too low consider herbs to support calcium in a more complexed form such as nettle, chamomile or chervil. Or the use of calcium/magnesium/D/K compound to support calcium in a more balanced fashion as low calcium can play a role in back pain, menstrual cramps and brittle nails. High levels of calcium may be an issue if glutamate is also high. Supplements to help control high calcium would include the use of vinpocetine, boswellia, ATP and/or the MitoForce compound may help support better calcium balance as mitochondria may act as sinks to buffer the effects of calcium overload. Potassium and phosphorus (consider riboflavin 5 phosphate) may help to reduce a high level of calcium dumping in urine. Check if boron is also being dumped as boron is often dumped with low vitamin D. So high level calcium and boron dumping may indicate a need for vitamin D. Guaifenesin, which is used for chronic fatigue (low dose in Air Power and natural guaifenesin is included in the Muscle Fatigue Support compound as well as the Ion Transport Capsule) may help pull down high calcium.

Excess glutamate relative to GABA can over excite your nerves. Glutamate works with calcium to stimulate your nervous system. Some stimulation is a good thing, but too much stimulation can leave you feeling nervous, twitchy and unable to sleep. The goal is to keep glutamate in balance so that you gain the benefits from it without having so much that your system is unbalanced. The BeCalm Spray contains a number of ingredients to help balance excess glutamate. One of those ingredients is low dose lithium support. This is a particularly important mineral, not only in terms of helping to control glutamate but lithium also helps with B12 transport. You want to be sure lithium is in balance before adding B12 so that you do not run the risk of further depleting potentially already low lithium levels. A key test to run early on is a HMT to check lithium levels, or a blood lithium and B12 level through your doctor. Dr. Amy feels it is important to supplement with potassium when adding extra lithium and ATP or Mitoforce.

Lab Tests and other Indications of a Need for Glutamate/GABA Balance

- Elevated: Glutamate, Glutamine, Glutamic acid, Aspartate, Aspartic acid, and Low GABA (gammaaminobutyric acid) on a Urine Amino Acid test (UAA)
- Low GABA on a Neurotransmitter test
- Elevated quinolinic or kynurenate on OAT/Metabolic test
- Seizures
- Self-stimulatory behaviors- Stims/Stimming
- Poor eye contact
- Aggressive behavior

Supports for Glutamate/GABA Balance:

- | | |
|---|---|
| <input type="checkbox"/> Nerve Calm Nucleotide blend RNA | <input type="checkbox"/> Lithium Orotate based on UEE/HTM |
| <input type="checkbox"/> Comfort Nucleotide blend RNA | <input type="checkbox"/> Potassium |
| <input type="checkbox"/> BeCalm Glutamate/GABA Spray | <input type="checkbox"/> L-Theanine (for comt-) |
| <input type="checkbox"/> Melatonin Sleep Spray | <input type="checkbox"/> Taurine (not for CBS + or SUOX Mutation unless suggested on testing) |
| <input type="checkbox"/> Resveratrol Antioxidant Spray | <input type="checkbox"/> Passion Flower |
| <input type="checkbox"/> Progesterone cream- Pro-Gest Cream | <input type="checkbox"/> Ku-Shen Sophora tea |
| <input type="checkbox"/> GABA-GABABalance | <input type="checkbox"/> Relaxation support (Valerian, Hops, Magnolia) |
| <input type="checkbox"/> Pycnogenol | |
| <input type="checkbox"/> Grape Seed Extract | |
| <input type="checkbox"/> Valerian Root | |
| <input type="checkbox"/> Jujube | |

Lab Tests and other Indicators for a Need to Reduce Calcium

- Elevated Calcium relative to Magnesium on a UEE
- Elevated Calcium relative to Magnesium on a red blood cell element test
- Self-stimulatory behaviors- Stims/Stimming

Supports To Decrease/Protect from High Calcium:

- | | |
|--|--|
| <input type="checkbox"/> MitoForce Compounded Supplement | <input type="checkbox"/> Zinc |
| <input type="checkbox"/> Co Q10 Fatigue & Muscle Spray | <input type="checkbox"/> Paradex, |
| <input type="checkbox"/> GSH Capsules | <input type="checkbox"/> Don Quai - Max V |
| <input type="checkbox"/> Magnesium | <input type="checkbox"/> Air Power |
| <input type="checkbox"/> Chamomile | <input type="checkbox"/> Black Cohosh |
| <input type="checkbox"/> Boswellia -Ayur Boswellia Serrata | <input type="checkbox"/> Muscle Fatigue Support compound |
| <input type="checkbox"/> Vinpocetine | <input type="checkbox"/> Prevagen 5mg or less |

SPECIAL SUPPLEMENT CONSIDERATIONS

Step One supplementation is a foundation of supports that will serve to support the body. As such, it may trigger detox on its own, so careful attention should be paid to this possibility. Please see page 59 of this guide to learn how to recognize and control detox. If a supplement is not tolerated, 9 times out of 10 the new supplement is triggering detox. It is recommended to add Supplements/ Nucleotide blend (RNA's) with the "low and slow" method; start with a sprinkle to 1/4 of a supplement, or 1 to 2 drops of a Nucleotide blend (RNA's), wait 3 to 4 days to see how you tolerate it. Dr. Amy feels that a sprinkle is a 'bonafide' dose. How you proceed with supplementation and which is best will be individual; based on behaviors, symptoms, detox and ongoing biochemical testing. Reducing inflammation, supporting organs, balancing minerals, Short Cut supports and GABA/Glutamate support will help to prepare the body for Step Two. As you add in the supplements for Step One, it may be very helpful to keep a diary of supplements. Date, dosage, reactions/behavior and any changes should be noted as you add them in.

Supplement Brands

Please read labels on any supplements that you may have on hand or when purchasing supplements, beware of added fillers and sources of excitotoxins such as: Glutamate, Glutamine, Glutamic acid, Aspartate, Aspartame and Aspartic acid. There can be an issue in terms of purity and storage for certain brands of supplements. Source and storage conditions are very important. Think of supplements as fresh produce.

Preferred Brands, Nucleotide blend formulas (RNA's), Compounds, Drops and Sprays

Dr. Amy continues to select and create the highest quality of supplements for her program. Individual supplements, proprietary Nucleotide blend Formula (RNA's) as well as recently created compounded formulas, and special technology oral sprays can be found at www.holisticheal.com

Mutation Specific Compounds-Sprays- MSF Nucleotide blend formulas (RNA's)

In an effort to make her program easier and more cost effective to implement, Dr. Amy has created several Mutation Specific Formulas (MSF's). These MSF formulas include compounds, Nucleotide blend RNA's and sprays designed and formulated with the specific mutation listed in mind. The idea is to fulfill the major portion of that mutation's needs. Individual herbs/vitamins can then be added based on biochemical testing.

All in One (AIO) Custom General Vitamin

Dr. Amy has created the **All in One**. A custom general vitamin, taking into account the imbalances she has seen on thousands of tests for over a decade and truly believes it will help to lay the nutritional groundwork for essentially everyone on the program, including those who are sensitive to sulfur and/or methyl donors and those who are MTHFR +. The *All in One* general vegan vitamin is gluten, casein, soy, copper and iron free. It contains VERY LOW dose lithium to help with B12 transport, the preferred forms of several important key minerals and VERY LOW dose supports for the methylation cycle. For most individuals this is **NOT** enough to trigger detox, but enough to be sure that there is some VERY LOW level support for both the short cut (nucleotides, SAME, DHA, soy Free PS) and the long route (5 methyl THF and a tiny bit of folinic, Very low dose hydroxyl, intrinsic factor, and low amount of methionine). This helps to ensure that the cycle can function to some degree at a very low level, to be sure that the 'tank is not empty' of critical nutrients. Suggested use is to start with a single capsule and gradually work up to the suggested four capsules per day, as tolerated. Although opening the capsule may expose the ingredients, it should be fine for those who are younger, sensitive or new to the program who may need to start with a sprinkle. For more information on the *All in One* ingredients and their rationale, please refer to the Discussion Group.

TOP STEP ONE SUPPLEMENTS/ Nutritional Groundwork:

- 1-4 capsules *All in One* general vitamin
- 1-2 MTHFR A1298C+ Liver Compound
- 1 VDR Fok/Pancreatic Compound
- 1-2 Ultimate B Complex
- 15-40 mg Zinc Lozenges
- 1 Ora-Kidney
- 1 Cod Liver Oil -CLO
- 3 Special Digestive Enzymes /SDE 1 w each meal
- 1 or more Resveratrol Spray
- 2 or more sprays BeCalm Spray
- 1 or more VitaD-Light Spray
- 1 Adrenal Concentrate
- T Cell + B Cell
- 1 or more VitaOrgan Compound
- 1 or more GABA- GABABalance
- 500mg Vitamin C
- Probiotics—several types-rotate daily: Florastor, Lactobacillus Plantarum, Lactobacillus Reuteri (Digestive Health or Probiotic drops), Suprema Dophilus, Allerdophilus, FloraElite, and Nutriclean
- 2 drops Cell Food
- 2 drops Bionativus Trace Minerals
- Run UEE to assess Minerals
- 3-5 drops or more as needed *General Support Nucleotide* blend RNA
- 3-5 drops or more as needed *Bowel Support Nucleotide* blend RNA
- 3-5 drops or more as needed *Cytokine Balance Nucleotide* blend RNA
- 3-5 drops or more as needed *Nerve Calm Nucleotide* blend RNA
- 3-5 drops or more as needed *Stress Foundation Nucleotide* blend RNA
- 3-5 drops or more as needed *Fatigue Support (CFS Adults) Nucleotide* blend RNA
- Pycnogenol- Optional if taking AIO
- Grape Seed Extract- Optional if taking AIO
- Vitamin K (Super K) Optional if taking AIO

Before adding EXTRA B12 check Lithium:

If levels are low in hair, blood or urine or excreting very high levels consider

- 3-5 Sprays BeCalm Spray
- Low dose Lithium Orotate (work with your doctor)
- Potassium
- 2-4 daily *All in One* General Vitamin

BASIC METHYLATION CYCLE SUPPORT Short Cut and Long Route:

In order listed

- 1-4 daily *All in One* General Vitamin
- 1 or more PS/PE/PC Complex
- 1 DHA Neuromins
- 3-5 drops *Methylation Support* blend *Nucleotide RNA*
- 1 or more VitaOrgan Compound
- 2 or more sprays BeCalm Spray
- SAM-e (if tolerated)
- 1-2 MethylMate A/Folinic Plus Compound
- 1-3 drops MethylMate B/5 methyl THF Oral Drops
- 1 or more drops Hydroxy B12 Mega Oral Drops
- 1 or more sprays Hydroxy B12 Oral Spray (GET-B12)
- 1 or more drops Adenosyl B12 Mega Oral Drops
- Black Bear Spray can be used as a substitute source of both Adenosyl B12 and Hydroxy B12
- 3-5 drops or more as needed *Kidney Support Nucleotide* blend RNA
- 3-5 drops or more as needed *Liver Support Nucleotide* blend RNA

General dosing for the above step one supports can be found on page 78.

Dr. Amy does not like to use high dose TMG as it is supporting the Short Cut pathway at a high level and may cause imbalances in norepinephrine to dopamine and cause hyperactivity or attention issues. She prefers to support the short cut with the PS/PC/PE complex and a specific source of DHA called Neuromins. PS (Phosphatidylserine) helps to decrease the cortisol stress response and PC (Phosphatidylcholine) helps with membrane fluidity. She then suggests shifting to DMG once lithium is in balance and one has supported the MTHFR, MTR and MTRR Long Route around the pathway with sufficient amounts of B12.

GABA

All GABA is not created equal and special consideration should be given to the brand, source, age, storage and processing of the GABA you use. Dr. Amy is very particular about the sources of supplements she suggests and often makes the analogy to fresh produce. For instance, if a store buys a large truckload of GABA, because buying in bulk it will save them money, and the load of GABA sits in a hot storeroom for weeks or even months, it may not have the same activity as GABA that has been handled properly. Remember that GABA can convert to glutamate via a simple enzymatic reaction in the body. With this in mind Dr. Amy has created what she feels are the best sources of GABA.

When beginning GABA, she recommends starting with GABA Balance and/or the BeCalm Glutamate/GABA Spray. Both are appropriate for all nutrigenomics. Start with a sprinkle or one spray and increase slowly. GABA can be increased until you get weepy, mushy or overly emotional behavior. You will also want to monitor dosages for fatigue or tiredness during daytime hours. GABA should be useful to help decrease stress or anxiety, increase speech, increase eye contact, help with seizure activity and social interactions. GABA increases gut peristalsis/gut motility so it can also help move the bowels better as well.

Dr. Amy prefers waiting until one is closer to Step Three to introduce the specific sublingual lozenge called GABA calm. The rationale for this is by step three glutamate and other excitotoxins are well under control as glycine can act as a "fair weather friend. For many adults whose UAA levels of glycine are not high, Dr. Amy has found that GABA Calm seems to work well, during the day. However it contains Glycine and Glycine is a 'fair weather' friend. If more glutamate is around it will pal up with the glutamate and cause more excitotoxin activity. If more GABA is around it will pal up with GABA and be more calming. Early on most have more glutamate and do not tolerate high doses of any source of glycine. Over time they are able to tolerate it as the balance between glutamate and GABA is more ideal. ZEN which contains L-theanine, is nice addition and can be taken later in the evening as it can help with sleep and stress. Theanine itself is also helpful in balancing out the effects of glutamate, but where it is a methyl donor it is usually only tolerated best by COMT- individuals.

In general most do not see any negative responses to the addition of plain GABA (as compared to GABA + glycine) unless the GABA levels are already very high on a UAA test or if Manganese levels are out of balance on UEE. Generally if glutamate is high and GABA is low on the UAA supplementing may be quite helpful. If you do see a negative reaction or less than optimal response check to see if you might be increasing GABA indirectly with other supports like Valerian root which contains GABA. Valerian root has been reported that it helps to prevent the breakdown of GABA, as well as to enhance the transport of GABA. It is possible that you may have issues with GABA release, breakdown and transport and that it is not simply a matter of increasing the level of GABA in the system. Check to see if you have any supplements containing any sources of glutamate, glutamine, glutamic acid, aspartate, Aspartame, aspartic acid compounds. Check to see if other ingredients have been added like B6 or

taurine which can be an issue for certain genetics. Check manganese and molybdenum levels on the UEE and Hair test as those levels may also affect GABA transport.

Tetanus toxin (by its action on synaptobrevin) in the DPT (diphtheria tetanus pertussis) vaccine can block the release of GABA and glycine. If the vesicles that contain GABA are not able to fuse with the membranes and release their contents this can create additional issues with the neurotransmitters that are contained in these vesicles, such as GABA. In these cases the use of ashwaghandha may be helpful in conjunction with valerian root and plain GABA. Antibodies against the GAD enzyme (the enzymes that converts glutamate to GABA) have been reported in some cases of tetanus toxicity.

TRANSITIONING FROM ANOTHER PROTOCOL

It may be difficult to blend Dr. Amy's protocol with others for a variety of reasons. Many supplements used on other approaches may contain excitotoxins; this may be counterproductive, please use your own judgment and consult your physician on what is best for you or your child. Make changes gradually. Just by stopping some supplements, you may see unwanted detox or behaviors. As we limit excitotoxins in the diet, we also want to limit excitotoxins in our supplementation as well.

For instance, many use L-glutamine for the gut. We are trying to avoid glutamine, especially early in the program. Chelated minerals can be chelated with problematic Amino Acids and should be avoided. High doses of Vitamin B6 or P5P are widely used in other protocols, but may be counterproductive. Methyl B12 shots may or may not be best for you. The best form of B12 for you will be dependent on your nutrigenomic results. Adding too much B12, in any form, before lithium is in balance can also be an issue.

Even if you have been on many supplements before with other protocols, everyone needs to go through Step 1 to get the body balanced and prepared for detox. You may choose to slowly wean off the counterproductive supplements, decrease B12/High dose 5MTHF and slowly make the transition over to Dr. Amy's Step 1 supports, Short Cut supports and assess and balance lithium. Please keep in mind, that these changes in supplements may be sufficient enough to trigger the body's natural detoxification process. If you feel this is happening, please look to the Discussion Group for support and consider that this is an indication that some additional testing, especially a toxic metals test, would be appropriate at this time to measure excretions and assess minerals that may have been depleted.

Only by looking at the specific ingredients in the supplements will you be able to determine compatibility with this protocol. If you are having difficulty, post your current supplement list on the discussion group with a short description of your specific issues, and the veteran members will help suggest options for you to consider while making this transition. Of course, the ultimate decision is yours as to which supplements you use. As discussed later in this companion guide Dr. Amy makes comments and suggestions on biochemical tests (see page 28) that are ordered through

www.holisticheal.com

When making these comments she refers to your supplement list, if submitted, and any previous testing on file. She will often comment directly on the supplement list and mark those supports that may be problematic. This can then be discussed with your practitioner.

Assessing lithium and balancing GABA/glutamate would be most important for those that have already been supplementing with 5MTHF and higher doses of B12. Usually adults have a harder time handling the detox that those supports may cause before short cut supports and Glutamate is in control. This is

especially helpful for those that are seeing high levels of folate, and or B12 levels in their blood work or those that are seeing a negative reaction supporting with lithium. Lithium helps with B12 transport and those high levels of folate and/or B12 may indicate a transport issue.

THE IMPORTANCE OF LITHIUM

Based on the data that Dr. Amy has been accumulating, she believes that the role and importance of lithium with regard to the methylation cycle has been under recognized for a very long time in both adults as well as individuals with autism.

Lithium support is a critical missing piece with many supplement programs, particularly for those using high dose B12, and those with SHMT+, MTR+ and/or MTRR+ mutations. In addition, there is new information that those with Lyme disease may also be low in lithium.

Where energy (ATP) is needed for lithium transport, many adults with CFS or younger individuals with Mitochondrial weakness may have low lithium. One or more of the following supports maybe useful in these instances: Mitoforce Compound, ATP, Riboflavin 5 Phosphate, CoQ10, Carnitine, NADH.

Those who are MTR/MTRR + tend to have lower lithium levels. Presumably, this is due to over activity of the MTR enzyme. Since MTR/MTRR uses B12 and lithium plays a role in B12 transport you can see why it fits with the data that those who are MTR/MTRR + tend to require more lithium, and thus the more B12 that is added, the more lithium may be needed.

Lithium is reported to play a role in the transport of B12 and has been implicated in helping to control glutamate levels such that it is reported to have positive impacts on Alzheimers, ALS, Parkinsons as well as other glutamate associated issues (which can include seizure activity). Lithium helps to decrease norepinephrine relative to serotonin levels and may also help to reset the circadian clock (sleep/awake cycle).

We also need to be aware that if you are adding B12, pay attention to lithium levels and be sure you are not depleting your system of lithium. In cases where blood B12 is high, yet urine cobalt is low we again see confirmation of the role of lithium, as in these cases the HMT lithium as well as blood lithium tends to be low. Once lithium is supported the B12 levels will also reach a better balance. If you are supplementing with lithium and are seeing high levels of excretion in urine and hair, run a blood lithium test to see if much of what is being supplemented is simply being excreted.

The goal is to be certain lithium is in balance without levels becoming too high or too low. In order to be sure that lithium stays in balance Dr. Amy suggests running frequent UEE's and HMT's and if needed blood lithium test.

***As always individuals should work closely with and defer to their own doctors.**

The *All in One* includes **low dose** lithium as well as low dose Hydroxy B12 for minimal support. The doses are well tolerated even for those just starting the program/ Step One. The low level of lithium may not be sufficient to support those who have very low lithium levels on a HMT. The BeCalm spray is also a great low dose lithium source. Besides the *All in One* and the BeCalm spray, Lithium Orotate capsules and Lithium Chloride liquid drops are available. If needed in unique cases, prescription lithium can be obtained from your doctor.

Tests or symptoms/behaviors that indicate a need to address Lithium:

- High Lithium on UEE or very low lithium on UEE
- Hydroxy B12 Mega Drops
- Low Lithium on HMT or dumping of lithium on a HMT
- Aggression
- Lack of cobalt on a UEE in spite of high levels of support
- MTR/MTRR + status

Supports for excretion of high levels of Lithium:

- | | |
|--|---|
| <input type="checkbox"/> AHCY/SHMT Compound | <input type="checkbox"/> Ultimate B Complex |
| <input type="checkbox"/> MTHFR A1298C Compound | <input type="checkbox"/> GSH capsule |
| <input type="checkbox"/> VitaOrgan Compound | <input type="checkbox"/> CellFood |
| <input type="checkbox"/> SHMT Spray | <input type="checkbox"/> Folazin |
| <input type="checkbox"/> BeCalm Spray | <input type="checkbox"/> BioNativus |
| <input type="checkbox"/> Low dose Lithium Orotate (work with your Dr.) | <input type="checkbox"/> ATP |
| <input type="checkbox"/> Potassium* | <input type="checkbox"/> Riboflavin 5-phosphate |
| | <input type="checkbox"/> MitoForce Compound |

*When supporting with lithium, it is suggested to keep a close eye on potassium and Iodine levels, as they can become depleted. This can be assessed with running frequent UEE and HMT test together and the topical iodine test and/or Urine Iodine test. Also make sure to check taurine levels on a UAA adding or adjusting CBS+ Nucleotide blend RNA **OR** Ammonia Nucleotide blend RNA as needed.

Lab Tests indicating a need to focus on Potassium:

- Very low potassium on a HMT
- Pattern of potassium dumping on UEE and HMT
- Very low rubidium on a HMT
-

Supports for Potassium:

- Potassium citrate
- MitoForce Compound
- K-Bicarb
- Krebs potassium

For more information on lithium please refer to the Discussion group and watch Dr. Amy's Lithium presentation: www.vimeo.com/dramyyasko

BIOCHEMICAL TESTING

The following biochemical tests are run throughout the protocol to determine additional supports needed for each individual. When purchased through www.holisticheal.com the total cost includes Dr. Amy's interpretation, hand written comments and shipping from you to that particular lab within the United States. The turnaround time for processing generally takes approximately 2 weeks unless otherwise noted. The **Preferred Supplement List** and **Client History** forms can be downloaded from the Discussion Group at www.ch3nutrigenomics.com. If tests are ordered through HHI, please

send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 once your samples are shipped.

FEEL GOOD BIOCHEMISTRY Your Roadmap To Health www.feelgoodbiochem.com by Dr. Amy, and edited by Dr. Nancy Mullan (available online at no cost) is a comprehensive resource to aid you and your doctor. It details Dr. Amy's interpretation of biochemical test data choices concerning supplementation. *Feel Good Biochemistry* is a free online resource to help you and your doctor understand Dr. Amy's interpretation of biochemical test results.

Urine Toxic Metals and Essential Elements Test – UTM/UEE (Urine)

Determines current level of detox and mineral levels. Repeated every 6-12 weeks (during times of heavy detox it is important to keep an eye on minerals as they can be depleted). The urine test gives a picture of what is being excreted at this moment. Dr. Amy finds it useful to run the UTM/EE at the same time as a HMT, at least initially to get a baseline level of metals from both the immediate as well as the more historic vantage point. IF possible she suggests an initial UTM/UEE along with a HMT to get a baseline sense of toxic and essential mineral. (For additional details see feelgoodbiochem.com/chapter-2)

Hair Elements Test - HE/HMT (Head Hair)

Determines past/history of toxic metals excretions that you may have missed and Lithium levels. Repeat every 3 to 4 months. IF possible she suggests an initial UTM/UEE along with a HMT to get a baseline sense of toxic and essential mineral. (For additional details see feelgoodbiochem.com/chapter-1)

Urine Amino Acids Test - UAA (Urine)

Determines Ammonia, Taurine, GABA, Glutamate and other important Amino Acid levels. Repeated every 4 to 6 months. Urine amino amino tests give you information about the building blocks for proteins in your system and can help you to see if you are making progress with some of the compounds in the Methylation Cycle as well as a sense of overall nutrient absorption. Turnaround time for processing can take approximately 3 weeks. (For additional details see feelgoodbiochem.com/chapter-5)

Metabolic Analysis Profile - MAP (Urine)

Determines current level of methylation support, and gives a sense about gut microbes and Dopamine balance in respect to Norepinephrine. The MAP helps to give information about intermediates in the Methylation Cycle, such as FIGLU and methylmalonic acid. that indicate a need for specific methylation cycle support. The MAP also give information about breakdown products of neurotransmitters like serotonin and dopamine that is useful in conjunction with a Neurotransmitter NT test in terms of mood, depression, OCD and the need for support in this area. The MAP gives data concerning critical energy intermediates in the body. More and more adults and children are recognizing mitochondrial issues as a factor in their declining health. MAP testing is useful in assessing the level of mitochondrial energy intermediates. In conjunction with a CSA and GI Panel tests, the MAP indicates issues with the breakdown of fats in the body, shows intermediates that can indicate a state of ketosis as well as more general indicators of bacterial or yeast issues in the body. In general the MAP test can help you to determine areas you need to focus on for additional testing. Repeated every 6 to 8 months. (For additional details see feelgoodbiochem.com/chapter-4)

Fecal Toxic Metals Test - FM (Stool)

Determines current level of detox through the stools. A number of individuals tend to excrete toxins more readily in stool rather than in urine or via hair. Particularly when there are imbalances in gut microbes and you are working to address the gut you may see more excretion of toxins in the stool than in urine. Unfortunately, the FMT does not include aluminum. Repeated every 4 months. (For additional details see feelgoodbiochem.com/chapter-3)

Comprehensive Stool Analysis -CSA (Stool)

Determines gut and bacterial issues by looking at what organisms grow from the sample. Best run together with the GI Panel. MAP tests are useful to look at the balance of kynurenic and quinolinic which may be increased with bacterial infection. UAA's are useful in conjunction with the CSA and GI panel tests as gut imbalances can directly play a role in nutrient absorption. Optional CSA with parasitology X3 may also be used to assess digestive and absorptive functions, and the presence of opportunistic pathogens is available. Repeated every 6 to 8 months (for additional details see feelgoodbiochem.com/chapter-6)

GI Panel (Stool & Saliva test)

Determines bacterial, parasitic as well as food related issues using a combination of saliva based antigen testing along with the growth of organisms to look for very specific organisms as well as specific toxins or antibodies to individual microbes. It works really well for slow growing organisms like anaerobes or Clostridia and also looks at Helicobacter pylori antibodies in saliva. Best run together with the CSA. MAP tests are useful to look at the balance of kynurenic and quinolinic which may be increased with bacterial infection. UAAs are useful in conjunction with a CSA/GI Panel tests as gut imbalances can directly play a role in nutrient absorption. Optional expanded panel with additional parasitology and antibody markers is available. Repeated every 6 to 8 months (For additional details see feelgoodbiochem.com/chapter-6)

Neurotransmitter Test (Urine)

Determines levels of Serotonin, Dopamine and Tryptamine and other important Neurotransmitters. Looking at a NT test to check on neurotransmitter levels in conjunction with a MAP test to look at breakdown products and a UAA to look at starting material to produce neurotransmitters along with BH4 levels gives a more complete picture of neurotransmitter balance. (For additional details see feelgoodbiochem.com/chapter-16)

Neopterin/Biopterin Profile (Urine)

Determines current level of Neopterin and Biopterin in urine. Healthy levels of tetrahydrobiopterin (BH4) are important in the synthesis of dopamine and serotonin. BH4 is also important in reducing reactive oxygen species from the urea cycle. When there is infection in the body, neopterin may be produced preferentially rather than BH4 in response to immune system requirements. A key advantage of this test is an assessment of the neopterin level, indicating if the balance has been shifted away from BH4 and toward neopterin synthesis. In addition this test shows the level of biopterin, which is a breakdown product of BH4. Higher levels of biopterin may or may not reflect adequate BH4 levels as biopterin is showing the end product of the processing of BH4. However, when used in conjunction with other tests that reflect adequate BH4 levels the biopterin level is useful in assessing the need for supplemental natural sources to support normal healthy BH4. (For additional details see feelgoodbiochem.com/chapter-14)

Drinking Water Analysis Test Kit (Water)

This test for metals and pH in your water, it does not test for Fluoride. Also suggested to rule out drinking water as a source of toxins noted on other toxic metal tests such as the HMT, UEE or FMT. Suggested to run if manganese, uranium, lead or arsenic are extremely high on HMT. (For additional details see feelgoodbiochem.com/chapter-9)

Please go www.holisticheal.com for a complete list of tests that Dr. Amy offers. Again **FEEL GOOD BIOCHEMISTRY Your Roadmap To Health** www.feelgoodbiochem.com by Dr. Amy, and edited by Dr. Nancy Mullan (available online at no cost) is a comprehensive resource to aid you and your doctor. It details Dr. Amy's interpretation of biochemical test data choices concerning supplementation. *Feel Good Biochemistry* is a free online resource to help you and your doctor understand Dr. Amy's interpretation of biochemical test results, and make informed choices concerning supplementation. If you desire Dr. Amy's direct feedback, tests ordered through www.holisticheal.com will contain her personal comments if Feel Good Biochemistry does not give you sufficient guidance to make informed supplement choices with your own doctor.

BIOCHEMICAL TESTING FOR STEP ONE AND SHORT CUT

Order your UEE/UTM, UAA and HE/HMT from www.holisticheal.com

These three tests can be ordered individually upon starting the protocol, and may also need to be rerun every few months to assess levels especially during Step 2. The **Preferred Supplement List and Client History** forms can be downloaded from the Discussion Group at www.ch3nutrigenomics.com. If tests are ordered through HHI, Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If your supplement list/client history forms are not received before her review they will be placed in your file for future testing.

- **UTM/UEE:** Reports on the essential elements (minerals) AND will include excreted metals as reported in a UTM. Getting a baseline on minerals at this point is necessary to continue with your Step One work of balancing the body.
- **HE/HMT:** Reports on essential elements and excreted metals. It helps to determine a past/history of toxic metal excretions, which you may have missed and Lithium levels.
- **UAA:** Reports on the Amino Acids levels, including GABA, Taurine, Ammonia, and Glutamate etc. This test may be run every few months as needed to assess Amino Acid levels.

While the lab company analyzing your samples provides an auto-generated interpretation with the report. Dr. Amy's analysis and suggestions for considerations are personalized and completed in conjunction with your current supplement list, genetic results on file, personal history, and previous testing. Written feedback is provided to be considered in conjunction with your physician and is aligned with the scientific principles on which this protocol is based.

ASSESSING NEEDS BASED ON PREVIOUS TESTING

If you plan to order testing through HHI, please send in previous testing results to Dr. Amy's office for inclusion in your biochemical file. Note that since your testing was reviewed by your ordering practitioner, Dr. Amy will utilize it only as a reference, but not supply her comments directly. At this time, it is suggested that you review past testing to assess current needs for organ support. If previous testing is not available, then you need to rely on symptoms and behavioral observations and new biochemical testing. Please utilize the following lists to help determine your current level of support:

***Regardless of your level of need as determined in the checklists below, organ support is critical for anyone engaging in a detoxification protocol. It is important that all organs, even if there are no issues indicated, receive some level of support.**

Lab Tests Indicating a Need for Liver Support:

- Elevated AST (SGOT) or below normal AST
- Elevated ALT (SGPT) or below normal AST
- Elevated alkaline phosphatase (ALP)
- Elevated lactate dehydrogenase (LDH)
- Elevated bilirubin
- Elevated cholesterol
- Elevated triglycerides
- Long term chelation with sulfur based chelating agents
- High level excretion of toxic metals on fecal tests

Supports for Liver:

- | | |
|---|---|
| <input type="checkbox"/> Liver Support Nucleotide blend RNA | <input type="checkbox"/> Rosemary |
| <input type="checkbox"/> MTHFR A1298C+ Liver Compound | <input type="checkbox"/> Quercetin |
| <input type="checkbox"/> Ultimate B Complex | <input type="checkbox"/> Dandelion Root |
| <input type="checkbox"/> Cod Liver Oil | |
| <input type="checkbox"/> Folazin | |
| <input type="checkbox"/> SAMe | |

Lab Tests Indicating a Need for Kidney Support:

- Elevated BUN
- Urine excretion/detox of metals for prolonged periods
- High creatinine levels over a prolonged period of time

Supports for Kidney:

- | | |
|--|--|
| <input type="checkbox"/> Kidney Support Nucleotide blend RNA | <input type="checkbox"/> Cranberry Juice (if needed-sweetened w/xylitol) |
| <input type="checkbox"/> CBS/NOS Compound | <input type="checkbox"/> Curbita Bladder Caps |
| <input type="checkbox"/> Ora-Kidney | <input type="checkbox"/> SAM-e |
| <input type="checkbox"/> Cranberry Caps | <input type="checkbox"/> ATP |

Lab Test Results and Other Indicators for Pancreatic Support:

- Consistently elevated glucose
- Consistently low glucose

- Elevated triglycerides
- Mutations: VDR Fok + -/ff or VDR Fok + +/ff
- Imbalances in pancreatic elastase on a CSA/GI Panel
- Imbalances in chymotrypsin values on a CSA/GI Panel
- Imbalances in SCFA (Iso-butyrate, iso-valerate and n-valerate) on CSA/GI Panel
- Imbalances in LCFA on a CSA/GI Panel

Supports for Pancreas:

- | | |
|--|--|
| <input type="checkbox"/> Prolongevity Nucleotide blend RNA | <input type="checkbox"/> Fenugreek |
| <input type="checkbox"/> CCK Support Nucleotide blend RNA | <input type="checkbox"/> Chromium |
| <input type="checkbox"/> VDR/Fok/Pancreatic Compound | <input type="checkbox"/> Red Yeast Rice & CoEnzyme Q10 |
| <input type="checkbox"/> Vita D-Light Spray or Vitamin D | <input type="checkbox"/> Vanadyl |
| <input type="checkbox"/> Special Digestive Enzymes (SDE) w/each meal | <input type="checkbox"/> GABA |
| | <input type="checkbox"/> Gymnema |

Lab Tests/other Indicators for Need to Reduce Calcium:

- Elevated Calcium relative to Magnesium on a UEE
- Elevated Calcium relative to Magnesium on a red blood cell element test
- Self-stimulatory behaviors- Stims/Stimming

Supports for reducing Calcium:

- | | |
|--|--|
| <input type="checkbox"/> MitoForce Compound | <input type="checkbox"/> Paradex |
| <input type="checkbox"/> Co Q10 Spray and/or CoQ10 Soft Gels | <input type="checkbox"/> Dong Quai |
| <input type="checkbox"/> GSH Caps | <input type="checkbox"/> Air Power |
| <input type="checkbox"/> Magnesium | <input type="checkbox"/> Black Cohosh |
| <input type="checkbox"/> Chamomile | <input type="checkbox"/> Muscle Fatigue Support compound |
| <input type="checkbox"/> Ayur Boswellia | <input type="checkbox"/> Prevagen 5mg or less |
| <input type="checkbox"/> Vinpocetine | |
| <input type="checkbox"/> Zinc | |

Lab Tests Indicating a Need to Increase Calcium:

- Calcium below the range of low-end normal on a UEE
- Calcium below the range of low-end normal on an RBC element test
- High level excretion of lead when checking urine Calcium levels

Supports for Increasing Calcium:

- | | |
|---|---|
| <input type="checkbox"/> Bone Support Nucleotide blend RNA | <input type="checkbox"/> Chamomile |
| <input type="checkbox"/> Bone Support Compound | <input type="checkbox"/> Chervil |
| <input type="checkbox"/> MitoForce Compound | <input type="checkbox"/> Cal/Mag/D/ K (Cal & Mag Citrate) |
| <input type="checkbox"/> Co Q10 Spray and/or Co Q10 Soft Gels | <input type="checkbox"/> Dong Quai |
| <input type="checkbox"/> GSH Caps | <input type="checkbox"/> Black Cohosh |
| <input type="checkbox"/> Nettle | <input type="checkbox"/> Prevagen |

Lab Results and Other Indicators of High Ammonia:

- Elevated Ammonia on a Urine Amino Acids test
- Hand Flapping
- Urine odor
- Very low creatinine

Supports for Decreasing Ammonia:

- Charcoal Magnesium flush
- Low dose Yucca with high protein meals
- CBS+ /NOS+ Compound
- L-Carnitine
- Decrease protein consumption
- ARA 6

Lab Results and Other Indicators of High Taurine:

- Elevated Taurine on a Urine Amino Acids test

Supports for Decreasing Taurine:

- CBS+ Nucleotide blend RNA or Ammonia Nucleotide blend RNA If taurine high on UAA
- Make sure not adding taurine directly

Lab Results and Other Indicators of low Ammonia:

- Low Ammonia on a Urine Amino Acids test

Supports for Increasing Ammonia:

- Increase protein consumption

Lab Results and Other Indicators of low Taurine:

- Low taurine on a Urine Amino Acids test

Supports for increasing Taurine:

- Full methylation cycle support: *All in One*, Short Cut and Long Route

Lab Tests indicating a need to support Inflammatory Imbalances:

- Elevated chymotrypsin test levels
- CRP above normal range on blood work
- Elevated IL 6 on blood work
- Elevated TNF alpha on blood work
- Chronic bacterial infection
- Low gut pH
- Allergic Rashes

Supports to help balance Inflammatory Imbalances:

- General Support Nucleotide blend RNA
- Hyper-Immune Nucleotide blend RNA (not for COMT ++)
- Cytokine Support Nucleotide blend RNA
- Stress Foundation Nucleotide blend RNA
- Heart Support Nucleotide blend RNA
- Bowel Support Nucleotide blend RNA
- TNF Balance Nucleotide blend RNA
- Inflammatory Pathway Support Compound
- Nettle
- Boswellia-Ayur Boswellia Serrata
- Turmeric
- Skull Cap
- Chamomile
- Quercetin 500 Plus
- Petadolex –Butterbur
- Cherry Fruit Extract
- InflammMove

Lab Tests indicating a need for Immune Support:

- Imbalances on ImmunoSciences or other similar test panels

Supports for the Immune System/Thymus/Spleen:

- Liver Support Nucleotide blend RNA
- AHCY/SHMT Compound
- T Cell & B Cell
- Ultimate B Complex
- Mycoceutics mushroom w/beta glucan
- Transfer Factor Classic-4Life
- Spirulina

Lab Tests indicating a need to address Zinc/Copper ratio:

- Elevated copper relative to zinc on a urine essential element test
- Elevated copper relative to zinc on blood work
- Low levels of ceruloplasmin on blood work
- Red hair, CONFIRM with a essential mineral test

Supports for Zinc/ Copper balance:

- Magnesium
- Zinc: Lozenges, drops, Krebs zinc
- Molybdenum
- Chromium Picolinate
- Lithium Orotate
- Selenium
- Strontium
- Boron
- Manganese
- Vanadyl
- Cell Food for Copper support as recommended on testing
- Carnosine
- Rosemary
- EDTA
- EDTA SOAK
- Sodium: Aerobic 07
- Potassium: Potassium Citrate, MitoForce, K-Bicarb, Krebs potassium
- Phosphorous: *All in One*, Ultimate B Complex, Riboflavin 5-phosphate, MitoForce

Lab Tests indicating a need to address Glutathione or Low Sulfur Values:

- Low glutathione on tests (for low reduced glutathione (GSH) but high oxidized glutathione (GssG) consider NADH first, then rerun test for reduced glutathione levels)
- GST polymorphisms
- Low values on a hepatic detox profile
- Low sulfur test values
- Very high taurine on a UAA

Supports for Glutathione/Sulfur * **USE LIMITED support if you suspect a CBS+**

- CBS Nucleotide blend RNA based on UAA taurine levels
- SAME
- Alpha lipoic acid
- Taurine
- Broccoli
- Garlic
- Rosemary
- Sublingual glutathione
- Oral GSH glutathione
- IV glutathione
- Glucosamine/ MSM
- Chondroitin sulfate
- N-acetyl cysteine w/ quercetin
- Vitamin C with Rose Hips
- Glutathione cream
- Magnesium sulfate cream
- Alpha lipoic acid cream
- Glucosamine/ MSM cream

Tests indicating a need to address Mitochondrial Support/Krebs Energy cycle:

- Elevated suberic on OAT/Metabolic analysis test
- Low levels of Krebs cycle intermediates

Supports for Mitochondrial/Krebs Energy:

- | | |
|--|---|
| <input type="checkbox"/> MTHFR A1298C+/Liver Compound | <input type="checkbox"/> Krebs Magnesium/Potassium Chelates |
| <input type="checkbox"/> MitoForce Compound | <input type="checkbox"/> Krebs Zinc |
| <input type="checkbox"/> MetalAway Compound | <input type="checkbox"/> Riboflavin 5-phosphate |
| <input type="checkbox"/> Muscle Fatigue Support Compound | <input type="checkbox"/> L-Carnitine |
| <input type="checkbox"/> Co Q10 Fatigue & Muscle Spray | <input type="checkbox"/> Malic Acid |
| <input type="checkbox"/> GSH Capsules | <input type="checkbox"/> Magnesium Citrate |
| <input type="checkbox"/> Krebs Potassium | |

NOTE:

Dr. Amy prefers that individuals STAY ON THEIR Supplements for ALL tests. You can STOP all supplements for BASELINE testing but AFTER that STAY on their supplements for tests so that she can see the positive impact of support on the test results.

Obtaining UTM/UEE Urine Sample

- Follow the instructions that come in your kit, but know that **Dr. Amy prefers that you stay on ALL supplements for testing** unless instructed on previous testing.
- Dr. Amy prefers “spot/random urines” for the UTM/UEE test as opposed to the 24-hour collection. She also prefers the later afternoon urines, but if it is easier to collect a morning or overnight urine, that is fine too. If you are having difficulty obtaining a sample, please refer to Discussion Group/Basics Forum, post entitled “Ideas for Collecting Urine.”
- Fill out the paperwork and ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You still need to provide the following info: name, date, time of collection, height, and weight. You will also need to sign and date the release.
- Try to follow the diet restrictions as best you can, by eliminating fish and shellfish for one week prior to obtaining your sample.
- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.
- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a “safe sender” in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Date Sample Sent: _____

Urine Toxic Metals (UTM) example report



LAB #: U000000-0000-0
 PATIENT: Sample Patient
 ID: PATIENT-S-00001
 SEX: Female
 AGE: 35

CLIENT #: 12345
 DOCTOR:
 Doctor's Data, Inc.
 3755 Illinois Ave.
 St. Charles, IL 60174

Toxic Metals; Urine

TOXIC METALS					
	RESULT	REFERENCE	WITHIN	OUTSIDE REFERENCE	
	µg/g creat	INTERVAL	REFERENCE		
Aluminum (Al)	54	< 35			
Antimony (Sb)	< dl	< 0.4			
Arsenic (As)	< dl	< 117			
Barium (Ba)	2.9	< 7			
Beryllium (Be)	< dl	< 1			
Bismuth (Bi)	< dl	< 15			
Cadmium (Cd)	1.3	< 1			
Cesium (Cs)	2.9	< 10			
Gadolinium (Gd)	0.2	< 0.4			
Lead (Pb)	7.1	< 2			
Mercury (Hg)	1.3	< 4			
Nickel (Ni)	14	< 12			
Palladium (Pd)	< dl	< 0.3			
Platinum (Pt)	< dl	< 1			
Tellurium (Te)	< dl	< 0.8			
Thallium (Tl)	0.2	< 0.5			
Thorium (Th)	< dl	< 0.03			
Tin (Sn)	2.3	< 10			
Tungsten (W)	< dl	< 0.4			
Uranium (U)	0.1	< 0.04			

URINE CREATININE							
	RESULT	REFERENCE	-2SD	-1SD	MEAN	+1SD	+2SD
	mg/dL	INTERVAL					
Creatinine	27.3	35 - 225					

SPECIMEN DATA		
Comments:		
Date Collected: 8/11/2011	pH upon receipt: Acceptable	Collection Period:
Date Received: 8/16/2011	<dl: less than detection limit	Volume:
Date Completed: 8/17/2011	Provoking Agent:	Provocation:
Method: ICP-MS	Creatinine by Jaffe Method	
Results are creatinine corrected to account for urine dilution variations. Reference intervals and corresponding graphs are representative of a healthy population under non-provoked conditions. Chelation (provocation) agents can increase urinary excretion of metals/elements.		
V13		

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0001s23

Essential Elements (UEE) example report



LAB #: U000000-0000-0
 PATIENT: Sample Patient
 ID: PATIENT-S-00001
 SEX: Female
 AGE: 35

CLIENT #: 12345
 DOCTOR:
 Doctor's Data, Inc.
 3755 Illinois Ave.
 St. Charles, IL 60174

Essential Elements; Urine

		ESSENTIAL AND OTHER ELEMENTS			PERCENTILE				
		RESULT/UNIT per creatinine	REFERENCE INTERVAL		2.5 th	16 th	50 th	84 th	97.5 th
Sodium	(Na)	81 mEq/g	43.5 - 226						
Potassium	(K)	43 mEq/g	22 - 82						
Phosphorus	(P)	27 µg/mg	250 - 1300						
Calcium	(Ca)	610 µg/mg	35 - 350						
Magnesium	(Mg)	120 µg/mg	25 - 230						
Zinc	(Zn)	25 µg/mg	0.1 - 2						
Copper	(Cu)	0.018 µg/mg	0.01 - 0.09						
Sulfur	(S)	470 µg/mg	308 - 1650						
Manganese	(Mn)	0.088 µg/mg	0.0005 - 0.01						
Molybdenum	(Mo)	0.062 µg/mg	0.016 - 0.18						
Boron	(B)	1.7 µg/mg	0.8 - 6.8						
Chromium	(Cr)	0.001 µg/mg	0.0005 - 0.01						
Lithium	(Li)	0.059 µg/mg	0.01 - 0.2						
Selenium	(Se)	0.041 µg/mg	0.034 - 0.28						
Strontium	(Sr)	0.23 µg/mg	0.06 - 0.54						
Vanadium	(V)	0.001 µg/mg	0.0002 - 0.004						
						68 th		95 th	
Cobalt	(Co)	0.066 µg/mg	< 0.008						
Iron	(Fe)	1.5 µg/mg	< 2						
		URINE CREATININE							
		RESULT mg/dL	REFERENCE INTERVAL		-2SD	-1SD	MEAN	+1SD	+2SD
Creatinine		27.3	35 - 225						

SPECIMEN DATA			
Comments:			
Date Collected:	8/11/2011	pH Upon Receipt:	Acceptable
Date Received:	8/16/2011	<dI:	less than detection limit
Date Completed:	8/17/2011	Provoking Agent:	
Method:	ISE/Na, K Spectrophotometry; P ICP-MS; Br, Ca, Cr, Co, Cu, Fe, Mg, Mn, Mo, Se, Sr, S, V, Zn Creatinine by Jaffe method		
Results are creatinine corrected to account for urine dilution variations. Reference intervals and corresponding graphs are representative of a healthy population under non-provoked conditions. Chelation (provocation) agents can increase urinary excretion of metals/elements.			
V13			

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0001x02

Obtaining Hair Elements Test Sample

- Follow the instructions that come in your kit, cutting samples of hair as close to the scalp as possible from the back of the head and collecting the suggested amount.
- Fill out the paperwork and ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You still need to provide the following info: name, address, date of birth, date of collection etc. You will also need to sign and date the release.
- Cut samples of hair as close to the scalp as possible from the back of the head and collect the suggested amount for the HE/HMT. **Dr. Amy prefers head hair** and it is fine to use treated hair (rather than pubic/body), just make sure to note it on your supplement list and test requisition form. **Make sure to provide enough hair to complete your sample, 0.25 grams of 1 inch long hair is needed for processing.*
- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.
- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Date Sample Sent:

Hair Elements (HE/HMT) example report



LAB #: H000000-0000-0
 PATIENT: Sample Patient
 ID: PATIENT-S-00001
 SEX: Male
 AGE: 9

CLIENT #: 12345
 DOCTOR:
 Doctor's Data, Inc.
 3755 Illinois Ave.
 St. Charles, IL 60174

Toxic & Essential Elements; Hair

TOXIC METALS			
	RESULT	REFERENCE	PERCENTILE
	µg/g	INTERVAL	68 th 95 th
Aluminum (Al)	9.0	< 8.0	
Antimony (Sb)	0.088	< 0.066	
Arsenic (As)	0.14	< 0.080	
Barium (Ba)	0.30	< 0.75	
Beryllium (Be)	< 0.01	< 0.020	
Bismuth (Bi)	0.13	< 2.0	
Cadmium (Cd)	0.025	< 0.070	
Lead (Pb)	0.92	< 1.0	
Mercury (Hg)	1.1	< 0.40	
Platinum (Pt)	< 0.003	< 0.005	
Thallium (Tl)	< 0.001	< 0.002	
Thorium (Th)	< 0.001	< 0.002	
Uranium (U)	0.010	< 0.060	
Nickel (Ni)	0.13	< 0.20	
Silver (Ag)	0.14	< 0.14	
Tin (Sn)	0.32	< 0.30	
Titanium (Ti)	0.51	< 0.70	
Total Toxic Representation			
ESSENTIAL AND OTHER ELEMENTS			
	RESULT	REFERENCE	PERCENTILE
	µg/g	INTERVAL	2.5 th 16 th 50 th 84 th 97.5 th
Calcium (Ca)	157	160- 500	
Magnesium (Mg)	11	12- 50	
Sodium (Na)	100	20- 200	
Potassium (K)	100	12- 140	
Copper (Cu)	11	11- 32	
Zinc (Zn)	350	110- 190	
Manganese (Mn)	0.28	0.08- 0.50	
Chromium (Cr)	0.60	0.40- 0.70	
Vanadium (V)	0.079	0.025- 0.10	
Molybdenum (Mo)	0.14	0.040- 0.090	
Boron (B)	3.6	0.50- 3.5	
Iodine (I)	0.48	0.25- 1.3	
Lithium (Li)	0.010	0.007- 0.020	
Phosphorus (P)	146	150- 220	
Selenium (Se)	0.84	0.70- 1.1	
Strontium (Sr)	0.21	0.21- 2.1	
Sulfur (S)	30900	44000- 51000	
Cobalt (Co)	0.009	0.004- 0.020	
Iron (Fe)	10	7.0- 16	
Germanium (Ge)	0.028	0.030- 0.040	
Rubidium (Rb)	0.086	0.008- 0.080	
Zirconium (Zr)	0.42	0.060- 0.70	
SPECIMEN DATA		RATIOS	
COMMENTS:		ELEMENTS	RATIOS
Date Collected: 10/13/2011	Sample Size: 0.198 g	Ca/Mg	14.3
Date Received: 12/8/2011	Sample Type: Head	Ca/P	1.08
Date Completed: 12/10/2011	Hair Color: Brown	Na/K	1
Methodology: ICP/MS	Treatment:	Zn/Cu	31.8
	Shampoo:	Zn/Cd	> 999
		RANGE	
			4- 30
			0.8- 8
			0.5- 10
			4- 20
			> 800

Obtaining UAA Urine Sample

- Follow the instructions that come in your kit, but know that **Dr. Amy prefers that you stay on ALL supplements for testing** unless instructed on previous testing. UNLESS you are choosing to run a BASELINE test without ANY support BEFORE starting the program, in which case for BASELINE TESTING do stop all supports.

- Dr. Amy prefers the first morning urine/void for the UAA as opposed to the 24-hour**, unless otherwise instructed on previous testing. Your sample is required to be frozen for a minimum of 6 hours before shipping. If you are having difficulty obtaining a sample, please refer to Discussion Group/Basics Forum, post entitled "Ideas for Collecting Urine."

- Fill out the paperwork and ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You still need to provide the following info: name, date, date of birth, time of collection, height, and weight. You will also need to sign and date the release.

- Samples should not be frozen/stored for more than two days at the most before shipping. It is highly recommended that you take your urine sample over the weekend, say Sunday or early in the week, so that you can ship it Monday through Wednesday. However, know that it is best to send the urine sample for a UAA on the same or next day that you collect it. **DO NOT SEND SAMPLES AT THE END OF THE WEEK.** If you send it at the end of the week, it may get stuck in transit over the weekend and arrive at the lab in a less than fresh condition.

- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.

- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Date Sample Sent:

Urine Amino Acids (UAA) example report



LAB #: U000000-0000-0
 PATIENT: Sample Patient
 ID: PATIENT-S-00001
 SEX: Male
 DOB: 11/1/2001

CLIENT #: 12345
 DOCTOR:
 Doctor's Data, Inc.
 3755 Illinois Ave.
 St. Charles, IL 60174

Amino Acids; Urine

SPECIMEN VALIDITY							
	RESULT	REFERENCE	PERCENTILE				
	per creatinine	INTERVAL	2.5 th	16 th	50 th	84 th	97.5 th
Creatinine	100 mg/dL	25- 180					
Glutamine/Glutamate	14	5- 160					
Ammonia Level (NH ₄)	73000 μM/g	16000- 75000					
Specimen Validity Index							

ESSENTIAL / CONDITIONALLY INDISPENSABLE AMINO ACIDS							
	RESULT	REFERENCE	PERCENTILE				
	μM/g creatinine	INTERVAL	2.5 th	16 th	50 th	84 th	97.5 th
Methionine	7.2	12- 46					
Lysine	170	55- 550					
Threonine	93	80- 400					
Leucine	33	20- 100					
Isoleucine	8.6	8- 45					
Valine	53	20- 94					
Phenylalanine	93	40- 180					
Tryptophan	99	35- 145					
Taurine	2270	200- 1600					
Cysteine	16	25- 93					
Arginine	21	12- 70					
Histidine	910	520- 2100					

NONESSENTIAL AMINO ACIDS							
	RESULT	REFERENCE	PERCENTILE				
	μM/g creatinine	INTERVAL	2.5 th	16 th	50 th	84 th	97.5 th
Alanine	230	170- 800					
Aspartate	5.7	12- 33					
Asparagine	87	60- 360					
Glutamine	310	300- 1200					
Glutamate	22	10- 80					
Cystine	28	28- 91					
Glycine	1070	800- 3400					
Tyrosine	130	60- 225					
Serine	200	200- 880					
Proline	10	2- 90					

Obtaining MAP Sample

- Follow the instructions that come in your kit, but know that **Dr. Amy prefers that you stay on ALL supplements for testing** (including malic acid, citrates, orotates and malates) unless instructed on previous testing.

- Dr. Amy prefers the first morning urine/void for the UAA as opposed to the 24-hour**, unless otherwise instructed on previous testing. Your sample is required to be frozen for a minimum of 2 hours before shipping. If you are having difficulty obtaining a sample, please refer to Discussion Group/Basics Forum, post entitled "Ideas for Collecting Urine."

- Fill out the paperwork and ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You still need to provide the following info: name, date, date of birth, time of collection, height, and weight. You will also need to sign and date the release.

- Urine samples must be sent in as fresh as possible as metabolites disintegrate easily. Therefore, they should not be frozen/stored for more than a day or two at the most before shipping. It is highly recommended that you take your urine sample over the weekend, say Sunday or early in the week so that you can ship it Monday through Wednesday. However, know that it is best to send the urine sample for a MAP on the same day that you collect it. **DO NOT SEND SAMPLES AT THE END OF THE WEEK.** If you send it at the end of the week, it may get stuck in transit over the weekend and arrive at the lab in a less than fresh condition. Samples must be received by the laboratory within 4 days of collection. If you are having difficulty obtaining a sample, please refer to Discussion Group Basics Forum, post entitled "Ideas for Collecting Urine."

- Try to follow the diet restrictions as best you can, avoiding MSG, Aspartame for a full 24hrs prior to obtaining your sample.

- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.

- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Date Sample Sent:

Metabolic Analysis Profile (MAP) example report



Metabolic Analysis Profile Physician Copy



63 Zions Street
Asheville, NC 28801
© Genova Diagnostics

Patient: JOHN
DOE
DOB: October 31, 2008
Sex: M
MRN:

Order Number: D5240150
Completed: March 25, 2011
Received: March 24, 2011
Collected: March 24, 2011

Results Overview

Normal	Borderline	High Need	Supplementation for High Need
Antioxidants			
Vitamin A / Carotenoids			
Vitamin C			
Vitamin E / Tocopherols			
B-Vitamins			
Thiamin - B1		Riboflavin - B2	Riboflavin - B2 - Dose = 5 mg
	Niacin - B3		
Pyridoxine - B6			
Biotin - B7			
	Folic Acid - B9		
		Cobalamin - B12	Cobalamin - B12 - Dose = 50 mcg
Minerals			
Manganese		Magnesium	Magnesium - Dose = 200 mg
Molybdenum			
	Zinc		

Obtaining Fecal Toxic Stool Sample

- Follow the instructions that come in your kit, but know that **Dr. Amy prefers that you stay on ALL supplements for testing** (including enzymes, baking soda and PeptiMycin), unless instructed on previous testing. Try to follow the diet restrictions as best you can.
- Fill out the paperwork and ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You still need to provide the following info: name, date, date of birth, time of collection, height, and weight. You will also need to sign and date the release.
- Stool samples can be taken any time of the day.
- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.
- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Some ideas on getting stool samples:

- Drain the water out of the toilet and insert the collection tray.
- Toilet plastic "Hats" that are used to collect urine/stool in hospitals fit nicely under the lid of the toilet and can be found at most pharmacies or hospital supply stores.

Date Sample Sent: _____

Fecal Metals (FM) example report

FECAL METALS



LAB#: F000000-0000-0
 PATIENT: Sample Patient
 SEX: Male
 AGE: 4

CLIENT#: 12345
 DOCTOR:
 Doctor's Data, Inc.
 3755 Illinois Ave.
 St. Charles, IL 60174

POTENTIALLY TOXIC METALS				
METALS	RESULT ng/kg	REFERENCE RANGE	PERCENTILE	
			68 th	95 th
Mercury	0.037	<.05 w/o amalgams ^{††}	██████████	██████████
Mercury	0.037	< .5 with amalgams ^{††}	██████████	██████████
Antimony	0.105	< 0.080	██████████	██████████
Arsenic	0.14	< 0.30	██████████	██████████
Beryllium	0.007	< 0.009	██████████	██████████
Bismuth	0.047	< 0.050	██████████	██████████
Cadmium	0.24	< 0.50	██████████	██████████
Copper	41	< 60	██████████	██████████
Lead	2.57	< 0.50	██████████	██████████
Nickel	5.3	< 8.0	██████████	██████████
Platinum	< dl	< 0.003	██████████	██████████
Thallium	0.008	< 0.020	██████████	██████████
Tungsten	0.599	< 0.090	██████████	██████████
Uranium	0.083	< 0.120	██████████	██████████

% WATER CONTENT						
	RESULT % H ₂ O	EXPECTED RANGE	2SD LOW	1SD LOW	MEAN 72.5%	1SD HIGH 2SD HIGH
% WATER CONTENT	77.3	60-85%	████	████	██████████	██████████

DISCUSSION

Analysis of elements in feces provides a comprehensive evaluation of environmental exposure, accumulation and endogenous detoxification of potentially toxic metals. For several toxic elements such as mercury, cadmium, lead, antimony and uranium, biliary excretion of metals into feces is the primary natural route of elimination from the body. Studies performed at DDI demonstrate that the fecal mercury content and number of amalgam surfaces are highly correlated, as is the case for post-DMPs urine mercury levels and amalgam surface area.

Results are reported as mg/kg dry weight of feces to eliminate the influence of variability in water content of fecal specimens. The reference values that appear in this report have been derived from both published data and in-house studies at DDI. ^{††}Due to exposure to mercury in the oral cavity, people with dental amalgams typically have a considerably higher level of mercury in the feces than individuals without dental amalgams; therefore, two reference ranges have been established for mercury.

To provide guidance in interpretation of results, patient values are plotted graphically with respect to percentile distribution of the population base. Since this test reflects both biliary excretion and exposure (metals to which the patient is exposed may not be absorbed), it may not correlate with overt clinical effects. Further testing can assist in determining whether the metals are from endogenous (biliary excretion) or exogenous (oral exposure) sources.

- Bjorkman, L, Sandborgh-Englund, G, and Ekstrand, J., Mercury in Saliva and Feces after Removal of Amalgam Fillings. *Toxicology & Applied Pharmacology* 144: 156-162 (1997)
- Zalups, R, Progressive Losses of Renal Mass and the Renal and Hepatic Disposition of Administered Inorganic Mercury. *Toxicology & Applied Pharmacology* 130: 121-131 (1995)
- Adamsson, E., Piscator, M., and Nogawa, K., Pulmonary and Gastrointestinal Exposure to Cadmium Oxide Dust in a Battery Factory. *Environmental Health Perspectives*, 28: 219-222 (1979)
- Smith, J., et al., The Kinetics of Intravenously Administered Methyl Mercury in Man. *Toxicology & Applied Pharmacology* 128:251-256 (1994)
- Bass, D., et al., "Measurement of Mercury in Feces". Poster presentation 1999 AACC

SPECIMEN DATA			
Comments:			
Date Collected: 12/22/2008	Provocation:	Dental Amalgams: None	
Date Received: 12/23/2008	Detoxification Agent:	Quantity:	
Date Completed: 12/24/2008	Dosage:	Methodology: ICP-MS	v02.00

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Obtaining CSA Stool Sample

- Follow the instructions that come in your kit, but know that **Dr. Amy prefers that you stay on ALL supplements for testing** (including enzymes, baking soda and PeptiMycin), unless instructed on previous testing.
- Fill out the paperwork and ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You still need to provide the following info: name, date, date of birth, time of collection, height, and weight. You will also need to sign and date the release.
- Stool samples can be taken any time of the day. Make sure to collect from as many areas of the stool as possible because bacteria live in colonies.
- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.
- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Some ideas on getting stool samples:

- Drain the water out of the toilet and insert the collection tray.
- Toilet plastic "Hats" that are used to collect urine/stool in hospitals fit nicely under the lid of the toilet and can be found at most pharmacies or hospital supply stores.

Date Sample Sent:

Comprehensive Stool Analysis (CSA) example report



LAB #: F000000-0000-0
 PATIENT: Sample Patient
 ID: P12345
 SEX: Female
 AGE: 50

CLIENT #: 12345
 DOCTOR:
 Doctor's Data, Inc.
 3755 Illinois Ave.
 St. Charles, IL 60174

Comprehensive Stool Analysis

BACTERIOLOGY CULTURE		
Expected/Beneficial flora	Commensal (Imbalanced) flora	Dysbiotic flora
3+ Bacteroides fragilis group NG Bifidobacterium spp. NG Escherichia coli NG Lactobacillus spp. 4+ Enterococcus spp. 1+ Clostridium spp. NG = No Growth		4+ Klebsiella oxytoca

BACTERIA INFORMATION

Expected /Beneficial bacteria make up a significant portion of the total microflora in a healthy & balanced GI tract. These beneficial bacteria have many health-protecting effects in the GI tract including manufacturing vitamins, fermenting fibers, digesting proteins and carbohydrates, and propagating anti-tumor and anti-inflammatory factors.

Clostridia are prevalent flora in a healthy intestine. Clostridium spp. should be considered in the context of balance with other expected/beneficial flora. Absence of clostridia or over abundance relative to other expected/beneficial flora indicates bacterial imbalance. If *C. difficile* associated disease is suspected, a Comprehensive Clostridium culture or toxigenic *C. difficile* DNA test is recommended.

Commensal (Imbalanced) bacteria are usually neither pathogenic nor beneficial to the host GI tract. Imbalances can occur when there are insufficient levels of beneficial bacteria and increased levels of commensal bacteria. Certain commensal bacteria are reported as dysbiotic at higher levels.

Dysbiotic bacteria consist of known pathogenic bacteria and those that have the potential to cause disease in the GI tract. They can be present due to a number of factors including: consumption of contaminated water or food, exposure to chemicals that are toxic to beneficial bacteria; the use of antibiotics, oral contraceptives or other medications; poor fiber intake and high stress levels.

YEAST CULTURE	
Normal flora	Dysbiotic flora
No yeast isolated	

MICROSCOPIC YEAST	
Result:	Expected:
Many	None - Rare
The microscopic finding of yeast in the stool is helpful in identifying whether there is proliferation of yeast. Rare yeast may be normal; however, yeast observed in higher amounts (few, moderate, or many) is abnormal.	

YEAST INFORMATION

Yeast normally can be found in small quantities in the skin, mouth, intestine and mucocutaneous junctions. Overgrowth of yeast can infect virtually every organ system, leading to an extensive array of clinical manifestations. Fungal diarrhea is associated with broad-spectrum antibiotics or alterations of the patient's immune status. Symptoms may include abdominal pain, cramping and irritation. When investigating the presence of yeast, disparity may exist between culturing and microscopic examination. Yeast are not uniformly dispersed throughout the stool, this may lead to undetectable or low levels of yeast identified by microscopy, despite a cultured amount of yeast. Conversely, microscopic examination may reveal a significant amount of yeast present, but no yeast cultured. Yeast does not always survive transit through the intestines rendering it unviable.

Comments:
 Date Collected: 4/13/2011
 Date Received: 4/18/2011
 Date Completed: 4/22/2011

* *Aeromonas, Campylobacter, Plesiomonas, Salmonella, Shigella, Vibrio, Yersinia, & Edwardsiella tarda* have been specifically tested for and found absent unless reported.

v5.09

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0001420

Obtaining GI Panel Stool & Saliva Samples

- Follow the instructions that come in your kit, but know that **Dr. Amy prefers that you stay on ALL supplements for testing** (including Enzymes, Baking soda and PeptiMycin), unless instructed on previous testing.
- Fill out the paperwork and ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You still need to provide the following info: name, date, date of birth, time of collection, height, and weight. You will also need to sign and date the release.
- On the first and third day, collect stool samples at any time of the day. Make sure to collect from as many areas of the stool as possible, because bacteria live in colonies. Refrigerate tubes.
- On third day, before eating or brushing teeth or 1 hour after a meal, rinse mouth with cold water for 30 seconds. Wait 2-5 minutes then collect saliva samples by placing cotton roll in mouth under tongue and soak until fully saturated. Place in vial and recap. Wait another 60 minutes or more and obtain second saliva sample after rinsing mouth again. This time filling vial to the 5th line. Refrigerate until mailing.
- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.
- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Some ideas on getting stool samples:

- Drain the water out of the toilet and insert the collection tray.
- Toilet plastic "Hats" that are used to collect urine/stool in hospitals fit nicely under the lid of the toilet and you can buy them at most pharmacies or hospital supply stores.

Date Sample Sent:

GI Panel example report

Diagnos-Techs, Inc.

Clinical & Research Laboratory
 19110 66th Ave S. Bldg. G, Kent WA 98023
 Tel: (425) 251-0596
 CLIA License # 50D0630141

Accession # 1

Received : 04/28/2014
 Completed: 04/28/2014
 Reported : 04/30/2014

DIAGNOS-TECHS, INC
 DIAGNOS TECHS
 6620 S 192ND PL #J-104

KENT WA 98032
 USA Tel: 425-251-0596 Fax: 1-425-264-0612

Results For:
 33 YEAR OLD MALE
 Age/DOB: 33 / / Sex: Male
 Reference ID : XXXXXXXXXXXXXXXX
 Patient's Tel:
 Specimen Collected: 04/27/2014

Code	Test Name	Result / Notes	Reference Values/Key
GI-t			
CS1	Stool Cu. Fungi, Isol. & I.D.	No yeast isolated	+1=Scant +2=Light +3=Moderate +4=Heavy
GP2	Ova & Parasites, x2 (Stool)	No Ova or Parasites Seen	
GP3	Bacterial Stool Cu.	Heavy growth mixed Gram negative rods/flora. Heavy growth mixed Gram positive rods/flora. Mixed Flora consists predominantly of: ----- Nontoxigenic E. coli - Heavy growth Citrobacter freundii - Heavy growth No Salmonella, Shigella, or E coli O157 isolated No Yersinia, Vibrio, or Aeromonas isolated No Proteus or Pseudomonas isolated In general, early disturbances in microfloral balance may be reflected in the non expected and selective overgrowth of microbial species that are usually non dominant. Please note: As of January 19th 2013, stool cultures are performed utilizing the MALDI TOF Mass Spectrometer which has not been cleared by the US Food and Drug Administration. All CLIA required performance specifications for a lab developed test have been validated by DTI and found to be in compliance.	Expected Findings: - Moderate to heavy growth of mixed Gram (+) & (-) flora - No pathogens should be detected.
GP3CA	Campylobacter Antigen	Negative	Normal: Negative
GP3ST	Shiga Toxin (Stool)	Negative	Normal: Negative
GP3CD	C. Difficile: Toxins A & B (Stool)	Negative	Normal: Negative
GP4	Giardia Antigen (Stool)	Negative	Normal: Negative
GP5	Cryptosporidium Antigen (Stool)	Negative	Normal: Negative
GP6S	Toxoplasma Ab, SIgA (Saliva)	Negative	Normal: Negative
GP7S	Entamoeba histolytica Ab, SIgA (Saliva)	Not detected	Normal: Not detected
GP8S	Helicobacter pylori Ab, IgG (Saliva)	<3	Negative: < 3 U/ml Borderline: 3-5.5 U/ml Positive: >5.5 U/ml
MB2	Total Intestinal SIgA (Stool)	100 Normal	Borderline Low: 10-19 mg/100g dry wt Normal: 20-160 Borderline High: 161-250

Obtaining Neurotransmitter Urine Sample

- Follow the instructions exactly as provided in your kit. **DO NOT COLLECT FIRST URINE OF THE MORNING!**
- Collect 2nd urine @ 10:00am (midstream) in enclosed urine collection cup.
- Fill out all paperwork and ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You will need to provide the following info: name, address, date of birth, date, wake up time, time of collection, height, and weight. You will also need to sign and date the release. Ship Monday-Thursday only, Return shipper is valid for continental US only.
- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.
- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Date Samples Sent: _____

Neurotransmitter example report



2233 Faraday Avenue • Suite K • Carlsbad • CA 92008 • (760) 448-2750

Practioner:

Lab Director: ?

Group:

Patient DOB ID Age Sex Height Weight Acc# Date Collected Date Received Date Reported

ABNORMAL	TEST	RESULT	UNITS	RANGES	
Metabolic Panel (by LC/MS/MS)					
	5-HTP	23.46	ug/g cr	20.10	--- 106.00
	Serotonin	93.74	ug/g cr	55.60	--- 157.60
	L-DOPA	38.10	umol/g cr	16.40	--- 62.30
44	Dopamine	44.00	ug/g cr	92.70	--- 212.00
	3-Methoxytyramine	13.13	ug/g cr	8.25	--- 65.00
2.13	Serotonin/Dopamine Ratio	2.13	Units	0.49	--- 1.67
59.56	Norepinephrine	59.56	ug/g cr	15.70	--- 51.20
	Normetanephrine	25.34	ug/g cr	20.70	--- 193.30
	Epinephrine	6.48	ug/g cr	3.00	--- 9.90
	Metanephrine	34.47	ug/g cr	9.90	--- 35.10
9.19	Norepinephrine/Epinephrine Ratio	9.19	Units	2.69	--- 9.12
17.07	Glutamic acid	17.07	umol/g cr	3.00	--- 16.80
	GABA	2.86	umol/g cr	0.47	--- 4.47
	Histamine (Free)	21.01	ug/g cr	8.56	--- 29.60
	Creatinine-Urine	85.00	mg/dl	5.00	--- 450.00

Obtaining Neopterin/Biopterin Urine Sample

- Follow the instructions that come in your kit. Dr. Amy prefers that you stay on ALL supplements for testing unless instructed on previous testing.
- Follow preparation instructions (fluid restrictions for adults) as best as possible.
- Fill out the test requisition form. The patient's first and last name, date of birth, as well as date of collection, must also be recorded on the vial as well, using a permanent marker before first morning until sample is collected.
- Vial and ice pack must be frozen. Ship according to the package instructions. The invoice is only partially filled out and the test is already paid for. You still need to provide the following info: name, date, time of collection, height, and weight. You will need to sign and date the release.
- Send your updated supplement list and client history form to kelly.barlow@holistichealth.com or fax it to (207) 824-0975 on the day your samples are shipped this will allow ample time for it to be placed in your chart for Dr. Amy's reference and review. If not received before her review they will be placed in your file for future testing.
- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address is correct.

Date Samples Sent: _____

Neopterin/Biopterin example report

 <p>3425 Corporate Way • Duluth GA 30096 USA 770.446.5483 • Fax: 770.441.2237 www.gdx.net/www.metamatrix.com</p>	Accession #: A1207020275 Reference #:	Date Collected: 07/01/2012 Date Received: 07/02/2012
	Patient: Sample Report Date of Birth: 02/05/1962 Age: 50 Sex: Female Reprinted: 06/21/2013 Comment:	Date of Report: 07/03/2012 Telephone: 7704464583 Fax: 7704412237
Ordering Physician: John Doe, MD 1234 Main St. Anywhere, GA 30096		
 <h2>0088 Neopterin/Biopterin Profile - Urine</h2>		
Methodology: LC/Tandem Mass Spectroscopy, Colorimetric		
Compound Tested	Results mcg/mg creatinine	Quintile Ranking 1st 2nd 3rd 4th 5th 95% Reference Range
Ranges are for ages 13 and over		
1. Neopterin	0.55 H	 0.18 0.53 0.15-0.79
2. Biopterin	0.24	 0.05 0.26 0.04-0.35
3. Neopterin/Biopterin ratio	2.29	 0.78 5.02 0.04-8.67
Creatinine = 200 mg/dL <DL = less than detection limit		
Interpretation: Neopterin is a marker of inflammatory challenge such as that precipitated by interferon gamma in response to viral infection or intestinal bacterial overgrowth. Urinary neopterin elevation has been proposed as a surrogate marker for inflammatory diseases. Neopterin and biopterin tend to respond similarly except in conditions such as autism where biopterin tends to rise while neopterin falls in CSF. Such scenarios are most sensitively detected by an abnormal neopterin/biopterin ratio. These markers allow assessment of successful strategies to reduce chronic inflammation.		
Values in the first decile are reported as 'L' because they may have significance regarding a patient's ability to produce adequate tetrahydrobiopterin (BH4). BH4 is required for the Phe to Tyr conversion and for formation of nitric oxide and serotonin. The method being used for this assay allows accurate low range determinations that were not possible by earlier methods for neopterin. Patients with insufficient tetrahydrobiopterin synthesis may benefit by supplemental BH4 and folate.		
Georgia Lab Lic. Code #067-007 CLIA ID# 11D0255349 New York Clinical Lab PFI #4578 Florida Clinical Lab Lic. #800008124		Testing Performed by Genova Diagnostics-Metamatrix, Inc. 3425 Corporate Way, Duluth, GA 30096 Laboratory Director: Robert M. David, PhD
Page 1		

Obtaining Drinking Water Analysis Sample

- Follow the instructions that come in your kit, and collect your specimen in the collection vial.
- Fill out the test requisition form and make sure to include that with your sample. You need to provide the following info: date of collection, water source, filter info, name and address. Ship according to the package instructions.
- Test results and Dr. Amy's comments will come by email from kelly.barlow@holistichealth.com. Please add this email address as a "safe sender" in your email filter so that you can receive email from Kelly without difficulty. The turnaround time is approximately 2-3 weeks depending on the lab processing time and Dr. Amy's schedule. If this is your first test and you have not received your test comments after 3 weeks please contact the office to make sure your email address.

Date Samples Sent: _____

Drinking Water Analysis example report:

COMPREHENSIVE DRINKING WATER ANALYSIS



WATER TYPE: Well Water
 ORDERED BY: Joe Water
 3755 Illinois Ave.
 St. Charles, IL 60174-2420

LAB#: 00000-0000
 DATE ORDERED: 10/12/06
 DATE COLLECTED: 10/13/06
 DATE COMPLETED: 10/14/06

PRIMARY EPA DRINKING WATER METALS				
PRIMARY METALS	RESULT parts per billion (ppb)	ACCEPTABLE	CAUTION	UNACCEPTABLE
Antimony (Sb)	0.2	✓		
Arsenic (As)	6		✓	
Beryllium (Be)	< 0.5	✓		
Copper (Cu)	2336			✓
Lead (Pb)	18			✓
Thallium (Tl)	< 0.1	✓		
Uranium (U238)	2		✓	
Barium (Ba)	4	✓		
Cadmium (Cd)	< 1	✓		
Chromium (Cr)	0.5	✓		
Mercury (Hg)	< 0.5	✓		
Nickel (Ni)	23	✓		
Selenium (Se)	38	✓		

SECONDARY EPA DRINKING WATER METALS				
SECONDARY METALS	RESULT parts per billion (ppb)	ACCEPTABLE	CAUTION	UNACCEPTABLE
Aluminum (Al)	186		✓	
Iron (Fe)	34	✓		
Manganese (Mn)	5	✓		
Zinc (Zn)	60	✓		

The EPA has not established levels for this category

FLUORIDE				
	RESULT parts per million (ppm)	ACCEPTABLE	CAUTION	UNACCEPTABLE
Fluoride (F)	0.82	✓		

Fluoride is naturally occurring and, though controversial, is sometimes added to municipal water to promote strong teeth. High levels can cause bone disease and mottled teeth. Some researchers report adverse health affects at levels much lower than "acceptable" by the EPA.

pH LEVEL				
	RESULT pH unit	ACIDIC < 6.5	ACCEPTABLE 6.5 - 8.5	ALKALINE >8.5
pH	6.1	✓		

pH is a measurement of corrosivity. A pH of 7 is neutral, being neither acidic nor alkaline. pH values of less than 7 are considered acidic (the lower the pH, the more acidic) and pH values above 7 are considered alkaline (the higher the pH, the more alkaline).

INFORMATION
<p>This test is a screen for primary and secondary metals regulated by the U.S. Environmental Protection Agency (EPA) in drinking water. Please see the back of this report for definitions of terms and abbreviations and information about action levels and reference ranges.</p> <p>Interpretation:</p> <p>ACCEPTABLE: Levels marked in the green area are within the desirable range recommended by the EPA. These levels are considered safe to drink by the EPA.</p> <p>CAUTION: Levels marked in the yellow area are higher than the desirable range recommended by the EPA, but lower than the EPA Maximum Contaminant Limit. If your drinking water contains metals with levels in the caution area you may wish to consider alternate sources or filtration.</p> <p>UNACCEPTABLE: Metals marked in the red area are higher than the EPA Maximum Contaminant Limit and actionable. Consumption of water with metals at this level may affect health. Contact your municipality and/or consider alternate sources or filtration.</p> <p>COMMENTS: taken at kitchen tap</p>

UNDERSTANDING YOUR BIOCHEMICAL RESULTS

FEEL GOOD BIOCHEMISTRY Your Roadmap To Health www.feelgoodbiochem.com by Dr. Amy, and edited by Dr. Nancy Mullan (available online at no cost) is a comprehensive resource to aid you and your doctor. It details Dr. Amy's interpretation of biochemical test data choices concerning supplementation. *Feel Good Biochemistry* is a free online resource to help you and your doctor understand Dr. Amy's interpretation of biochemical test results, and make informed choices concerning supplementation.

If you desire Dr. Amy's direct feedback, tests ordered through www.holisticheal.com will contain her personal comments if Feel Good Biochemistry does not give you sufficient guidance to make informed supplement choices with your own doctor. Because Dr. Amy is looking at various markers when making suggestions for consideration, she will often suggest supports based on patterns that she feels are emerging overtime after reviewing numerous biochemical tests. Therefore, it is imperative to stay current on the Discussion Group for the most recent information.

Examples of this more complex analysis are:

- High taurine and/or high aspartate may possibly be an indicator of bacteria in the absence of a CBS + mutation OR with a sufficiently supported CBS + mutation
- Threonine levels may be an indicator of Clostridia and/or other bacterial issues.
- Cadmium and Bismuth levels may be an indicator of Helicobacter.
- If Lithium is being supplemented, it may be in high range, but that is to be expected. However, if Lithium is **NOT** being supplemented and is in high range, it may mean there is 'Lithium dumping'. Running the HE/HMT is also useful.

The following are "general" preferred ranges. Suggestions are individually tailored based on genetics, previous testing in the file, current supplementation, and fluctuations in urine creatinine.

UTM/UEE

The first page of your results will contain the toxic heavy metal levels being excreted from the body. While many other professionals look solely at Mercury or Lead, Dr. Amy looks at all the metals and their relationship to each other and the Essential Elements/Minerals.

- At this time any metals showing would be considered a positive
- In the presence of high Lead, she may suggest Calcium supports or Bone Support compound
- In the presence of high Cadmium or high Bismuth (in the absence of any bismuth support), she may suggest Helicobacter supports

The second page of your UTM/UEE results will contain the Essential Elements/Mineral levels.

- Midrange for Sodium, Phosphorous, Potassium, Chromium, and Boron
- Midrange Lithium
- Low to Normal range for Calcium, but lesser than Magnesium
- High to Normal range for Magnesium, but greater than Calcium
- Normal range for Zinc, but lesser than Magnesium and greater than Copper
- Low to Normal range for Copper, but lesser than Zinc
- Normal to High range for Manganese, Molybdenum, Selenium, and Strontium

- Low to Normal range for Vanadium
- High range for Cobalt (indicator of B12 levels)
- No detectable levels for Iron
- Low end normal for Sulfur

HE/HMT

The results will contain the toxic heavy metal levels being excreted from the body. While many other professionals look solely at Mercury or Lead, Dr. Amy looks at all the metals and their relationship to each other and the Essential Elements/Minerals.

- At this time any metals showing would be considered a positive
- In the presence of high Lead, she may suggest Calcium supports or Bone Support compound
- In the presence of high Cadmium, she may suggest Helicobacter supports
- Mid to High range for Lithium
- Low to Mid range Iron
- Mid range Rubidium
- Mid range Potassium (higher than sodium)

UAA

The 3rd page of the Urine Amino Acids test report contains levels of GABA, Glutamate, Ammonia, Taurine, and other important Amino Acids. Dr. Amy makes suggestions for consideration based on the levels of Amino Acids and their relationship to each other.

- Mid-range to High GABA (gamma aminobutyric acid), greater than Glutamate
- Low to Mid-range for Glutamate, Glutamine, Glutamic acid, lesser than GABA
- Low to Mid-range for Ammonia
- Low to Mid-range for Taurine
- Mid-range Methionine, Lysine, Threonine, Isoleucine, Leucine, Valine, Phenylalanine, Tryptophan, and Arginine
- Low range of normal for Cysteine and Phenylalanine
- Midrange Citrulline and Phosphoethanolamine
- Low to Mid-range Aspartate, Aspartic Acid, Glycine, Beta-alanine, Homocysteine, Ornithine, Methionine Sulfoxide, Anserine, Carnosine, Methylhistidine and Histidine
- Higher range Phosphatidyl Serine and Phosphatidyl Choline

ASSESSING DETOXIFICATION

As you continue to add in Step One and Short Cut supports, including minerals, you may start to see changes. If so, it is recommended to do a UTM, HE/HMT, or FM. This will give you an idea if you are detoxing. Along the way, keep checking the Cobalt levels on UEE's. In addition, watch for the rise and fall of creatinine as well. For some it may take a year just to get the basic supports on board and tolerated, and for others it may be a quick process. Remember that there is no right or wrong way just what works for you, your family and your physician. It is not a quick process but chances are you will enjoy every positive step forward—both large and small!

Many need to keep an extra toxic metals kit on hand in the likelihood of detox, but even if you do not have a kit on hand, you can still collect and store some samples. Please see the "Tips on Testing" post in the Basics Forum of the Discussion Group for more information on storage options.

Recognizing Detox

Detox has many faces. It may be an increase in hyperactivity, increased stimming, recurrence of old obsessions, increases in OCD behaviors, less language or effective use of language, rashes, fever, cold like symptoms, increased difficulty with going to sleep, fatigue, increased urination frequency, etc. Some may even become lethargic, or they just do not feel well. Any behavior or feeling that is considered "out of the ordinary" for you or even an increase in certain symptoms may be considered as possible detox. One way to confirm your suspicions is to send a toxic metals test (UTM, HE/HMT, or FMT).

"When in doubt, run a UTM, HE/HMT or FM."

Controlling Detox

To help with the symptoms of detox, you can either increase the calming supplements and Nucleotide RNA's or pull out/reduce the detoxing supplement(s) until symptoms subside to a tolerable level or until you are back to a calm place.

The calming nucleotide blend supplements include BeCalm Spray, Chamomile, Relaxation, General Support Nucleotide blend RNA, Stress Foundation Nucleotide blend RNA, Nerve Calm Nucleotide blend RNA, Cytokine Support Nucleotide blend RNA, Fatigue Support Nucleotide blend RNA, GABABalance, magnesium citrate, Inflammatory Pathway Support compound etc. Calming supplement capsules include Inflammation Capsule and/or Inflammov and Relaxation Capsules that may help offset symptoms of detox. You may also need to increase your glutamate and GABA supports to help offset the changes in behavior/symptoms. Increases in supports that help to reduce inflammation can also be helpful. There is no right or wrong way, do what is best for you!

"This is a marathon, not a sprint."

Urine Color

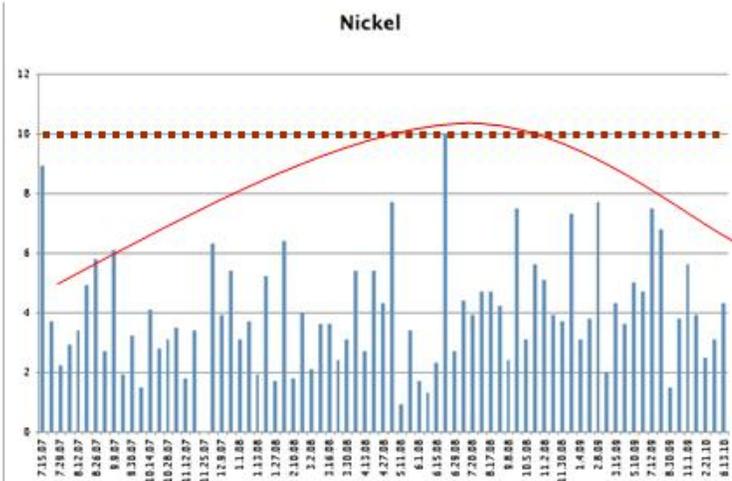
During this time, it can be very helpful to monitor creatinine on a daily basis and note the color, smell and appearance. In this way, you can "see" what has been changing inside you or your child's body and that these changes are producing the less than desirable behaviors or performance. There are creatinine test strips you can buy and use at home. One less expensive way is to collect urine in Dixie cups or small vials. Note the date, time on each strip, and use them as you would picking out paint colors. Some have even referred to the changes to the color of beer (Stout vs Pale Ale). Also, if you have some urine left over from your urine samples, freeze it and write the actual creatinine on them when it comes back from the lab.

Graphing

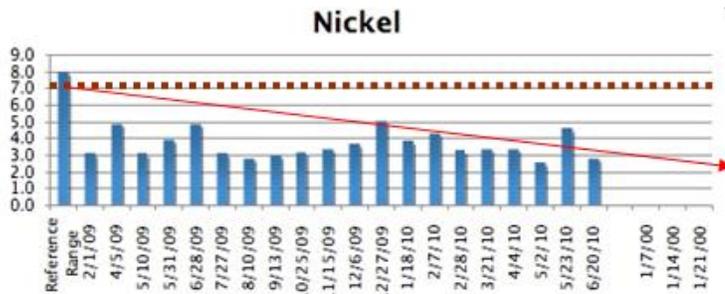
Graphing the hair, urine and fecal toxic tests is an additional way to monitor your progress. Templates for these can be found in the Basics Forum on the Discussion Group.

The following are graphing examples where one can see the rise and fall of a particular metal and ultimately see the bell shaped curve.

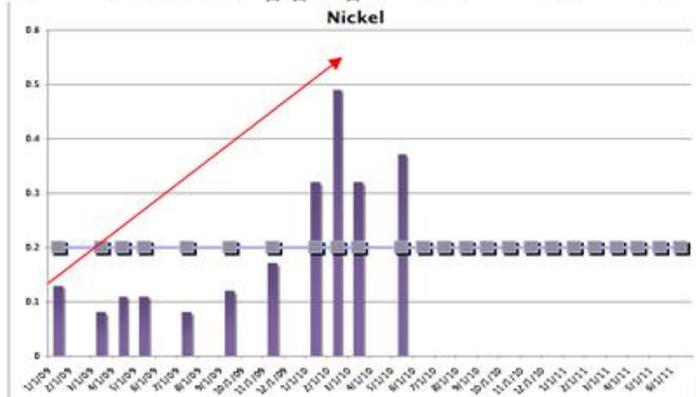
Nickel



Urine: Bell shaped curve



Fecal: Decrease



Hair: Increase

TRANSITIONING FROM STEP ONE-SHORT CUT TO STEP TWO-LONG ROUTE SUPPORTING MUTATIONS

The following is a suggested order to support your Nutrigenomic mutations, after Step One supports are tolerated and in conjunction with your practitioner. **By now you should have Step One GABA/glutamate supports in place, lithium in balance, organ supports and started some short cut supports. Now it is time to start supporting your Long Route mutations.**

In general, we can think about addressing the **BHMT, SHMT** and **ACAT** first, then the **CBS** based on UAA levels, and then the rest of methylation cycle support or Long route support: **MTHFR, MTR/MTRR, AHCY, COMT, MAO A, SUOX, NOS, and VDR**. There is potential for each supplement to add in a layer of detox. It is suggested that you start LOW and SLOW with all recommendations, including the reduction of protein in the diet. If you see fatigue, regressions in behavior, speech, etc., be sure to take a UTM, HTM, and FTM.

Step One/Short Cut is often part of the honeymoon period...you are making changes to your supplement program to take into account excitotoxins, GABA, lithium balance and other basic supports. As noted earlier, you may also see some detox in Step One as the body becomes more balanced, but know that some can see improvements too.

It is important to continue Step One supplements as you move into Step Two. As you begin to address the mutations identified in your nutrigenomic test, you are giving the body what it needs to begin the natural detox process. You may find that you need to increase your calming supports and at this time you may begin to experience greater detox and the accompanying behaviors and/or regressions.

The more mutations, the more time, the greater the exposure to toxins, the more there is to excrete. How long this process takes will depend on several factors.

This is also the step where frequent toxic metal tests make a tremendous difference. As mentioned, as detox progresses, graph your results to look for the bell-shaped curve, which indicates you have detoxed the majority of that metal.

Please see your MPA or www.knowyourgenetics.com for supplement suggestions for each of your SNP's, the *Methylations and Mutations* presentation series on the CD that came in your nutrigenomics test kit, and refer to the Genetics Forum on the Discussion Group for more information.

Short Cut Mutations and ACAT:

BHMT 1,2,4,8 (betaine homocysteine methyltransferase): The product of this gene is central to the 'short cut' through the methylation cycle, again helping to convert homocysteine to methionine. The activity of this gene product can be affected by stress, by cortisol levels and may play a role in ADD/ADHD by affecting norepinephrine levels. Supports for BHMT began with the Short Cut including DHA Neuromins and the PS/PC/PE complex. Other BHMT supplements support the Long Route/Step two.

SHMT C1420T (serine hydroxymethyltransferase) and ACAT 1-02 (acetyl coenzyme A acetyltransferase): SHMT helps to shift the emphasis of the methylation cycle toward the building blocks needed for new DNA synthesis and away from the processing of homocysteine to methionine. While DNA building blocks are important, mutations which affect the ability to regulate this gene

product and interfere with the delicate balance of the methylation cycle may cause accumulations in homocysteine, as well as imbalances in other intermediates in the body.

ACAT plays a role in cholesterol and other lipid balance in the body, helping to prevent the accumulation of excess cholesterol in certain parts of the cells in the body. ACAT is also involved in energy generation in the body. It is involved in helping to allow protein, fats and carbohydrates from food to be converted into an energy form that can be used by your body. In addition, lack of ACAT may also cause a depletion of B12, which is needed for the long route around the methylation cycle. Dr. Amy tends to see more dysbiotic and imbalanced flora associated with SHMT and ACAT +’s. Until you get the flora in better balance, you risk the problem of retention of toxic metals by the microbes. If you have an MTHFR A1298C mutation, BH4 and aluminum issue, you may have trouble moving ahead with this mutation and gaining on the aluminum excretion and mitochondrial issues, if you have not addressed the general gut environment by looking at SHMT and ACAT support. Consider extra supports for those that have Iron showing on a UEE, Short Chain Fatty Acid Imbalances on a CSA/GI Panel tests; Suberic, beta hydroxyl methylglutaric acid, or other ketone and fatty acid metabolites, Imbalances on a MAP, Severe gut issues, or muscle weakness (which can be related to aluminum retention). Those who are C677T+ AND ACAT + should consider the Bone Assessment test and the use of low dose (1 or 2 drops) Bone nucleotide blend and the Bone Capsule as needed.

CBS C699T, A360A, N212N (cystathionine-beta-synthase): The CBS enzyme basically acts as a gate between homocysteine and the downstream portion of the pathway that generates ammonia in the body. The types of CBS mutations that are identified on this SNP panel cause this “CBS gate” to be left open, this ‘open gate’ is not a neutral situation. The ‘open gate’ can allow support that is added for the rest of the methylation pathway to be depleted, including any B12 that is used to address MTR and MTRR mutations. While there are some positive end products that are generated via the downstream portion of the pathway such as glutathione and taurine, there are also negative byproducts such as excess ammonia and sulfites. By virtue of increased CBS activity, these sulfur groups that were complexed as part of the methylation cycle can now be released into the system as sulfites which are toxic to the body and put an additional burden on the SUOX gene product. Supports for the CBS+ mutations begins by assessing levels of taurine and Ammonia on a UAA. The CBS+ Protocol is a set of supplement suggestions designed to address biochemical issues associated with CBS + individuals. The level of support is determined by your individual mutations as detailed in the Methylation Pathway Analysis and Urine Amino Acid biochemical test results. Please note that these supports may also be needed for NOS and SUOX mutations.

Long Route Mutations:

MTHFR A1298C, C677T, 3 (methylenetetrahydrofolate reductase): The MTHFR gene product is at a critical point in the methylation cycle. It helps to pull homocysteine into the cycle, serving to aid in keeping the levels in a normal healthy range. Several mutations in the MTHFR gene have been well characterized as increasing the risk of heart disease, as well as cancer, and may play a role in the level of the neurotransmitters serotonin and dopamine. Those who are C677T+ AND ACAT + should consider the [Bone Resorption Test](#) and the use of low dose (1 or 2 drops) Bone nucleotide blend and the Bone Capsule as needed.

MTR A2756G/MTRR A66G, H595Y, K350A, R415T, S257T, 11 (methionine synthase/methionine synthase reductase): These two gene products work together to regenerate and utilize B12 for the critical long way around the methylation pathway, helping to convert homocysteine to methionine. High levels of homocysteine have been implicated as risk factors in a number of health conditions including heart disease as well as Alzheimer’s disease. As is the case for COMT and VDR /Taq, the MTR and MTRR composite status is also important. Mutations in MTR can

increase the activity of this gene product so that it leads to a greater need for B12 as the enzyme is using up B12 at a faster rate. Conversely, recent publications suggest that the A66G mutation in MTRR decreases the activity of the enzyme. Regardless of which theory is correct, over activity depleting the cycle of B12 or lack of activity impairing the function of the methylation cycle at that point, the net result is the same in terms of suggestions for supplementation. This would include all routes and forms of B12, Please see the next section, *Higher Doses of B12* for help on how to choose the right forms and types of B12 that are best for you.

AHCY 1,2,19 (S adenosylhomocysteine hydrolase): The various mutations in AHCY may affect levels of homocysteine as well as ammonia in the body. Key supports for AHCY include the use of SAME (S adenosyl methionine) even if you are COMT ++ and as needed Serenaid.

COMT V158M, H62H, 61 (catechol-O-methyltransferase): A primary function of this gene is to help to break down dopamine. Dopamine is a neurotransmitter that is recognized for its role in attention, as well as reward seeking behavior. Dopamine helps to cause pleasurable feelings that aid in reinforcing positive behaviors and motivating individuals to function in certain reward gaining activities. COMT is also involved in the breakdown of another neurotransmitter, norepinephrine. The balance between norepinephrine levels and dopamine levels has been implicated in ADD/ADHD; in addition, dopamine levels are important in conditions such as Parkinson's disease. COMT is also involved in the proper processing of estrogen in the body. Sensitivity to pain has recently been found to be correlated with COMT activity, such that COMT +/- individuals may be more sensitive to pain.

MAO A R297R (monamine oxidase A): Mao A is involved in the breakdown of serotonin in the body and is involved with mood. Imbalances in serotonin levels have been associated with depression, aggression, anxiety, and OCD behavior. Dr. Amy suggests small frequent doses of supports through out the day rather than higher doses, to avoid feedback inhibition.

SUOX S370S (sulfite oxidase): This gene product helps to detoxify sulfites in the body. Sulfites are generated as a natural byproduct of the methylation cycle as well as ingested from foods we eat. Sulfites are sulfur based preservatives that are used to prevent or reduce discoloration of light-colored fruits and vegetables, prevent black spots on shrimp and lobster, inhibit the growth of microorganisms in fermented foods (e.g. wine), condition dough, and maintain the stability and potency of certain medications. Sulfites can also be used to bleach food starches, to prevent rust and scale in boiler water that is used to steam food, and even in the production of cellophane for food packaging. The FDA estimates that one out of a hundred people is sulfite-sensitive, and five percent of those also suffer from asthma. A person can develop sulfite sensitivity at any point in life. Because many reactions have been reported, the FDA requires the presence of sulfites in processed foods to be declared on the label. Scientists have not pinpointed the smallest concentration of sulfites needed to trigger a reaction in a sulfite-sensitive person. Difficulty in breathing is the most common symptom reported by sulfite-sensitive people. Sulfites give off the gas sulfur dioxide, which can cause irritation in the lungs, and cause a severe asthma attack for those who suffer from asthma. Responses in the sulfite-sensitive person can vary. Sulfites can cause chest tightness, nausea, hives and in rare cases more severe allergic reactions. Mutations in SUOX may be a risk factor for certain types of cancer, including leukemia.

NOS D298E (nitric oxide synthase): This enzyme plays a role in ammonia detoxification as part of the urea cycle and can have additive effects with CBS up regulations due to the increased ammonia that is generated by the CBS up regulations.

VDR/Taq and VDR/Fok (vitamin D receptor): While the Fok change has been related to blood sugar regulation, changes at Taq can affect dopamine levels. For this reason, it is important to look at the composite of the COMT and VDR/Taq status and make supplement suggestions based on the combined results at these two sites. The focus on changes in the Fok portion of the VDR is in regard to supplements that support the pancreas and aid in keeping blood sugar in the normal healthy range.

Part of the transition from the Short Cut to the Long Route involves adding in 'basic methylation' or Long Route supports, and these would include:

- MethylMate A/Folinic Plus Compound Supplement
- MethylMate B Drops/5 methyl THF Drops- Preferred form of 5-MTHF
- Methylation Support Nucleotide blend RNA 1X/day 3-4 drops
- Higher Dose B12: Mega Drops and Oral Spray's

After long route supports are on board and tolerated it is suggested to run or re-run the MAP and UAA to see where supports need to be adjusted. Assess detox and minerals with UEE, Hair test and fecal toxic and also adjust or add supports for CBS+. Often you may not see the affects of a CBS+ up-regulation until long route supports are in place. These tests can be run at anytime but best 4-6 weeks after MMA/ Folinic PLUS, MMB/5 methyl THF Drops, Methylation Support Nucleotide blend RNA and higher doses of B12 have been added.

Detox can be like a roller coaster ride, with lovely increases in language, cognition, attention, increased energy, less fatigue and behavior, followed by aggression, fatigue and regressions, only to find that the cycle repeats again. Take your time, and move at a pace that works for you. Work in conjunction with your health care provider. And remember this is a **marathon, not a sprint**. If you need to slow the pace down, then move more slowly. There is no rule that says that you need to rush through detox. Each person is an individual, with his or her own genetics, microbial burden and toxic metal burden. One of the beauties of this program is the ability to tailor it to suit specific needs. So take advantage of the flexibility in the program to customize it to your own situation.

HIGHER DOSE B12

Once your lithium levels are in balance and short cut support is in place it is time to start to increase B12 support and to customize your supplement plan to optimize your health, based on your personal results. Vitamin B12 is important for energy, for balance related sports, for endurance sports, for healthy red blood cells, for memory, gut health, among other roles in the body. Vitamin B12 can be depleted by drinking alcoholic beverages, a poor diet, certain medications and as we age. Lack of B12 has been associated with fatigue, alcoholic liver disease, anemia, cancer, ulcers, H. Pylori, dementia, neural tube defects, depression and memory loss. Higher levels of B12 correlate with improved balance, energy and endurance in athletics. Different types of B12 work best for different people.

Vitamin B12 also called cobalamin can include Hydroxyl B12, Methyl B12, Cyano B12 and Adenosyl B12. Many vitamins, including B12, are not active in the form in which they are normally found in food. Instead the body needs to convert the B12 into a form that it can use directly. B12 is needed for the proper functioning of a number of different enzymes in the body, however not all types of B12 are equal and not all types of B12 can be easily changed to what is needed for critical reactions in the body. Hydroxy, methyl and adenosyl are all forms of B12 that are used directly by reactions in the

body. Cyano B12 must be converted for use in the body and as the name suggests, cyanocobalamin contains a cyanide molecule. Methyl B12 can be used in the body, though it may not be tolerated by everyone. Those who get jittery from caffeine, coke, tea, may not react as well to methyl B12. Many adults don't do as well with methyl B12 in spite of their nutrigenomics and so it is fine to choose an alternative form. Adenosyl B12 is a special form of B12 that is important in the energy cycle in the cells of your body. It is important to have adenosyl B12 but it is not as versatile as other forms of B12 so it can be used in lower doses.

Hydroxycobalamin B12, or hydroxy B12 is a unique form of vitamin B12, which is more easily converted to the form that is actually used for reactions in the body. This might cause you to ask, why doesn't everyone use high dose hydroxyl B12 in their formulations? Well, Hydroxycobalamin (Hydroxy B12) is more difficult to work with, harder to keep in an active form and more expensive than some other forms of B12, such as cyano B12. For this reason, many other products do not contain hydroxyl B12 and instead use cyano B12. Cyano B12 contains a cyanide molecule. So when you take cyano B12 your body must first turn it into hydroxy B12 in order to use it, and then must find a way to get rid of the toxic cyanide molecule. We all know cyanide is a poison even if the rest of the B12 molecule is good for you. The body actually uses hydroxy B12 in order to detoxify cyanide. So, not only is cyano B12 not the form your body ultimately needs, but taking higher doses of cyano B12 may actually deplete your hydroxy B12. So why would anyone use cyano B12 if it can be toxic? Well, in low doses it may be helpful for the eyes, but for the most part cyano B12 is used because it is much less expensive, and a form of B12 that is easier to keep in a stable.

Just as the GPS system in your car guides you in unknown areas when you are driving, so too can your nutrigenomic results guide you in individualizing your personal healthcare. Not all of us can tolerate caffeine. We all know people who can drink espresso just before bed and fall asleep like a baby and others who are shaking from a single cup of dilute coffee. These differences in part reflect individual tolerances to certain compounds in coffee. These effects are similar to the response people can have to different forms of B12. We need B12, it is a critical B vitamin and by now all of you are getting some low dose B12 support from the *All in One* and *Ultimate B* complex. The forms of B12 in those vitamins are designed to be tolerated by all, but now it is time to add some specific B12 based on your nutrigenomic results. The chart below will help you to determine which form of B12 might be best tolerated by your system. There is a more detailed description of the types of B12 along with references for their use after the chart if you want more information than simply knowing which type of B12 might be best suited based on your nutrigenomics. Both the COMT and VDR Taq status determine need and ability to tolerate methyl donors. This chart goes from highest need for methyl donors to lowest need and ability to tolerate methyl donors.

COMT V158M/H62H-- VDR Taq++/TT	need the most methyl donors
COMT V158M/H62H -- VDR Taq +/-/Tt	
COMT V158M/H62H -- VDR Taq --/tt	
COMT V158M/H62H +-VDR Taq++/TT	
COMT V158M/H62H +-VDR Taq +/-/Tt	
COMT V158M/H62H +-VDR Taq --/tt	
COMT V158M/H62H ++VDR Taq++/TT	
COMT V158M/H62H ++VDR Taq +/-/Tt	
COMT 61, V158M/H62H ++VDR Taq--/tt	exquisitely sensitive to methyl donors

While this chart helps to guide you on the choice of the type of B12 based on nutrigenomics, it is also important to pay attention to what your body is telling you. In spite of nutrigenomics if you are having

trouble tolerating methyl B12, then listen to your body and use hydroxyl with some adenosyl B12 instead. This is particularly true for adults who often have a more difficult time with any supplements that can trigger detox including any Methyl B12 support. Why it is so important to have a form of B12 that you can tolerate Vitamin B12 is a water-soluble vitamin. This means that it does not stay in the body for a long period of time and that more frequent support with B12 may be needed to maintain healthy B12 levels. Everybody needs methyl donors. However, the amounts and which ones are based on biochemical results and genetics and how well the individual will handle the detox that goes along with methyl's. The ONE exception is the need for support with SAME (as tolerated) for those who are AHCY +

Options for additional B12 support:

- Hydroxy B12 Mega Drops
- GET B12 Spray
- Black Bear Spray
- Black Bear Drink
- Adenosyl B12 Mega Drops
- Methyl B12 Mega Drops
- B12 injections (if possible hydroxyB12)

For a complete list of B12 support: www.holisticheal.com

THE GUT

With respect to the gut, as with all aspects of this protocol, there is no "one size fits all" approach. Sometimes it is difficult to know where to start with support, and there is no easy answer that fits all cases. With respects to the gut, the idea is to look at BOTH the gut environment as well as the specific organisms that are present. In terms of the gut environment the goal is to have a balanced pH, sufficient elastase, balanced levels of fatty acids reflecting appropriate fatty acid digestion, low levels of inflammatory markers, lack of blood, mucous, muscle in the stool, normal ranges of lactoferrin as well as cholesterol and triglycerides. A healthy gut environment is more conducive for the growth of appropriate normal flora rather than non-ideal microbes.

Comprehensive stool analysis tests (CSA) and the GI Health Panel can give an indication of the bacterial, yeast and parasitic loads in the intestinal tract. Dr. Amy likes to run both the CSA with the GI Panel simultaneously as they give related but non-identical information. For example the comprehensive stool analysis does not limit the organisms it allows to grow but will indicate any organisms that are present that grow in a given amount of time. This is a wonderful tool to see the range of non-ideal organisms in the gut. But a comprehensive stool analysis may not pick up very slow growing or oxygen sensitive organisms. The GI health panel uses a combination of growth of organisms as well as the immune response to organisms as a secondary measure of the presence of non-ideal flora. For these reasons the combination of the CSA and GI Panel yields more comprehensive data.

"If you think about bacteria as individuals living in housing units or apartments, you can see why when one neighborhood gets overcrowded those individuals flow into the next area, even if that area was deemed to be "housing free". Also if the main designated housing area has problems like flooding or fires or high crime, again, you are going to have people moving into the adjacent neighborhood, even if there was not supposed to be anyone living there. So, you want to know what is going on in the gut, the environment as well as specific microbes, in order to understand why you now have bacteria. We

need to address the environment (pH, inflammation, digestive enzymes etc.) as well as the specific organisms. If there are high levels of toxins in the stool this can also impact the gut environment and running a FMT helps too"

The following is a brief list of suggestions for overall gut health, taking biochemical testing and nutrigenomics into account. As always, work closely with your physician and refer to the Comprehensive Gut Protocol found in the Basics forum on the Discussion group for updates. It is important if you have a history of problems keeping the gut flora in balance, to look at implementing all three aspects of the gut program:

- 1) **Change the Gut environment:** The use of Bowel Support Nucleotide blend RNA, Stomach pH Nucleotide blend RNA, MTHFR A1298C caps, Homeopathic BH4, Leaky Gut Nucleotide blend RNA, and MetalAway (or malic acid/EDTA/horsetail grass) are designed to help to change the gut environment, so that it is less conducive to the growth of non-ideal organisms and encourages the long term growth of beneficial organisms. That combination should also help to chelate aluminum that is excreted as a function of elimination of imbalanced/dysbiotic flora. Dr. Amy tends to see more dysbiotic and imbalanced flora associated with SHMT and ACAT +’s. Even in the absence of a mutation or +, SHMT and ACAT supports help to improve the general gut environment. The MetalAway may be a big help for cases of suspected aluminum issues. The VitaOrgan compounded supplement and the NaturoMycin spray should also help specifically with gut pH. Once you have received your nutrigenomic profile, look for indicators that H. pylori may be an issue. Also keep in mind that if H. pylori is an issue this can also seriously affect the gut pH. The reason to begin with H. pylori, if there are a number of positive indicators for its presence, is that H. pylori can disturb the overall gut environment, allowing for the growth of other non-ideal microbes.
- 2) **Establish Normal flora** Rotating specific probiotics lays the groundwork for normal flora in the gut. A healthy gut environment aids in the ability of normal flora to populate/colonize the gut. In turn, healthy normal flora makes it more difficult for certain imbalanced or dysbiotic flora to grow, Dr. Amy has found that using specific sources of normal flora helps in establishing this balance of gut flora: Florastor, Lactobacillus Plantarum, Lactobacillus Reuteri (Digestive Health or Probiotic drops), Suprema Dophilus, Allerdophilus, FloraElite, and Nutriclean probiotics. Until we get the flora in better balance we risk the problem of retention of toxic metals by the microbes. If an individual has an MTHFR A1298C mutation, BH4 and aluminum issues, they may have trouble moving ahead with this mutation and gaining on the aluminum excretion and mitochondrial issues, if they have not addressed the general gut environment by looking at SHMT and ACAT support. Dr. Amy prefers to use probiotics that only contain Lactobacillus, Bifidobacter and lower doses of Saccharomyces.
- 3) **Eliminate non-ideal gut microbes:** The use of the mixture of gut herbs in NaturoMycin Spray and Capsules/Compound, IgY Immune, IMF’s, with the Microbial Support Nucleotide blend RNA-X formulas are designed to address bacterial imbalances ie Strep, Clostridia, Staph, H. pylori, E. coli etc. Mycology support Nucleotide blend RNA, IMF 7 along with Candisol, and GSE are designed to help address yeast imbalances. Supports should be tailored for each individual based on their CSA and GI Panel tests. In addition to its role in pancreatic support,

CCK also appears to aid in addressing chronic bacterial loads in the body. CCK capsules are no longer available so low dose CCK Nucleotide blend RNA along with pancreatic support (such as the VDR Fok compounded capsule) may be useful.

For a more comprehensive review of the Gut please refer to and the Discussion Group and Chapter 6 of Feel Good Biochemistry feelgoodbiochem.com/chapter-6 Supplement suggestions for a particular bacteria, imbalances, and SHMT or ACAT can be found on your Methylation Pathway Analysis, or www.knowyourgenetics.com Dr. Amy makes comments and individual suggestions on CSA and GI Panel tests run through her office, which can be purchased at www.holisticheal.com

Supports for changing the gut environment and establishing normal flora should have begun in Step one, if not please add them in as tolerated. It is fine to layer in some Hydroxy B12 support early on in step one while addressing lithium, then later when considering long route supports, look to add higher levels of supports for B12 including methyl for COMT-. You can look at SHMT spray, BeCalm spray and the *All in One* general vitamin first then once lithium is in balance consider Get B12 oral spray, Black Bear Spray and the B12 Mega drops (Adenosyl, Hydroxy, and Methyl based on COMT status). With the addition of balancing lithium and the newly formulated sprays and drops (ie. buccal route of delivery), Dr. Amy has found that individual B12 shots may not be needed. The level of B12 in the system can also affect the gut environment. If there are a number of MTR/MTRR mutations then higher doses of B12, gradually layered in over time would be important for the gut environment as well as for support for the methylation cycle. The use of NADH, trehalose, ATP, Riboflavin 5-phosphate to help with oxidation issues. Also Resvatrol spray and low dose UltiFend may help with oxidation and there is stabilized NADH in the MTHFR A1298C capsules. Dr. Amy is also finding that the BeCalm glutamate/GABA spray with low dose lithium is very helpful for MTR +.

GUT HEALTH ASSESSMENT

To assess gut health please look over old testing and records to see what history you may have with gut related issues.

Lab Tests indicating a need to address bacterial imbalances:

- History of chronic ear infections
- Maternal history of Streptococcal infection
- History of bacterial Pneumonia
- Streptococcus, E. coli on CSA/GI Panel
- Other bacterial pathogens on CSA/GI Panel
- Elevated kynurenic on OAT/Metabolic Test, CONFIRM with CSA/GI Panel
- Elevated quinolinic on OAT/Metabolic Test, CONFIRM with CSA/GI Panel
- Low gut pH
- High DHPPA on a MAP or OAT
- High Suberic on a MAP or OAT

Lab Tests indicating a need to address yeast imbalances:

- Elevated arabinose on OAT/MAP, CONFIRM with CSA /GI Panel

- Presence of yeast on CSA/GI Panel
- Low gut pH, CONFIRM with CSA/GI Panel

Lab Tests indicating a need to address parasites:

- Parasites on a CSA/GI Panel
- High or very low eisonophils

Probiotic Support/ Normal Flora/Yeast:

Dr. Amy's preferred sources of normal flora include; Suprema Dophilus, Florastor, Lactobacillus Plantarum, Lactobacillus Reuteri, FloraElite, Nutriclean Probiotics and Allerdophilus.

Rotate normal flora to get a good mixture and variety. If possible use 1/2 to one whole capsule of a different source of normal flora each day of the week for general support. You can also use the Mycology Support Nucleotide blend RNA, GSE, Candisol and IMF #7 once a day, if yeast is an issue, as well as the Bowel Support Nucleotide blend RNA, Leaky Gut Nucleotide blend RNA and Stomach pH Nucleotide blend RNA to help to with overall balance and Inflammation of the gut. By following this plan, you create an environment where the normal flora can thrive and as a result you will help to eliminate the offending organisms. It is recommended to run periodic CSA and GI Panel tests together to confirm that the gut flora is in balance.

Overall Gastrointestinal Tract Supports to consider:

- | | |
|--|--|
| <input type="checkbox"/> CCK Support Nucleotide blend RNA | <input type="checkbox"/> ARA 6 |
| <input type="checkbox"/> Bowel Support Nucleotide blend RNA | <input type="checkbox"/> Transfer Factor |
| <input type="checkbox"/> Bowel Support Plus Nucleotide blend RNA | <input type="checkbox"/> Slippery Elm Bark |
| <input type="checkbox"/> Leaky Gut Nucleotide blend RNA | <input type="checkbox"/> PH Strips-pHydrion |
| <input type="checkbox"/> Stomach pH Nucleotide blend RNA | <input type="checkbox"/> Cholacol |
| <input type="checkbox"/> AHCY/SHMT Compound | <input type="checkbox"/> GSH Caps |
| <input type="checkbox"/> SHMT Oral Spray (to help w/iron) | <input type="checkbox"/> Microbial ECX Nucleotide blend RNA |
| <input type="checkbox"/> NaturoMycin PVB Compound | <input type="checkbox"/> Microbial PSX Nucleotide blend RNA |
| <input type="checkbox"/> NaturoMycin PVB Spray | <input type="checkbox"/> Microbial KLX Nucleotide blend RNA |
| <input type="checkbox"/> BactiSolve Compound | <input type="checkbox"/> Microbial SALX Nucleotide blend RNA |
| <input type="checkbox"/> VitaOrgan Compound | <input type="checkbox"/> Microbial STAX Nucleotide blend RNA |
| <input type="checkbox"/> Colostrum with Lactoferrin and IGF | <input type="checkbox"/> Microbial STRX Nucleotide blend RNA |
| <input type="checkbox"/> Special Digestive Enzyme 3xday | <input type="checkbox"/> Microbial CLX Nucleotide blend RNA |
| <input type="checkbox"/> Red Rice yeast | <input type="checkbox"/> Anaerobic Nucleotide blend RNA |
| <input type="checkbox"/> Glucosamine Chondroitin Sulfate Plus | <input type="checkbox"/> Mycology Support Nucleotide blend RNA |
| <input type="checkbox"/> Rotate Normal Flora: | <input type="checkbox"/> Cranberry |
| • Florastor, | <input type="checkbox"/> Caprylic Acid |
| • Lactobacillus Plantarum | <input type="checkbox"/> Grapefruit Seed Extract |
| • Lactobacillus Reuteri (Digestive Health or Probiotic drops) | <input type="checkbox"/> SerraFlazyme |
| • Suprema Dophilus | <input type="checkbox"/> Candisol |
| • Allerdophilus | <input type="checkbox"/> Immunfactor 5 |
| • FloraElite | <input type="checkbox"/> Immunfactor 7 |
| • Nutriclean probiotics | <input type="checkbox"/> Immunfactor 9 |
| <input type="checkbox"/> Ultra Dairy Support | <input type="checkbox"/> Olive Leaf |
| <input type="checkbox"/> Buffer pH | <input type="checkbox"/> Malic Acid |
| | <input type="checkbox"/> EDTA |

Supports for Leaky Gut /or XMRV

- Glucosamine and Chondroitin Sulfate Plus
- Leaky Gut Nucleotide blend RNA
- Bowel Support Nucleotide blend RNA
- VitaOrgan Compound
- Metals VI Nucleotide blend RNA OR Metals III Nucleotide blend RNA +Metals VI Nucleotide blend RNA

Supplements to Help with Constipation

- Mag O7
- Artichoke
- Yellow Dock
- Cascara Sagrada
- Aloe Vera Leaf
- Cod Liver Oil (CLO)
- Rhubarb
- Triphala Extract
- Smooth Move tea
- Colon Cleanse
- Orange Chewable C-500

Lab Tests indicating a need to address parasites:

- Parasites on a CSA/GI Profile
- High or very low eisonophils

Supports to address/balance Parasites:

- Paradex
- NaturoMycin Spray and caps
- MTHFR A1298C caps

Lab Tests indicating a need to address yeast imbalances:

- Elevated arabinose on OAT/MAP, CONFIRM with CSA /GI Panel
- Presence of yeast on CSA/GI Panel
- Low gut pH, CONFIRM with CSA/GI Panel

Supports to balance / repopulate GI tract/ decrease yeast:

- Rotate probiotics (one each day of the week): Florastor, Lactobacillus Plantarum, Lactobacillus Reuteri (Gut Health or Probiotic drops), Suprema Dophilus, Allerdophilus, FloraElite, Nutriclean probiotics
- Candisol
- IMF 7 (Immunfactor #7)
- Lactoferrin
- NautroMycin Spray
- NaturoMycin Caps
- BactiSolve
- Stomach pH Balancing Nucleotide blend RNA
- CCK Support Nucleotide blend RNA
- Mycology Support Nucleotide blend RNA
- Buffer pH supplement

Gut PH, Excess Stomach Acid, Protein, Ammonia and TMG/Betaine HCL:

Excess stomach acid in the system can cause loose stools and severe stomach pain. Ammonia that is generated from excessive protein is alkaline. This may help to neutralize the stomach acid and would make the stools and gut pain better. However, using a high protein diet to address loose stools is not dealing with the root of the problem if it is caused by excess stomach acid. Creating high ammonia levels via diet to neutralize acids treats the symptom but not the underlying imbalance in the body. Stomach acid is triggered by histamine reacting with H2 receptors in the stomach. In an effort for the body to try and improve B12 levels, lack of B12 may cause increased stomach acid. A high protein diet may be increasing ammonia, which is neutralizing the stomach acid and improving the gut issue. However, it is not addressing why you have excess acid in the first place nor is it considering why there may be high histamine in the system (histamine is related to methylation function).

In addition it is important to evaluate ammonia levels and to consider the consequences of high ammonia. She is not suggesting that individuals abandon the SCD/high protein diet, especially as it has made a positive difference for many people. However, running a test for Helicobacter pylori or looking at the parameters mentioned in the next section as that is often a causative agent for excess stomach acid. It is also suggest that you consider running a DDI urine amino acid test (UAA) so that you can look at Ammonia, taurine and other amino acids while on the SCD diet or high protein diet. It is important to monitor ammonia levels to be certain that the body is able to dispose of the ammonia properly, which can be generated from the intake of high protein foods. The body uses two molecules of BH4 to detoxify one molecule of ammonia to urea. This is an 'expensive way' to use up your BH4. BH4 is also needed for dopamine and serotonin synthesis, as well as language related function.

Adequate levels of GABA, BH4, and dopamine appear to play a major role in language development. Since language is a primary problem for many children with Autism, using up limited BH4 to detoxify ammonia may not be the best use of it for the body. Using a supplement like the MTHFR A1298C Compounded capsule to support natural BH4 levels may be helpful. In addition, ammonia is reported to inhibit the metabolism of butyrate, along with other short chain fatty acids. Butyrate is a nutrient used by cells that line the gut. Butyrate synthesis can be inhibited by H2S and sulfites that are generated as a result of the CBS up regulation, low molybdenum or SUOX mutations. Paradoxically, butyrate has been reported to be a potent detoxifier of ammonia. Ammonia detoxification also depletes stores of manganese that are needed for healthy dopamine levels. The presence of H.pylori can also negatively impact manganese levels, so this is another factor to consider. Rather than add butyrate directly the supports Dr. Amy suggests for high ammonia/CBS+ are designed to address both aspects of this issue. Simply using butyrate to pull down ammonia by itself is not the answer.

L-Glutamine, which is often recommended by others for a variety of gut symptoms, can potentially convert to glutamate/excitotoxin and is not recommended by Dr. Amy. She is also not a fan of the use of betaine HCL for digestive issues, and generally does not like the addition of high doses of any type of TMG, choline or betaine. In order for the betaine HCL to provide the increase in stomach acid that you desire...that the molecule is cleaved in order to liberate the HCL that you are looking to add to your system. However the other product of this reaction is betaine, otherwise known as TMG. So, ultimately when you take betaine HCL it is equivalent to adding betaine which is known to feed into the BHMT enzyme for the short cut pathway around the cycle. TMG is a methyl donor and can be a problem for COMT +/- individuals. IF you add acidic supplements, you will actually make the situation worse as the 'real' gut pH is likely already acidic. By adding more acidic products the 'real' gut pH will drop further and make an even more conducive environment for the H. pylori. In addition the TMG will be converted to DMG which shifts the emphasis from the short cut to the long route. By using TMG you

may be shunting to the long route before you are ready, before lithium is in balance and before you have added support as needed for MTHFR or B12.

On a related note other helpful tools for addressing bacterial and viral infection and supporting the body in the process include the use of BCell and TCell formulas, Moducare and the ImmunFactors (IMF). In particular IMF 4 should be helpful for viruses related to childhood vaccines. The IMF 1, 2 and 6 should be helpful in supporting the body for herpes related viruses and Dr. Amy has found that the IMF 5 is particularly helpful for support for bacterial infections.

Chronic bacterial infection and its effects on tryptophan breakdown are part of the reason why she suggests only low levels of P5P for individuals with chronic bacterial issues and CBS up regulations. P5P also helps to push the CBS reaction as well as to aid in the conversion of kynurenic to quinolinic. The kynurenic that is generated via the breakdown of tryptophan by bacterial infection is calming; however P5P helps to convert it to quinolinic which is excitatory.

In animal models vitamin B2 (riboflavin) has been shown to speed the clearance of bacteria from the body and to lower mortality rates from bacterial sepsis. In addition, riboflavin is reported to be helpful in reducing inflammatory mediators. Another B vitamin, vitamin B3, is often depleted in individuals with chronic bacterial infections. You may also want to consider niacinamide (1/2 per day) and A1298C caps as this may help to stem the breakdown of tryptophan that is often seen with bacterial infection. Kynurenate is part of the breakdown pathway for tryptophan. As the body breaks down tryptophan for this purpose it will also deplete serotonin. Lack of serotonin combined with streptococcal infection can lead to perseverative and OCD behaviors in addition to other effects. The nutrigenomic panel looks for mutations in the MAO A gene, which is the enzyme involved in serotonin breakdown. The final breakdown product of the tryptophan pathway is niacinamide. This B vitamin has been reported to have antimicrobial effects. It may be that the body is trying to address bacterial infection by breaking down tryptophan into niacinamide to help with infection. In some cases she has not found that the use of high dose B6 or P5P is always helpful. It can actually cause more overstimulatory or OCD type behaviors. While kynurenic acid is calming for neurotransmitters, the product that kynurenines are converted to by B6 is quinolinic acid. Quinolinic acid is an excitotoxin.

So if you have high kynurenine and add B6 you can generate quinolinic acid, which acts as an excitotoxin and can aggravate the nervous system. Increased levels of quinolinic acid have been implicated in Alzheimer's disease as well as with respect to excitotoxin damage of nerves. Quinolinic acid was found to be substantially elevated in patients with *Borrelia burgdorferi* (Lyme) infection and has been postulated to play a role in contributing to neurological and cognitive defects associated with Lyme disease. It is of importance to try to look at why you may have elevated activity in the tryptophan breakdown pathway in the first place. Decreased methylation, increased IDO (an enzyme that is also effected by methylation and other factors), and chronic streptococcal or even *B. burgdorferi* (lyme) infection can lead to stimulation of this pathway.

Lyme, Inflammation, Thyroid and Other Considerations

Lyme disease has been implicated in a number of neurological conditions. Cat's claw is reported to be helpful for viral issues as well as for Lyme. Artemisia (wormwood) has also shown activity against Lyme. Wormwood is a component of Paradex that was already mentioned with respect to other parasitic infections. In addition, Tick support Nucleotide Blend RNAs and IMF 2 and IMF 8 may help to support the body. Chronic issues with Lyme may overlap with thyroid dysfunction.

There is a complex relationship between thyroid function and bacterial infection. Healthy thyroid activity helps to address chronic bacterial/sinus infection. Conversely, the presence of chronic bacterial infection can impair thyroid hormone levels, creating a bit of a catch 22. Periodic thyroid testing and CSA/GI panel tests help to assess the status of bacterial infections and its effect on thyroid function. This is suggested for individuals who have issues with chronic bacterial infection, sinus infections, dental issues, or a past history of ear infections. One of the enzymes that is activated during chronic bacterial infection is also needed for thyroid hormone synthesis. Since low thyroid function is often found in association with a variety of neurological and cardiovascular conditions I felt this was a good time to raise potential problems so that you can be aware of them and watch for signs of these on issues in the future. Iodine levels also affect thyroid function and there is a relationship between the methylation cycle, sulfur groups and iodine levels. Iodine levels will be impacted negatively by bromine that is used in bread. This is another reason to be vigilant with the gluten free aspect of the GF/CF diet. Lithium is concentrated in the thyroid and may affect iodine uptake. This is why it is important to monitor both the levels of iodine as well as lithium on essential mineral tests and supplement lithium only as needed for low values that may occur as a result of detoxification and excretion of mercury. Iodine is no longer included on the standard essential element test, and needs to be ordered as a separate test. As an alternative, a topical iodine test can be performed. The Ultimate B Complex may also be supportive for the thyroid along with extra PABA and Pantothenic acid supplements.

If iodine and thyroid hormone levels are an issue, the use of 1/2 to one Iodoral per day may be of help in supporting healthy iodine levels. The use of the herb guggul may help to balance T3 and T4. Natural thyroid supplementation is available in the form of thyroid/tyrosine supplements. After four to six weeks of nutritional support you should run a follow up thyroid test with your health care provider to confirm that thyroid hormone levels are in the normal range and an essential mineral iodine test to confirm healthy iodine levels (or the use of the topical iodine test). The thyroid hormone iodination cycle is tied to glucose 6 phosphate dehydrogenase levels. The use of supplements or chelating agents that deplete G6PDH levels can also affect thyroid hormone levels. Chronic streptococcal infection, and possibly E. coli infection can also lead to a variety of inflammatory mediators as well as depleting neurotransmitters. Bacterial infection is also known to increase the levels of inflammatory mediators such as IL6 and TNF alpha. Mutations have been characterized that aid in increasing the levels IL6 or TNF alpha in the system. Elevated IL6 has been reported to inhibit the release of thyroid hormones in addition to its role in enhancing inflammation.

Support for the Body to help balance Inflammatory Mediators consider:

- | | |
|---|---|
| <input type="checkbox"/> General Support Nucleotide blend RNA | <input type="checkbox"/> Inflammov |
| <input type="checkbox"/> Hyper-Immune Nucleotide blend RNA
(not for COMT ++) | <input type="checkbox"/> Nettle |
| <input type="checkbox"/> Cytokine Balance Nucleotide blend RNA | <input type="checkbox"/> Boswellia-Ayur Boswellia Serrata |
| <input type="checkbox"/> Stress Foundation Nucleotide blend RNA | <input type="checkbox"/> Turmeric |
| <input type="checkbox"/> Heart Support Nucleotide blend RNA | <input type="checkbox"/> Skull Cap |
| <input type="checkbox"/> Bowel Support Nucleotide blend RNA | <input type="checkbox"/> Chamomile |
| <input type="checkbox"/> TNF Balance Nucleotide blend RNA | <input type="checkbox"/> Quercetin 500 Plus |
| <input type="checkbox"/> Inflammatory Pathway Support
Compounded Supplement | <input type="checkbox"/> Petadolex –Butterbur |
| | <input type="checkbox"/> Cherry Fruit Extract |

Microbial:

The gut may be a source or reservoir for chronic bacterial infection if it is an issue in the body. There are a number of herbs that are useful in supporting the body to address bacterial imbalances in the

gut. NaturoMycin spray and caps include these herbs all in one place. Alternatively the herbs can be added individually. In addition the use of BactiSolve (or an alternate source of chitosan) may help to weaken the bacterial outer layers of defense so that they are more susceptible to herbs. Seasonal support is a compound that is designed for use during the influenza season as well as containing a higher concentration of herbs to support berberine. This may be particularly helpful if Streptococcus is the main issue in terms of imbalanced flora.

For Microbial Herb Support consider:

- NaturoMycin PVB Compound
- NaturoMycin Spray
- BactiSolve
- GSE
- Seasonal Support

Aluminum:

Aside from the toxic effects of mercury on the body, aluminum and lead toxicity can cause toxicity in the body. Bacteria seem to be able to hold onto aluminum. Aluminum is known to inhibit glutamate dehydrogenase, which is an enzyme that converts glutamate to alpha keto glutarate, potentially causing increased glutamate. In addition aluminum interferes with the production of BH4. Therefore, the presence of aluminum may be affecting levels of serotonin as well as dopamine in the body and may be affecting BH4 levels regardless of whether there is an MTHFR A1298C mutation. Malic acid, EDTA and horsetail grass are helpful in binding aluminum in the body, all of which are a part of the MetalAway compounded formula. As chronic bacterial infection is addressed it should help to aid in aluminum excretion. Detox Away is designed for more advanced excretion of metals but may also trigger more detox symptoms. As always work with your own health care practioner when attempting detox.

Supports for Aluminum and Lead excretion consider:

- | | |
|--|--|
| <input type="checkbox"/> Bone Support Nucleotide blend RNA | <input type="checkbox"/> Adenosyl B12 Mega Drops |
| <input type="checkbox"/> CCK Support Nucleotide blend RNA | <input type="checkbox"/> EDTA soap and/or EDTA soak |
| <input type="checkbox"/> MTHFR A1298C Compound | <input type="checkbox"/> Malic Acid |
| <input type="checkbox"/> MetalAway Compounded Supplement | <input type="checkbox"/> EDTA Chelator Complex capsules with garlic and malic acid |
| <input type="checkbox"/> DetoxAway Compounded Supplement | <input type="checkbox"/> BactiSolve (if no shellfish allergies) |
| <input type="checkbox"/> GSH capsules | |
| <input type="checkbox"/> Adenosyl B12 -Dibenzozide | |

Helicobacter/H Pylori:

Helicobacter is a Gram-negative bacteria associated with ulcers, gastritis, duodenitis, and stomach cancer and is able to thrive in an acidic environment. There are a number of parameters that Dr. Amy has found that may relate to H. pylori in the absence of a positive HP test. Realize that because H. pylori can hide in the cells lining the gut, negative biopsies or negative antigen test results may not be conclusive. If you and your doctor feel this may be an issue, take some time to watch the presentations on H. pylori: [part one](#) and [part two](#). Then work with your doctor to slowly layer in H. pylori support. Run HMT, FM and UTM/UEE's on a regular basis to follow lithium levels, potassium levels, bismuth levels and the excretion of cadmium.

- Helicobacter test

- Presence of blood on a CSA
- Low Manganese on UEE or HE/HMT test in spite of supplementation
- Very High Suberic on MAP
- Extreme swings in CSA/GI Panel Stool PH
- High Aspartate Or high Tryptamine on Neurotransmitter
- Excretion of Bismuth on a FM in the absence of supplementation
- Consistent Cadmium excretion on a UTM and FM
- Signs of ketosis on a MAP
- Normal to high excretion of Arginine on UAA, when all other AA's (except taurine) are low
- Low PS on a UAA regardless of having all suggested supports in place
- High 5HIAA or Indole acetic acid on a MAP
- High taurine on UAA in the absence of a CBS +, OR in spite of sufficient CBS Nucleotide blend RNA/Ammonia Nucleotide blend RNA
- Positive Urea/Urease breath test

Helicobacter/H. Pylori supports to consider:

- | | |
|---|---|
| <input type="checkbox"/> Bowel Support Nucleotide blend RNA | <input type="checkbox"/> Mastica Gum |
| <input type="checkbox"/> Microbial HELX Nucleotide blend RNA | <input type="checkbox"/> Intrinsic Factor |
| <input type="checkbox"/> Liver Support Nucleotide blend RNA | <input type="checkbox"/> GSH |
| <input type="checkbox"/> Ion Transport Support Nucleotide blend RNA | <input type="checkbox"/> Broccoli Max |
| <input type="checkbox"/> MTHFR A1298C/liver Compound | <input type="checkbox"/> Air Power |
| <input type="checkbox"/> Ion Transport Compound | <input type="checkbox"/> NAC |
| <input type="checkbox"/> B12 oral spray + drops + additional B12 | <input type="checkbox"/> Some cases very low dose Arginine |
| <input type="checkbox"/> Adenosyl B12 Mega Drops | <input type="checkbox"/> Serrafazyme with meals |
| <input type="checkbox"/> PeptiMycin Compounded Supplement | <input type="checkbox"/> L-Carnitine |
| <input type="checkbox"/> SHMT Spray | <input type="checkbox"/> Coffee |
| <input type="checkbox"/> BeCalm Spray | <input type="checkbox"/> Huperzine (only in select situations based on testing) |
| <input type="checkbox"/> Resveratrol Spray | <input type="checkbox"/> Biotin |
| <input type="checkbox"/> Baking Soda with meals | <input type="checkbox"/> Se-Methyl L-Selenocysteine |
| <input type="checkbox"/> Ester C | <input type="checkbox"/> Wasabi - low dose gradually increase |
| <input type="checkbox"/> Perfect E | <input type="checkbox"/> Potassium Bicarbonate (K-Bicarb) |

Strep/ Streptococcus:

Many individuals have issues with chronic streptococcal infection or recurrent issues with other bacterial infections in the body. In addition chronic gut issues can indicate an underlying bacterial infection in the body. Streptococcal infection in the gut can serve as a reservoir to re-infect the sinuses. Chronic streptococcal infection has been associated with OCD behavior as well as tics, over stimulatory behavior and perseverative speech. Streptococcal infection can also lay the groundwork for leaky gut, which can relate to decreased weight gain or slower growth. Many microbes require the presence of iron for growth and/or virulence. The use of vitamin C and Biotene toothpaste or mouthwash (available at your local pharmacy) may be useful in combating chronic streptococcal infection. Biotene toothpaste, mouthwash and gum may also aid the mitochondria in detoxification and help to support SOD and glutathione mutations. Seasonal support is a compound that is designed for use during the influenza

season as well as containing a higher concentration of herbs to support berberine. This may be particularly helpful if Streptococcus is the main issue in terms of imbalanced flora.

Streptococcal Immune support to consider:

- | | |
|--|---|
| <input type="checkbox"/> Microbial STRX Nucleotide blend RNA | <input type="checkbox"/> Xylitol (In some sprays) |
| <input type="checkbox"/> TNF Balance Nucleotide blend RNA | <input type="checkbox"/> Xylitol Nasal Spray-Xlear |
| <input type="checkbox"/> Advanced Joint Nucleotide blend RNA | <input type="checkbox"/> Papaya Enzyme |
| <input type="checkbox"/> SHMT Spray (to help w/iron) | <input type="checkbox"/> Vitamin C |
| <input type="checkbox"/> NaturoMycin PVB Compound | <input type="checkbox"/> Orange Chewable C-500 |
| <input type="checkbox"/> NaturoMycin Spray | <input type="checkbox"/> Immunfactor 5 |
| <input type="checkbox"/> BactiSolve Compound | <input type="checkbox"/> Ultimate B Complex |
| <input type="checkbox"/> Seasonal Support | <input type="checkbox"/> Biweekly toothbrush change |

Clostridia:

The situation regarding the bacterium Clostridium deserves special mention. There is some indication that Clostridia infection may have an impact on language as well as significant leaky gut and thus, food sensitivity in adults. Particular Clostridium is an anaerobe, which means that it does not grow well (if at all) in a high oxygen environment. Some of the compounds in the PeptiMycin (which is designed to help with H. pylori support) may also be useful for Clostridia support. Addressing Clostridia infection may also help with loose stools. The toxins excreted by Clostridia cause gaps between the cells lining the gut, adding to leaky gut issues. OAT/MAP tests indicate the levels of HPHPA, which is often elevated with Clostridia infection. Levels of DHPPA on other OAT/MAP tests have formerly been discussed as relating to Clostridia levels. Since there continues to be some disagreement over the implication of the levels of these biochemical intermediates and their relationship to Clostridia levels, it is wise to run a specific stool test to confirm the presence of Clostridia toxins if you see elevated levels of HPHPA or DHPPA listed on an OAT/MAP test.

Clostridia supports to consider:

- | | |
|---|---|
| <input type="checkbox"/> C. Language Support Nucleotide blend RNA | <input type="checkbox"/> Aerobic O7 |
| <input type="checkbox"/> Microbial CLX Nucleotide blend RNA | <input type="checkbox"/> Pure L-Alanine |
| <input type="checkbox"/> Bay Leaf | <input type="checkbox"/> Ashwagandha |
| <input type="checkbox"/> Florastor | <input type="checkbox"/> Open the Box |
| <input type="checkbox"/> Lactobacillus Plantarum | <input type="checkbox"/> In Home Oxygen or HBOT |
| <input type="checkbox"/> Penta Water | <input type="checkbox"/> IGY Immune |

ADDITIONAL DETOXIFICATION

If additional detox is wanted you can add support with the Metals I, II, III, IV, V, VI Nucleotide blend RNA's. These Metals Nucleotide blend RNA formulas can be added to help address specific viral concerns and promote additional detox. For those with exposure to the MMR vaccine or Measles Mumps, and Rubella. It is suggested to start with Metals I, increase slowly based on tolerance, creatinine changes, and excretions on toxic metals testing. If you have not been exposed you may want to skip to Metals IV Nucleotide blend RNA. Start with 1/3 drop per Metals I Nucleotide blend RNA

1X/day and continue at this low dosage for two to three weeks. After the first two to three weeks, you can begin to gradually increase the frequency of the Metals I Nucleotide blend RNA to 1/3 dropper 2X/day for several days, then to 1/3 dropper 3X/day, and so forth up to 7–8X/day. Dr. Amy cannot over-emphasize the importance of proceeding gradually. The dosage and number of times you should deliver the Metals Nucleotide blend RNA should be individualized to your response. As always, work with your doctor when participating in any type of detox program.

As you increase the dosage of the Metals I Nucleotide blend RNA, you will notice that test results show increases in the creatinine followed by increases in the metal excretion. The color of the urine will begin to get darker during excretion and then may clear as the metals are released. Once you have reached a dosage of Metals I Nucleotide blend RNA of 7–8 X/day, keep this up and continue using the UEE, HMT or fecal toxic tests to track excretions. If, after several weeks, test results no longer reveal the excretion of metals, drop back to a maintenance dose of 1/3 dropper 1X/day. After you feel you have exhausted Metals I, take a two to three week break, remaining on the maintenance dose of Metals I during this time period. During this break you may still continue to see some increased excretion of metals. The ongoing use of MMA/Folinic Plus and MMB/5 methyl THF drops as well as other supplements for mutations in the methylation cycle will also stimulate metal excretion during this time. After the break, you can continue on to Metals II with the same slow progression and maintenance level of Metals I. Continue on with Metals III.

Metals IV, directed towards Herpes virus, can be dosed similar to the progression of Metals I,II, and III, or used intermittently during times of outbreaks, flare-ups and/or ongoing maintenance support. Metals V directed towards directed towards flu or influenza viruses can be dosed similar to the progression of Metals I, II, and III, or used intermittently during times of flu exposure and illness. Metals VI directed towards XMRV can be dosed similar to the progression of Metals I, II, and III, or used intermittently during times of exposure or maintenance.

The DetoxAway capsule supports more advanced excretion of metals. As always defer to your own health care practitioner when attempting detox.

If additional Detox support is desired consider:

- | | |
|--|---|
| <input type="checkbox"/> Metals I Nucleotide blend RNA | <input type="checkbox"/> Metals V Nucleotide blend RNA |
| <input type="checkbox"/> Metals II Nucleotide blend RNA | <input type="checkbox"/> Metals VI Nucleotide blend RNA |
| <input type="checkbox"/> Metals III Nucleotide blend RNA | <input type="checkbox"/> MetalAway |
| <input type="checkbox"/> Metals IV Nucleotide blend RNA | <input type="checkbox"/> DetoxAway |

* Detox can be like a roller coaster ride, with lovely increases in language, cognition, attention and behavior, followed by aggression, fatigue and regressions, only to find that the cycle repeats again. Take your time, and move at a pace that works for you. Work in conjunction with your health care provider. And remember this is a **marathon, not a sprint**. If you need to slow the pace down, then move more slowly. There is no rule that says that you need to rush through detox. Each person is an individual, with his or her own genetics, microbial burden and toxic metal burden. One of the beauties of this program is the ability to tailor it to suit specific needs. So take advantage of the flexibility in the program to customize it to your own situation.

STEP THREE

The major focus of this final phase of the program entails implementing a program of supplementation to support remyelination of the nerves and to foster left/right communication in the brain. This is essential because many of the symptoms seen in neurological inflammation result from the demyelination of the nerves that is produced by the assault of virus, metals, and other factors. Most people are pleased to get to this phase. Congratulations, It's been a lot of work and a long wait. However, I also want to caution you that your journey is not quite over. This phase also takes time, dedication, and work. The process of remyelinating the nerves can take up to nine months, and that is only the first part of this step. Once the nerves are remyelinated, then they are ready to launch a "pruning" process, essential to normalizing nerve function. This process also takes time except for those who are COMT +/-, for whom pruning may occur much more rapidly.

Methylation is directly involved in the ability to both myelinate nerves and to "prune" nerves. Myelin is a sheath that wraps around the neuronal wiring to insulate and facilitate faster transmission of electrical impulses. Without adequate methylation, the nerves can neither initially myelinate nor can they remyelinate after viral infection or heavy metal toxicity. Inadequate methylation therefore decreases both myelination and the subsequent "pruning" of the nerves. Why is pruning necessary? Pruning helps to prevent excessive wiring, or unused neural connections, and reduces the density of synapses to allow proper transmission. Without adequate pruning, the brain cell connections can become dense and tangled, causing poor or misdirected signals.

Even after detoxifying virus and metals, many underlying factors still remain and will persist over time. Your goal is to maintain sufficient long-term supplementation to prevent the likelihood of accruing a toxic and microbial burden that would instigate inflammation and dysfunction once again. No one wants that to happen! So, while you may be tempted to limit supplementation to the recommendations for Step Three, nerve growth and myelination, remember where you have been. It's easier to keep taking needed supplements on a daily basis than it is to run the risk of glutamate, viral, and metal toxin buildups occurring again.

Supports to consider for Step Three

- | | |
|---|--|
| <input type="checkbox"/> Advanced Language Nucleotide blend RNA | <input type="checkbox"/> Bacopin |
| <input type="checkbox"/> Nerve Coat Nucleotide blend RNA | <input type="checkbox"/> Placenta |
| <input type="checkbox"/> Nerve Calm Nucleotide blend RNA | <input type="checkbox"/> Mesenchyme |
| <input type="checkbox"/> General Support Nucleotide blend RNA | <input type="checkbox"/> Spirulina |
| <input type="checkbox"/> Step 3 Cognitive Support Compound | <input type="checkbox"/> Sphingolin |
| <input type="checkbox"/> MMA/Folinic Plus & MMB/5 methyl THF | <input type="checkbox"/> Ashwagandha |
| <input type="checkbox"/> NaturoMycin Compound | <input type="checkbox"/> Pure L-Alanine |
| <input type="checkbox"/> MTHFR A1298C Compound | <input type="checkbox"/> Low dose Ampamet |
| <input type="checkbox"/> BeCalm Glutamate/GABA Spray | <input type="checkbox"/> Royal Jelly (as long as NO bee allergies) |
| <input type="checkbox"/> Get B12 Spray and B12 Megadrops | <input type="checkbox"/> Dong Quai |
| <input type="checkbox"/> Resveratrol Antioxidant Spray | <input type="checkbox"/> Black Cohosh |
| <input type="checkbox"/> PS/PC/PE Complex | <input type="checkbox"/> H. Pylori supports If needed |
| <input type="checkbox"/> MetalAway Compound | <input type="checkbox"/> ThinkWell |
| <input type="checkbox"/> Fenugreek | <input type="checkbox"/> <i>All in One</i> general vitamin |
| <input type="checkbox"/> Gotu Kola | <input type="checkbox"/> Black Bear b12 Energy Spray |
| | <input type="checkbox"/> VDR Fok+ Compound |

DOSAGES

The following are suggested dosages based on the preferred brands of supplements and those that can be ordered through www.holisticheal.com

The following suggestions are all approximate and each will be dependent for each individual. As a general rule when starting most supplements, is to start low and slow with one spray, sprinkle or drop. Remember a 'sprinkle' is considered a 'bonafide' dose. Gradually increase each, unless otherwise noted below, based on your own tolerance, detox, behaviors and ongoing biochemical testing. As always work with and defer to your own doctor for final supplement choices.

All in One General Vitamin: Start with a sprinkle and work up 1-4 capsules a day if tolerated. In certain individuals may cause detox.

MTHFR A1298C+ Liver support BH4 Function Compound: 1-4 capsules or more based on tolerance and testing, may replace the need for additional BH4 for most. May cause detox. For those that need additional BH4, Homeopathic BH4/Pteriden is available (overnight shipping only within USA), by contacting the office directly 1-207-824-8501 or 1-800-768-8744.

VDR Fok/Pancreatic Compounded Supplement: work up slowly to 1 cap, VDR Fok + work up to 2-3 caps then go by testing.

Ultimate B Complex: Work up slowly to 1-2 caps then go by testing. May cause detox, yet may help with fatigue.

Zinc: No more than 40 mg total per day.

Ora Kidney: 1/4 capsule to start work up to 1 a day.

Cod Liver Oil: 1 capsule or liquid.

Special Digestive Enzymes/SDE: Work up to 2 capsules per meal. May cause detox

Resveratrol Spray: 1-3+ sprays a day, as needed, working up as tolerated.

BeCalm Glutamate/GABA Spray: 1-6+ sprays a day, as needed, working up as tolerated.

Vita D-Light Spray or VIT D3: 1000-2000iu a day depends on VDR mutations, this is extra than what is in the multi and CLO Spray. Work up to 1-2 sprays a day as tolerated. The Vita D-Light spray includes rosemary and sage to help with vitamin D transport.

Adrenal Concentrate: 1/4 capsule to start work up to 1 a day. May cause detox.

T Cell and B Cell Formula capsules: Work up to one capsule of each daily. Replaces discontinued Ora Triplex and Immuno forte

VitaOrgan Compound: Start with a sprinkle and work up to 1 or more capsules a day.

GABA/GABA Balance: Start with a sprinkle, 1/4 to 1/2 capsule and work up to 2-3 capsules a day if tolerated. If an individual becomes mushy/sleepy/tired during the day then back off. This should be calming, use preferred brands and check mineral levels on UEE and HMT.

Vitamin C: 500-1000mg a day if tolerated.

Probiotics: Several different types rotated daily to populate the gut with good flora. Rotate many different types. May cause some yeast or bacteria die-off, which can feel like detox. Take as much as die-off will allow you to take, working up to at least 1 cap or several drops a day. Adjust based on CSA and GI Panel tests. Preferred types and brands:

- | | |
|--|--|
| <input type="checkbox"/> Florastor | <input type="checkbox"/> Allerdophilus |
| <input type="checkbox"/> Lactobacillus Plantarum | <input type="checkbox"/> FloraElite |
| <input type="checkbox"/> Lactobacillus Reuteri (Gut Health or Probiotic drops) | <input type="checkbox"/> Nutriclean probiotics |
| <input type="checkbox"/> Suprema Dophilus | |

Cell Food: 2-8 drops once a day, adjust accordingly to an UEE.

Bionativus Ionic trace minerals: 2-10 drops a day and adjust accordingly to an UEE.

Pycnogenol: Work up to 1 or 2 daily, starting with a sprinkle.

Grape seed extract: Start with 1 capsule can go up to 3x day.

Vitamin K/Super K: Work up to 1 gel cap a day.

Lithium Orotate capsules: Start with a sprinkle or to 1/4-1/2 capsule, working up to 1 capsule based on your own doctor, behaviors, tolerance, and UEE and Hair Elements (HE/HMT) testing. Always support potassium when adding lithium.

Potassium: Start with one drop or sprinkle - 1/4 capsule and work up as tolerated.

PS/PC/PE Complex: Work up to two or more gel caps a day. May cause detox and if so start by poking a hole in the gel cap and giving a drop or two.

DHA Neuromins: Work up to one gel cap a day.

SamE: Start with a crumb or sliver and work up to one tablet a day if tolerated. May cause detox. While you may lose some effectiveness, it is fine to split the enteric coated capsules and store the remainder in the refrigerator with desiccant packs. Cell food liquid SamE is not a sufficient source of SamE. For those that have high sulfur levels or are extra sensitive Dr. Amy carries a foil wrapped non-enteric coated brand of SamE tablets, which may be better tolerated.

MethylMate A/Folinic Plus Compound: Work up slowly to 2 caps a day if tolerated. May cause detox

MethylMate B/5 methyl THF drops/Folapro: Work up slowly to 3 drops a day, 200MCG or 1/4 tablet only-

Do NOT increase unless suggested on testing. Start slow and work up gradually, known to cause detox especially for those MTHFR C677T +.

Individual Minerals: Based and adjusted according to Urinary Essential Elements(UEE) and Hair Metals tests (HMT) ie; Selenium, Manganese, Molybdenum etc.

B-12: The type, forms, and amounts of B12 each individual will ultimately need will be determined by their genetics, detox, tolerance and biochemical testing. Hydroxy B12 is suggested for all genetics and methyl B12 for those who are COMT- -, the doses mentioned below are starting doses and it is suggested to work up very slowly, increasing b12 causes detox for many so you will need to work at your own pace and ongoing biochemical testing.

- Mega Drops; Hydroxy, Methyl, Adenosyl : Start with 1 drop, dilute in liquid if extra sensitive. Work up slow to 1-3 drops or more. Type dependent on genetics (COMT/VDR Taq Results)
- Get B12 spray: most easily tolerated by adults and COMT++, start with one spray and work up slowly.
- Black Bear energy spray: Good choice for adults and older children start with one spray and work up slowly.
- Sublinguals: can be crushed or broken into pieces to start. Start with crumbs or one a day and gradually increase to 3 a day if tolerated.
- Patch: can be cut into quarters applied every few days or once a week to start.

EDTA:

- MetalAway compound work up to 1-2 capsules a day
- EDTA Chelator complex- 1/4-1/2 capsule to start work up to 1-3 capsules a day.
- EDTA Soak - Start with 1 teaspoon and work up, 2-3x a week.
- EDTA soap - To be used daily in shower or bath as tolerated.
- BactiSolve and DetoxAway compounds which contain higher amounts of EDTA. Increase slowly and defer to your doctor

Magnesium Citrate: Start with 1/4-1/2 capsule, can be dosed up until you get loose stools. Magnesium chloride drops can be dosed instead, if extra sensitive.

Nucleotide RNA's:

- Step One Foundational Nucleotide blend RNA's- General Pathway, Nerve Calm, Stress, Bowel, Cytokine, and Fatigue for adults: start low and slow, working up as tolerated and needed based on behaviors, detox and testing. May need to increase during times of detox. General rule of thumb for these Step One calming Nucleotide blend RNA's is to start with 1-3 drops and work up to .5ml or 1/4 dropper (0.25ml) 2-3 x a day. All of these mentioned above will need to be adjusted throughout the protocol and should be increased during times of detox.
- Methylation blend Nucleotide RNA: Requires only 3-5 drops once daily, which should be sufficient. Start with one drop and work up as tolerated and based on testing.
- Metals Nucleotide blend RNA's- I, II, III, IV, V, VI: Start 1/4 dropper once daily for 2-3 weeks then gradually increase to 7-8x a day. Follow along with toxic metals tests; UTM, FM, HMT and adjust accordingly (minimum of one test each month). Graphing templates help to monitor excretions and can be found on the discussion group.

- Microbial X Nucleotide blend RNA's- Anaerobic X, CLX, ECX, HELX, KLX, PSX, SALX, STAX, STRX: start with 1-2 drops and work up to 1/4 dropper 1-3x a day, as tolerated and adjust based on testing.
- Mood Nucleotide blend RNA's- Mood S, Mood D, Mood Focus: dependent on biochemical test results, genetics results, suggest starting with 1-2 drops as tolerated.
- MSF Nucleotide blend RNA's: COMT V158M+/-, COMT V158+/+, COMT V158-/-, VDR TAQ +, VDR FOK +, MAO A +, ACAT +, ACE +, MTHFR A1298C +, MTHFR C677T +, MTHFR 3 +, MTR/MTRR +, MTRR 11 +, BHMT 1,2,4 +, BHMT 8 +, AHCY +, SUOX +/-, SHMT +, NOS +: Unless otherwise suggested below 1-3 drops a day should be sufficient, more would be based on testing. *CBS+ MSF RNA OR Ammonia RNA: 1-3x a day. Dosage will depend on taurine levels on UAA as well as the number of other mutations. If ammonia levels are higher than ideal on a UAA, Dr. Amy may recommend to lower protein and/or the use of the CBS/NOS caps.

CLOSING REMARKS

I like the idea of looking for the next mile marker along the way rather than simply concentrating on the finish line.

I think that sometimes it is easy to feel discouraged that you have not reached the finish line yet, but if we can all concentrate on how far we have come, rather than how far we have left to go, I believe that it makes the journey more enjoyable and easier to travel. It is another way of living in the moment, rather than always living for the future and the “what ifs”.

When I used to do a lot more counseling in my private practice I would tell people that I wanted them to get rid of the “would haves”, “could haves” and “what ifs” from their vocabulary.

“What is done is done, where we are is where we are. Live in the moment, concentrate on the moment, be the best you can be each and every day and you will not have regrets. We do need to learn from the past and look toward the future, but that is different than living with regrets or living for the future. I like the idea of focusing on the mile markers as we pass them, and trying to appreciate and enjoy the run along the way! ”

I hope that this companion guide will be helpful in getting you started on your own personal roadmap to health!

With love, hope, and a hug, for health always,

Dr. Amy

FREQUENTLY ASKED QUESTIONS

Q: Do I have to use all the supplements in all the lists?

A: No. Lists are provided to give you options. It is important to cross-reference the lists so you can see which supplements work in multiple areas. If you are uncomfortable with a particular supplement do not use it, choose another from the list.

Q: Why do all the HHI Nucleotide blend RNAs list the same ingredients?

A: The specifics of each isolated Nucleotide blend RNA product are so complex and lengthy that they cannot be listed on the small bottles. Therefore, each Nucleotide blend RNA product is labeled with the proprietary blend statement. Nucleotide blend RNA's are strings of bases of ribonucleic acids isolated and purified so that you have pure RNA without any of the organism it was isolated from. They have different sequences depending on which biochemical pathways they need to support. They are derived from yeast, but **DO NOT** contain any yeast or any allergens.

Q: How do I know if it's detox?

A: When in doubt, it's best to run a UTM, FM, or HE/HMT. Detox has many faces. It may be an increase in hyperactivity, increased stimming, recurrence of old obsessions, increases in OCD behaviors, rashes, fever, headache, body aches, cold like symptoms, increased difficulty with going to sleep and many other issues. Some may even become lethargic because they just don't feel well.

Q: What do I do if detox gets to be more than I can handle?

A: Increase the calming supplements and Nucleotide blend RNA's, pull out or reduce the detoxing supplement(s) until detox subsides to a tolerable level or until you are back to a calm place.

Q: Do I still give supplements when I am sick? Which ones?

A: This is a personal choice. Increasing the calming supplements and Nucleotide blend RNA's may be helpful. You may choose to continue the detox provokers at the same or lower dose, or stop them completely. There is no magic answer for this one. You are the expert on yourself and in the best position to determine which approach is most tolerable for your situation.

Q: Will Dr. Amy answer my question on the Discussion Forum?

A: Most questions will be answered by 'veteran' members. A few posts are selected each week, at the discretion of the moderator, and sent to Dr. Amy.

Q: How and when do I contact the office?

A: For office related questions please contact the office:

1-207-824-8501 or 1-800-768-8744 info@holistichealth.com

For questions regarding the protocol itself and all other questions please use the Discussion Group: www.ch3nutrigenomics.com

Q: How do I get Dr. Amy personal comments and suggestions on my biochemical test results to help guide me?

A: Dr. Amy makes comments and suggestions on biochemical tests run through www.holisticheal.com (she does **not** see the file for the DNA test, this is run through a program)

When doing so she will refer to information in your chart (Supplement list, Client History form, previous testing, other genetic results etc.). However she no longer comments on tests that have been run outside of her office.

GLOSSARY AND COMMON ABBREVIATIONS

Chelation: to remove a heavy metal (i.e. Lead or Mercury) from the body by means of an agent such as EDTA.

Creatinine: Generally, the darker the urine sample, the higher the creatinine. This is when we believe the body is detoxing viruses. When creatinine drops, the urine becomes lighter and that is when the body is eliminating metals. Aluminum excretion can be happening despite the creatinine level. Some also detox heavy metals at high creatinine. The higher the creatinine, the more stress is placed on the kidneys.

Detox: The process of ridding the body of viruses, bacteria and metals. Detox behaviors range from lethargy to hyperactivity and inability to sleep. Also cold symptoms and fevers are common.

CSA: Comprehensive Stool Analysis. Identifies bacteria and good flora in the gut. Also measures pH levels and sIgA, an inflammatory bowel marker.

Enzyme: Any of numerous proteins or conjugated proteins produced by living organisms and functioning as specialized catalysts for biochemical reactions. Enzymes help reactions happen faster than they would if the enzyme were not present.

Escorts: MetalAway, BactiSolve, NaturoMycin, EDTA, Malic Acid, and Horsetail Grass are frequently referred to as "escorts" because they escort the metals out of the body.

Excitotoxin: A toxic molecule that stimulates nerve cells so much that they are damaged or killed. See list page 86.

FM: Fecal Metals Test. Shows what metals are being excreted via stool (processed by liver).

GI Panel: Identifies bacterial, parasitic as well as food related issues using a combination of saliva based antigen testing along with the growth of organisms to look for very specific organisms as well as specific toxins or antibodies to individual microbes.

Hair Metals Test HE/HMT: Determines past/history of toxic metal excretions via hair, which you may have missed and Lithium levels.

MAP: Metabolic Analysis Profile- Determines current level of methylation supports and gives a sense of gut microbes and dopamine balance in respect to norepinephrine.

Methyl group: A methyl group is simply a single carbon atom bonded to 3 hydrogen atoms (CH₃).

Methylation: Transfer of methyl groups from one chemical to another is called methylation. Essentially any chemical compound that has a methyl group as part of its chemical structure is capable of donating it to another chemical that needs it. The chemical that receives the methyl group is "methylated". This process of moving methyl groups around is necessary for the functioning of several biochemical reactions such as DNA and RNA synthesis, creatinine generation, immune responses involved in silencing viruses etc. Filling in the methylation cycle is critical for improved health and ability to excrete toxins.

MPA: Methylation Pathway Analysis. Test to determine genetic mutations to be addressed and includes lists of supplementation suggested for each mutation.

Myelination: The wrapping around nerves. The change or maturation of certain nerve cells whereby a layer of myelin forms around the axons, which allows the nerve impulses to travel faster.

Neurotransmitter Test: Determines levels of Serotonin and Tryptamine and other important Neurotransmitters.

OCD: Obsessive Compulsive Disorder

Organ Supports: for liver, kidneys, pancreas and adrenals. Supplement lists can be found on Discussion Forum, Basics Section.

PM: Private message on the Discussion Group. At the right side of each post is a button marked "PM" which allows you to send a private message to the author of that post. To view PMs sent to you, go to the top left of the page, 'user control panel' and you'll find "You have X new messages." Click there and your private mailbox will open.

SNP: (Pronounced snip) is a small genetic variation within a person's DNA sequence.

UAA: Urine Amino Acids test. Shows levels of amino acids, especially important for identifying Ammonia, taurine and GABA/Glutamate.

UTM: Urine Toxic Metals test. Shows which metals are being detoxed/excreted and in what quantity. Also reports Creatinine (processed through the kidneys).

UTM & UEE: Urine Toxic Metals test AND Urine Essential Elements, measuring mineral levels.

List of Excitotoxins

- monosodium glutamate
- seasoning(s)
- NutraSweet/Aspartame
- caseinate
- malted barley flour
- soy protein
- glutamate
- seasoned salt
- hydrolyzed protein
- disodium guanylate
- malt extract
- soy protein concentrate
- natural flavor(s)
- dough conditioners
- hydrolyzed vegetable protein
- disodium inosinate
- malt flavoring(s)
- soy protein isolate
- natural flavoring(s)
- yeast extract
- hydrolyzed plant protein
- disodium caseinate
- malted barley/barley malt
- soy extract
- maltodextrin
- soy sauce
- hydrolyzed oat flour
- autolyzed yeast
- malted anything
- autolyzed yeast extract
- carrageenan
- autolyzed anything
- hydrolyze anything
- bouillon
- texture protein
- broth
- gelatin
- stock
- sodium caseinate
- soup base
- guar gum
- vegetable gum
- spice(s)
- komb extract
- smoke flavoring(s)
- ajinomoto
- calcium caseinate
- whey protein concentrate
- plant protein extract l-cysteine
- chicken/pork/beef "flavoring"
- whey protein
- chicken/pork/beef "base"
- whey protein isolate

Sources of MSG

- Hydrolyzed Protein or Hydrolyzed Oat Flour
- Sodium Caseinate or Calcium Caseinate
- Autolyzed Yeast or Yeast Extract
- Gelatin
- Glutamic Acid
- Monosodium Glutamate

Possible Sources of MSG

- Textured Protein
- Carrageenan or Vegetable Gum
- Seasonings or Spices
- Flavorings or Natural Flavorings
- Chicken, Beef, Pork, Smoke Flavorings
- Bouillon, Broth, or Stock
- Barley Malt, Malt Extract, Malt Flavoring
- Whey Protein, Whey Protein Isolate or Concentrate
- Soy Protein, Soy Protein Isolate or Concentrate
- Soy Sauce or Extract