



Nutritional Status and Hormone Balance

Marion Owen, MD

27 January 2016

The views and opinions expressed herein are solely those of the presenter and do not necessarily represent those of Genova Diagnostics. Thus, Genova Diagnostics does not accept liability for consequences of any actions taken on the basis of the information provided.



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Technical Issues & Clinical Questions

Please type any technical issue or clinical question into either the “Chat” or “Questions” boxes, making sure to send them to “Organizer” at any time during the webinar.

We will be compiling your clinical questions and answering as many as we can the final 15 minutes of the webinar.





Need More Resources?

Ensure you have an account!

The screenshot shows the Genova Diagnostics website homepage. At the top, there is a navigation bar with social media icons (Twitter, LinkedIn, YouTube, Facebook) and links for International, About Us, Contact Us, Search, myGDX, and US. Below the navigation bar is the Genova Diagnostics logo and a menu with Home, Clinicians, and Patients. A banner for a "Nutritional Status and Hormone Balance" Live GDx Webinar is featured, presented by Marion Owen, MD, on January 27, 2016, at 12 PM EDT. A button for "FREE WEBINAR - MORE INFO & REGISTRATION" is visible. Below the banner are three main service tiles: "Getting Started" (with a red circle around it), "Test Menu", and "myGDX Login" (with a red circle around it). Each tile includes a brief description and a button: "NEW USERS", "SEARCH TESTS", and "LOGIN" respectively. At the bottom, there is an "Online Education" section with a "LEARN NOW" button.



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Objectives

- To understand ways to minimize risk while providing appropriate hormone replacement therapy to men and women
 - Understand metabolic pathways of hormone clearance
 - Understand the impact of key nutrients and how to support
 - Understand causes for continued symptoms despite good hormone levels and how to address those without increasing hormone burden
- Understand ways to promote healthy cells especially as it applies to breast tissue in women on Hormone Therapy (HT), and prostate tissue in men on Testosterone replacement





Before Starting Hormone Therapy (HT)

- Optimize diet
- Address sedentary lifestyle if needed
- Address adrenal imbalances
- Address elevated blood sugar/insulin resistance
- Address any thyroid imbalances
- Assess methylation/sulfation
- Open all exits for detoxification
 - 1-3 bowel movements daily
 - Enough water to ensure bladder voiding every 2-3 hours
 - Increase sweating (sauna or exercise)





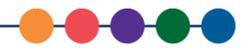
Optimize Diet: *NutrEval*

The ***NutrEval*** is a comprehensive nutritional evaluation designed to identify nutritional imbalances that help to overcome chronic disease and promote optimal health and wellness

It assesses:

- Amino Acids (Plasma or FMV)
- Organic Acids (FMV)
- Essential Fatty Acids (packed RBCs)
- Oxidative Stress (blood and urine)
- Toxic and Nutrient Elements (packed RBCs)





Optimize Diet

Results Overview

Normal

Antioxidants

Vitamin C

B-Vitamins

Molybdenum

Supplements	Daily Recommended Intake (DRI)	Patient's Daily Recommendations	Provider Daily Recommendations
Antioxidants			
Vitamin A / Carotenoids	2,333 IU	5,000 IU	
Vitamin C	75 mg	250 mg	
Vitamin E / Tocopherols	22 IU	200 IU	
α-Lipoic Acid		100 mg	
CoQ10		60 mg	
B-Vitamins			
Thiamin - B1	1.1 mg	25 mg	
		25 mg	
		30 mg	
		10 mg	
		100 mcg	
		1,200 mcg	
		500 mcg	
		600 mg	
		5 mg	
		75 mcg	
		20 mg	
		500 mg	
		25 billion CFU	
		5,000 IU	
Other Vitamins			
Vitamin D	600 IU		

Amino Acid	mg/day	Amino Acid	mg/day
Arginine	0	Methionine	0
Asparagine	0	Phenylalanine	0
Cysteine	55	Serine	0
Glutamine	0	Taurine	0
Glycine	0	Threonine	0
Histidine	0	Tryptophan	0
Isoleucine	0	Tyrosine	0
Leucine	0	Valine	0
Lysine	0		



The Decision to Start Hormone Therapy (HT)

- Women:
 - Severe hot flashes
 - Sleep disturbance
 - New onset emotional disturbance
 - Increased joint pain and muscle stiffness impacting healthy lifestyle
 - Noticeable loss of attention, processing speed, memory
- Men – in the setting of low T and normal estrogen levels only:
 - Loss of “wanna”
 - Weight gain/muscle loss
 - New, unusual depression/anxiety





Initial Monitoring

- Women and Men:
 - CBC
 - CMP
 - Estradiol, estrone, estriol, progesterone, testosterone in serum
 - Sex-hormone binding globulin (SHBG)
 - Thyroid studies (not always)
 - Assess symptoms
 - Assess for weight changes





Sex Hormone Binding Globulin (SHBG)

- If elevated, consider adjusting dose of HT down
- Consider whether hyperinsulinemia is an issue
- Assess for elevated thyroid levels
- Malnutrition (very elevated in anorexia)
- Heavy alcohol use and liver damage can elevate SHBG
- Is high cortisol an issue?
- Higher when HT given with beta-tocopherol or linolenic acid.





Elevated Estrogen in a Man on Testosterone?

Aromatase...

Solutions

- Weight loss, hard to do with high estrogen, just ask any woman...
- Metformin or if you prefer herbs, berberine both at 500 mg TID
- Aromatase blockers:
 - Natural: Grape seed extract, mangosteen, EGCG, Quercetin, Resveratrol (maybe) Chrysin, Ohio buckeye, mushrooms, gum palm, If you are an herbalist check out this paper with a huge listing of natural products with aromatase activity:
 - Natural Products as Aromatase Inhibitors: Balunas et al: [Anticancer Agents Med Chem Aug 2008; 8\(6\) 646-682](#)
 - Prescription: I use anastrozole 0.1 mg a day to start





Follow-up Testing

- Urine metabolites: Everyone
- Adrenal stress test: If still not sleeping or emotional symptoms predominate
- Organic acids with red blood cell minerals (RBC) minerals to monitor for nutrient depletions that can happen with estrogen therapy (in women and men with high E levels)
 - Folic acid
 - Vitamin B12
 - Vitamin B6
 - Magnesium (Mg)
 - Chromium
 - Vitamin C
 - Zinc/Copper balance





Follow-up Testing

Vitamin Markers			
	Reference Range		
α-Ketoadipic Acid	1.2		≤ 1.7
α-Ketoisovaleric Acid	0.61		≤ 0.97
α-Ketoisocaproic Acid	0.76		≤ 0.89
α-Keto-β-Methylvaleric Acid	2.3		≤ 2.1
Formiminoglutamic Acid (FIGlu)	1.2		≤ 1.5
Glutaric Acid	0.50		≤ 0.51
Isovalerylglycine	3.2		≤ 3.7
Methylmalonic Acid	0.9		≤ 1.9
Xanthurenic Acid	0.34		≤ 0.96
3-Hydroxypropionic Acid	6		5-22
3-Hydroxyisovaleric Acid	<dl		≤ 29

- Folic acid
- Vitamin B12
- Vitamin B6

Nutrient Elements		
Element	Reference Range	Reference Range
Copper	0.604	0.466-0.721 mcg/g
Magnesium	44.6	30.1-56.5 mcg/g
Manganese	0.013	0.007-0.038 mcg/g
Potassium	2,815	2,220-3,626 mcg/g
Selenium	0.63	0.25-0.76 mcg/g
Zinc	10.2	7.8-13.1 mcg/g

Toxic Elements		
Element	Reference Range	Reference Range
Lead	0.044	≤ 0.048 mcg/g
Mercury	<dl	≤ 0.0039 mcg/g
Antimony	0.001	≤ 0.002 mcg/g
Arsenic	0.012	≤ 0.071 mcg/g
Cadmium	0.001	≤ 0.001 mcg/g
Tin	<dl	≤ 0.0009 mcg/g

- Magnesium (Mg)
- Zinc/Copper balance



NutrEval Results Overview

Normal	Borderline	High Need
Antioxidants		
Vitamin A / Carotenoids	Vitamin C	α-Lipoic Acid
Vitamin E / Tocopherols		
CoQ10		
B-Vitamins		
		Thiamin - B1
		Riboflavin - B2
Pyridoxine - B6	Niacin - B3	
Biotin - B7		
	Folic Acid - B9	
		Cobalamin - B12
Minerals		
	Magnesium	
	Manganese	
Molybdenum		
Zinc		

Supplementation for High Need

SUGGESTED SUPPLEMENT SCHEDULE			
Supplements	Daily Recommended Intake (DRI)	Patient's Daily Recommendations	Provider Daily Recommendations
Antioxidants			
Vitamin A / Carotenoids	2,333 IU	3,000 IU	
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α-Lipoic Acid		200 mg	
CoQ10		30 mg	
B-Vitamins			
Thiamin - B1	1.1 mg	50 mg	
Riboflavin - B2	1.1 mg	50 mg	
Niacin - B3	14 mg	30 mg	
Pyridoxine - B6	1.5 mg	10 mg	
Biotin - B7	30 mcg	100 mcg	
Folic Acid - B9	400 mcg	800 mcg	
Cobalamin - B12	2.4 mcg	1,000 mcg	
Minerals			
Magnesium	320 mg	600 mg	
Manganese	1.8 mg	5.0 mg	
Molybdenum	45 mcg	75 mcg	
Zinc	8 mg	10 mg	
Essential Fatty Acids			
Omega-3 Oils	500 mg	500 mg	
Digestive Support			
Probiotics		25 billion CFU	
Pancreatic Enzymes		10,000 IU	
Other Vitamins			
Vitamin D	600 IU		



2/16 OH Estrogen Ratio

- Early case-control studies (1980s-1990s) were encouraging as to the clinical utility of the Estrogen Metabolism Ratio (EMR), reporting lower 2/16 ratio levels among breast cancer cases compared to controls, particularly in premenopausal women.
- There appears to be no strong evidence in the literature that a higher urinary 2/16 ratio protects postmenopausal women from breast cancer, and only weak evidence of a protective effect in premenopausal women.
- The 2/16 ratio continues to be a generally informative tool; ***however, the overall relationships between individual and total 2-, 16-, and 4-pathway metabolites must be taken into consideration for the broadest clinical utility.***



Estrogen Metabolites – 2 & 16 Pathways

- 2-Hydroxy Estrogens
 - While the traditional EMR clinical utility for cancer risk may not be as robust as previously thought, a majority of findings indicate that metabolism of parent estrogens through 2-hydroxylation (independent of any relationship to 16 α -OHE1) may be considered as a benign or even protective pathway
 - Moderation should be used, however, in up-regulating the “lesser estrogenic” 2-hydroxylation pathway, particularly in women with a family history of osteoporosis, since excessive 2-hydroxylation has been associated with decreased bone mineral density
- 16 α -Hydroxyestrone
 - Studies are mixed, with some associating higher levels with increased risk for certain cancers (cervix, breast, endometrium, and head and neck, as well as HPV-related tumors); however, many have found no significant association
 - Inadequate 16 α -hydroxylation (the “more proestrogenic” pathway) has been associated with lower bone mineral density



Estrogen Metabolites – 4 Pathway

- 4-Hydroxy (Estrone + Estradiol)
 - Research focus is shifting toward 4-hydroxyestrone which is thought to have greater estrogenic and genotoxic potential than either 2OH(E1+E2) or 16 α -OH.
- 4-Methoxy (Estrone + Estradiol)
 - COMT conversion of 4-hydroxyestrogens to 4-methoxyestrogens minimizes subsequent production of damaging 4-pathway-derived DNA adducts



Hydroxy-estrogens

- Have been noted to cause direct DNA damage in cell research
- Evidence to suggest that intra-prostatic conversion of estrogens to hydroxy-estrogens in men increases DNA damage
- Methylation of estrogens is an important aspect of managing an HT patient
 - Ratio of hydroxy to methyl estrogens

Estrogen Metabolites

2-Hydroxyestrone (FMV urine)	16.3	9.2-76.6 mcg/g Creat.
16 α -Hydroxyestrone (FMV urine)	7.2	2.4-20.3 mcg/g Creat.
4-Hydroxyestrone (FMV urine)	6.7	\leq 5.3 mcg/g Creat.
2-Methoxyestrone (FMV urine)	2.0	\geq 1.7 mcg/g Creat.
4-Methoxyestrone (FMV urine)	<dl	\geq 1.9 mcg/g Creat.



Clearing Hydroxy-estrogens

- Keep overall doses as low as possible
- Methylation support
 - Active B complex
 - Consider COMT and MTHFR testing
- Since 4 OH seems to be more aggressive in its ability to damage DNA, encourage 2 OH formation with cruciferous vegetables
- Prevent reabsorption after detox
 - High fiber diet, especially flax lignans
- Support Sulfation
 - NAC, methylation support, glutathione supplementation
 - Consider NutraEval





MTHFR Genetics

- Impacts are myriad
- Estrogen detoxification
- Bypass with 5-MTHF: 1-5mg
- Replace with care if suspect COMT problem

<i>MTHFR</i>	
Location: Chromosome 1 C677T Your Genotype:	
 	
A1298C Your Genotype:	
	

  Gene activity decreased

  Neither chromosome carries the genetic variation.



COMT Genetics

- Effects estrogen detoxification and neurotransmitter balance
- If a patient has COMT issues, often they will have high anxiety
- Must take care if providing methyl support
- I start with a low dose B Complex
- Then B12 to allow methyl group to be handed on
- Then 5MTHF starting at very low doses, titrate up
- Some recommend SAM-e, I have not had luck with this

<i>COMT</i>	
Location: Chromosome 22.11q V158M	
Your Genotype:	
 	 

  Gene activity decreased



Still with Symptoms After Good Levels and Detox Support?

- Heavy metals? Bone mobilization with menopause
- Adrenal stress?
- Sleep disorder?
- Is there a dysbiosis causing estrogen metabolites to be re-circulated?
- Hyperglycemia/insulin blocking hormone signaling?
- Nutritional deficiencies causing poor metabolic responsiveness to hormone signaling
- Consider precursor hormone levels: DHEA, Pregnenolone





Cancer Prevention

- Lower Oxidative Stress
- Optimize Mitochondrial Health
- Avoid Triggers: Toxins
- Support Immune System
- Optimize Blood Sugar





Oxidative Stress

- Regular exercise
 - There is convincing evidence that physical activity is associated with a reduced risk of cancers of the colon and breast
 - Chronic exercise elicits protective adaptations against oxidative damage
- Antioxidant support
 - Oxidative stress damages DNA
 - No clear studies that blanket support prevents cancer
 - BUT...targeted, individualized support? Can't hurt...
 - Consider *NutrEval* or more targeted Oxidative Stress Analysis



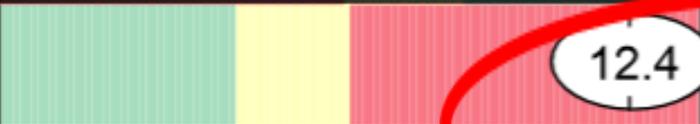
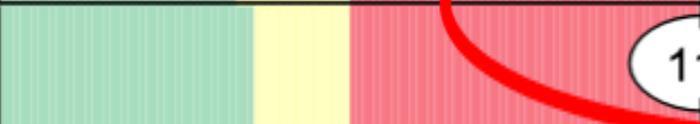


Oxidative Stress Analysis

Oxidative Stress Markers

Oxidative Stress Markers

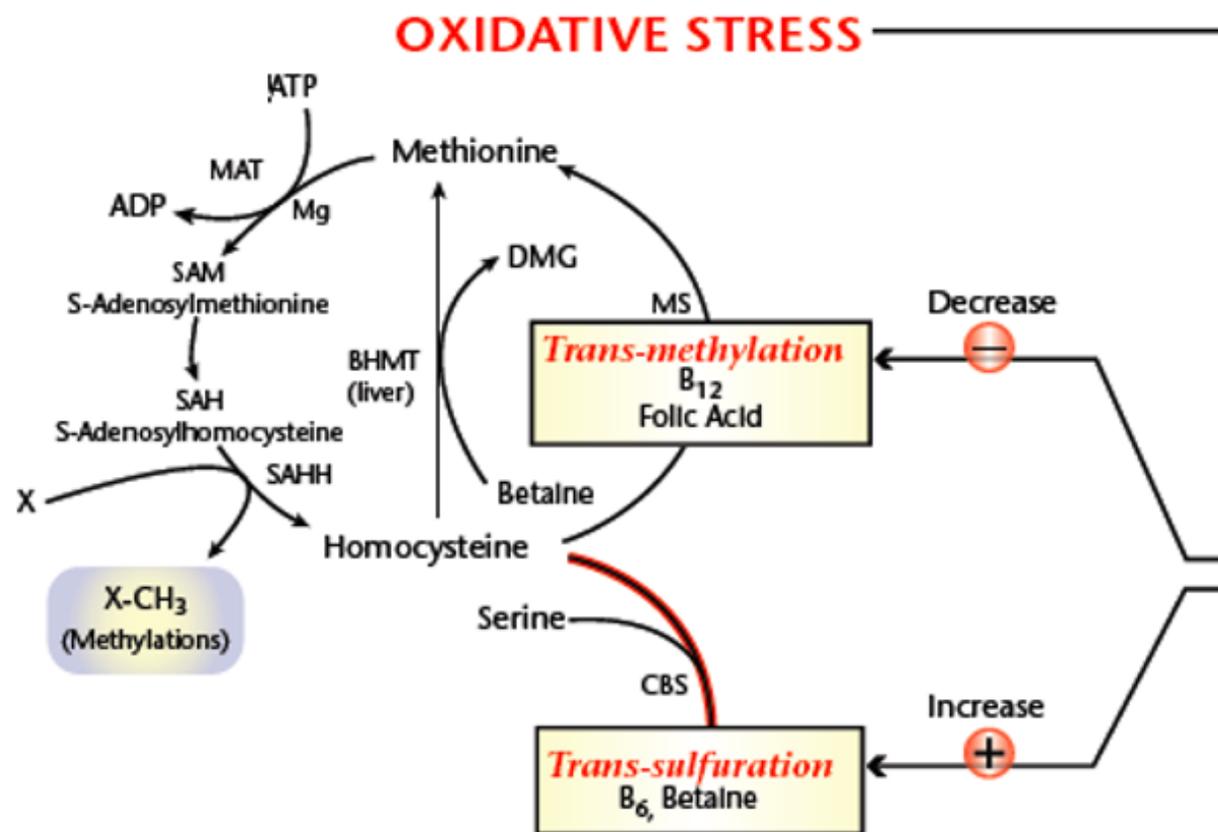
Reference Range

Glutathione (whole blood)		798	≥ 669 micromol/L
Lipid Peroxides (urine)		12.4	≤ 10.0 micromol/g Creat.
8-OHdG (urine)		113	≤ 16 mcg/g Creat
Coenzyme Q10, Ubiquinone (plasma)		1.16	0.43-1.49 mcg/mL



Oxidative Stress and Estrogen Metabolism

- Oxidative stress depletes methyl donors
- Connects back to final neutralizing step of estrogen metabolism via methylation





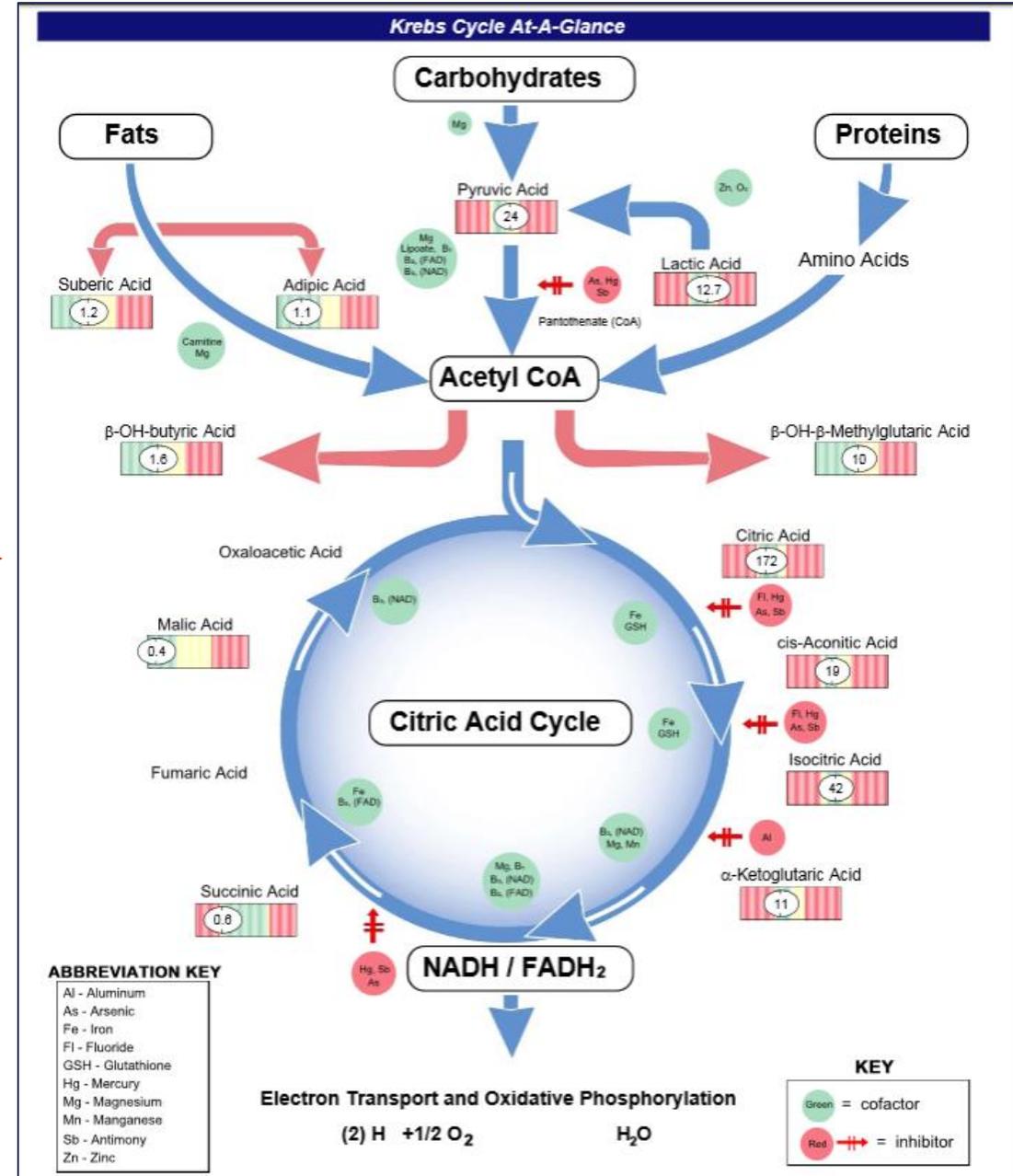
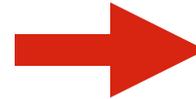
Mitochondrial Health

- Immune system health
- Reduction of oxidative stress
- Think mitochondria when your patient has energy issues:
 - Poor exercise recovery
 - Brain fog
 - Weak immune system
- Easily assessed with an organic acid profile with lipid peroxides



Mitochondrial Assessment

Cellular Energy & Mitochondrial Metabolites		
Carbohydrate Metabolism		Reference Range
Lactic Acid	1.8	1.9-19.8
Pyruvic Acid	19	7-32
β-OH-Butyric Acid (BHBA)	0.3	≤ 2.8
Energy Metabolism		
Citric Acid	220	40-520
Cis-Aconitic Acid	12	10-36
Isocitric Acid	25	22-65
α-Ketoglutaric Acid (AKG)	67	4-52
Succinic Acid	5.1	0.4-4.6
Malic Acid	1.5	≤ 3.0
β-OH-β-Methylglutaric Acid (HMG)	13	≤ 15
Fatty Acid Metabolism		
Adipic Acid	1.2	≤ 2.8
Suberic Acid	2.2	≤ 2.1



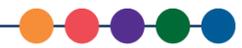


Toxic Triggers

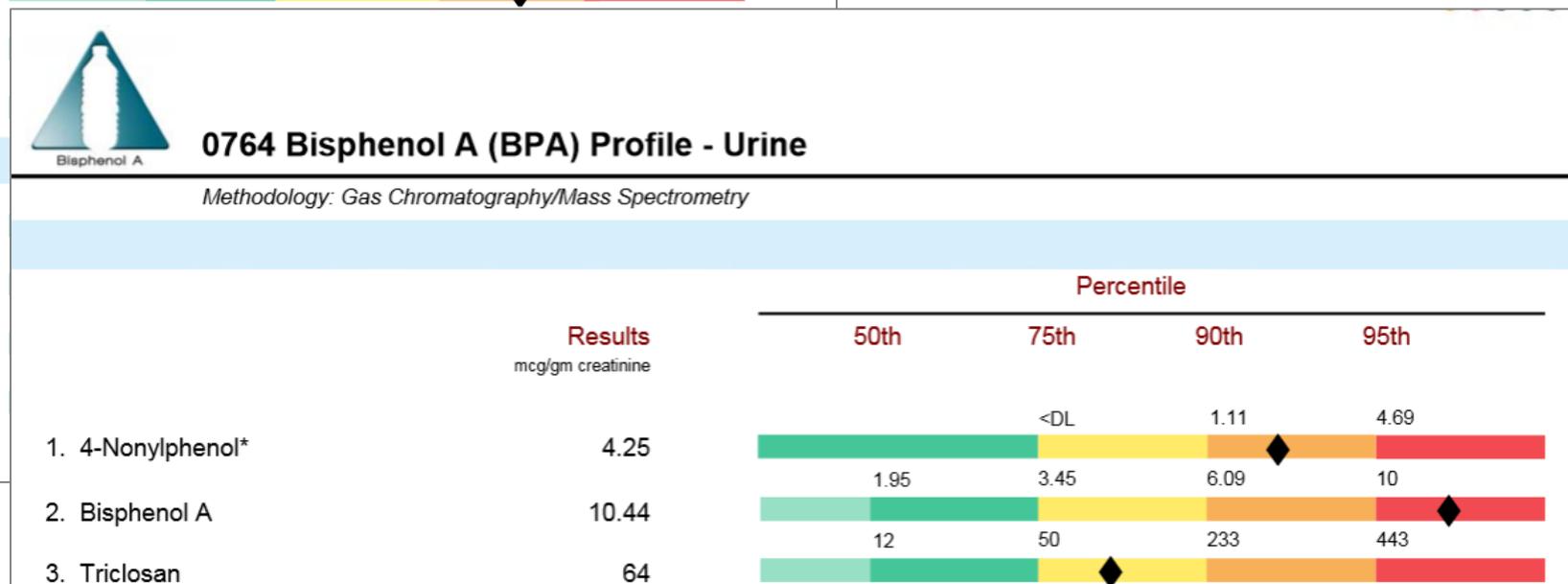
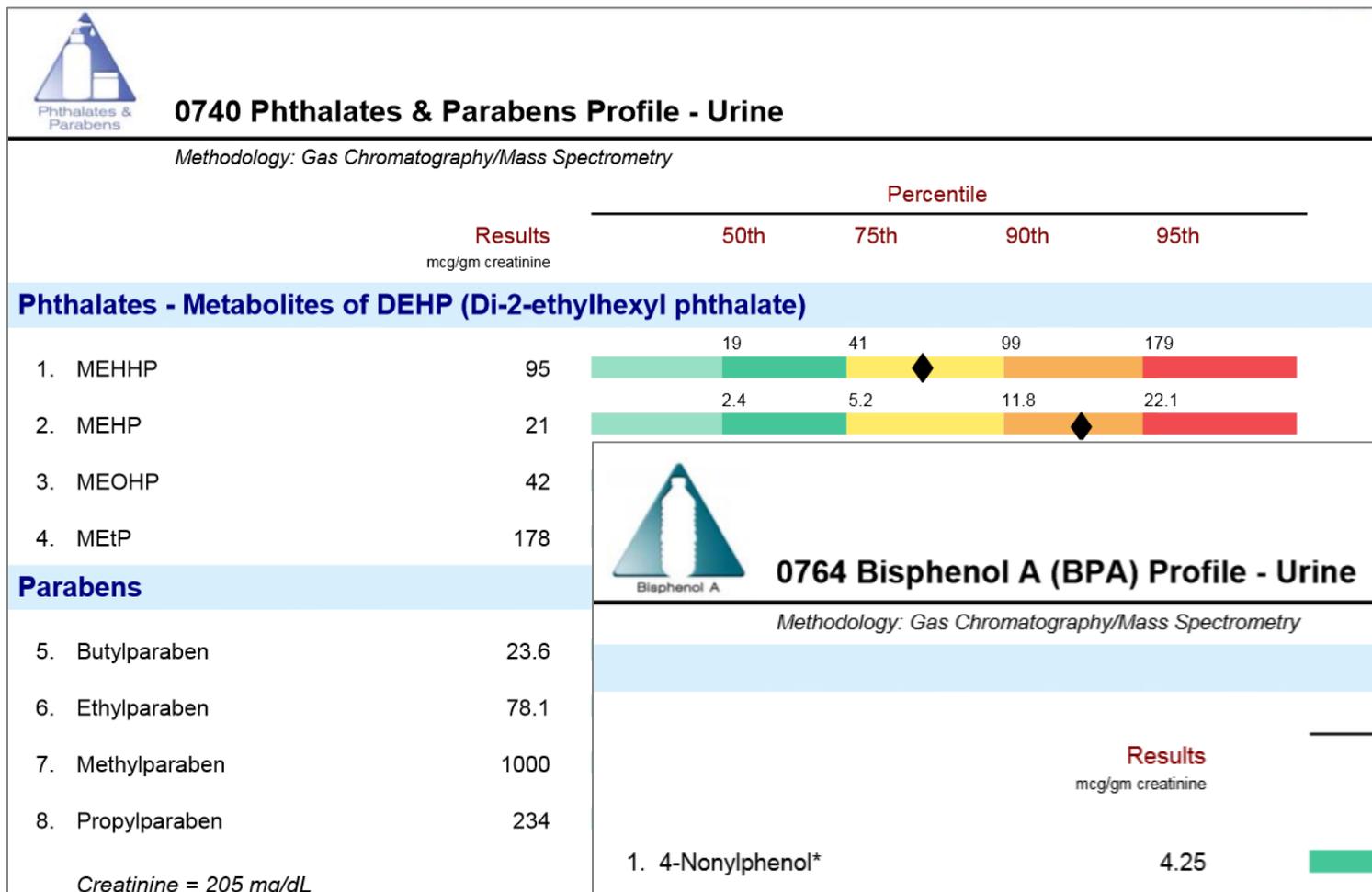
Many environmental triggers for mutagenesis

- Phthalates
- Parabens
- Plasticizers like Bisphenol-A
- Animal fat
- Alcohol
- Anti-fungals
- Anti-bacterials like Triclosan





Toxic Effects CORE



Creatinine = 205 mcg/dL



Phthalates: Adverse Effects

- Possible steroid hormone disruption
 - Synergistic effect may enhance estrogen receptor response
 - Impaired male reproductive development
 - Endometriosis
- Have been linked to obesity in research



Reddy BS, Rozati R, Reddy BV. *Bjog*. May 2006;113(5):515-520.

CDC. Biomonitoring Summary: Phthalates Overview. *National Biomonitoring Program 2012*;

http://www.cdc.gov/biomonitoring/DEP_BiomonitoringSummary.html.

Stahlhut RW, van Wijngaarden E, Dye TD, Cook S, Swan SH. *Environmental health perspectives*. Jun 2007;115(6):876-882.



Parabens

- Dermally absorbed via cosmetics and pharmaceuticals
- Thought to be weakly estrogenic
- Methyl and propyl mitochondrial toxins
 - Possible role in male infertility

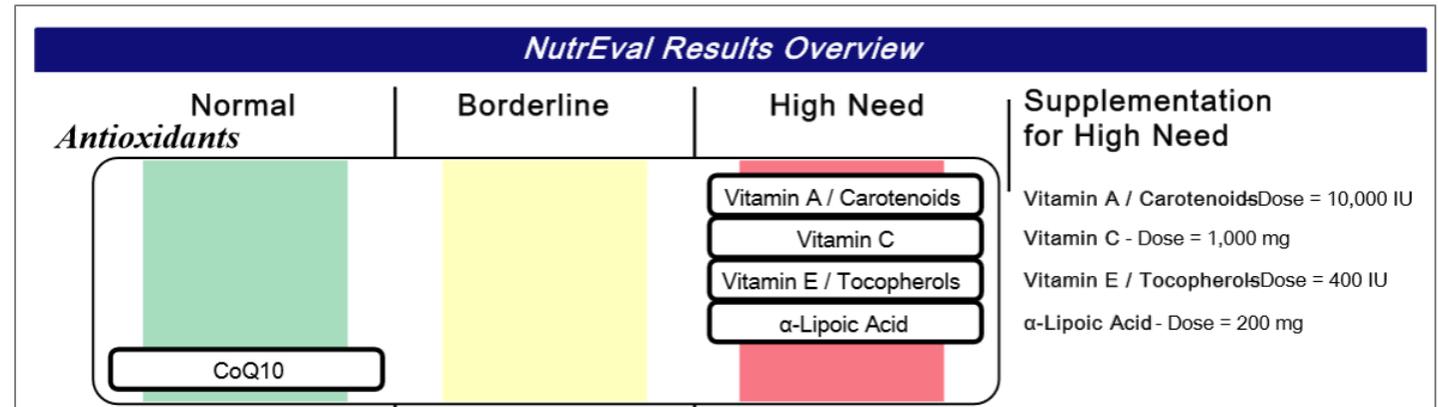
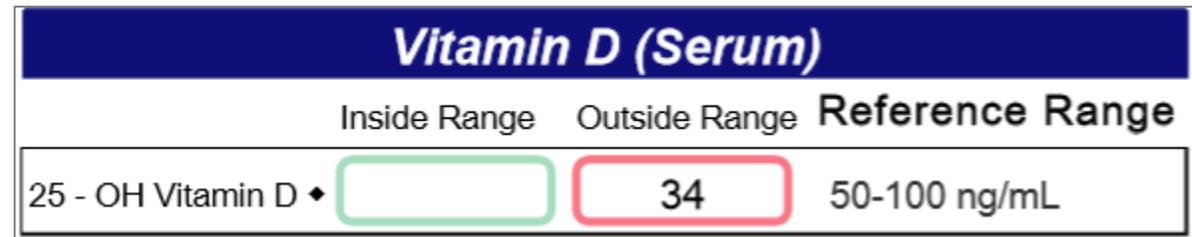


Vo TT, et al. *Reprod Toxicol* 2012; 29:306-16
Oishi S, *Toxicol Ind Health* 2001; 17:31-9
Tavares R, *Reprod Toxicol* 2009; 27:1-7



Immune Support

- Exercise and Stress Reduction
- Eat Mushrooms
- Support GI Health
- Adequate Vitamin D
(to me this means 55-75ng/mL)
- Anti-oxidant rich diet





Improve Glucose Metabolism

- Cancer cells require glucose for metabolism, they cannot use ketones
- Maintaining a low blood sugar with a low glycemic diet is anti-cancer, as well as better for your brain
- Continually monitor fasting insulin, glucose and hemoglobin A1c





Case Study:

- 59 y.o. white female, menopausal for 8 years. No HT
- Social: works as a psychotherapist
- Long term relationship with partner with health problems which is stressful but at a stable place
- Stress: no real change
- Doing very well until onset hot flushes
- From patient's perspective health issues happened, *"out of no where"*





Case Study:

- Regular exercise, tennis and walking
- Diet: low vegetable intake, high simple carb, mostly “organic”
- In recent physical, found to have elevated homocysteine and A1c of 5.7
- Has begun B complex — Had not adjusted diet to lower sugar intake





Clinical Recommendations

- For 1 year, we focused on adrenal support and blood sugar management in addition to adjusting B complex, and 5MTHF to get homocysteine under 8
- This approach was very helpful for daytime symptoms but nights were worsening with continual night sweats – Waking from sleep drenched
 - With loss of sleep patient was getting increasingly anxious and depressed
 - Patient chose Ambien for sleep support over HRT trial. Initially Ambien was very effective but gradually stopped working. Bone density test showed osteopenia with rapid decline from 2 years prior
- Decision to start HT after 18 months





Started HT

- Initial lab serum
 - E: < 5
- Symptoms immediately better, significantly reduced Ambien for sleep
 - Serum
 - E 21.9 (menop < 50)
 - P 0.2 (menop < 0.7, I aim for 10:1 with E)
 - T 22 (0-75)
 - SHBG 82 (18-114)





Follow-up

- Metabolism checked once symptoms better and on a stable transdermal dose (March, 2013)
- Addressed methylation and estrogen clearance with flax seed in AM, encouraged cruciferous vegetable intake
- Added more methyl B12, 5MTHF (despite homocysteine of 7.7)
- Patient felt much better with good sleep and reduced hot flashes





Estrogen Metabolism Plus (FMV) March, 2013

Urine Tests		
Estrogen Metabolites		Reference Range
2-Hydroxyestrone (FMV urine)	11.9	9.2-76.6 mcg/g Creat.
16 α -Hydroxyestrone (FMV urine)	4.5	2.4-20.3 mcg/g Creat.
2-Methoxyestrone (FMV urine)	<dl	\geq 1.7 mcg/g Creat.
4-Methoxyestrone (FMV urine)	<dl	\geq 1.9 mcg/g Creat.
4-Hydroxyestrone (FMV urine)	4.8	\leq 5.3 mcg/g Creat.
2-Hydroxyestrone/16 α -Hydroxyestrone Ratio (FMV urine)	2.6	1.7-2.8
2-Methoxyestrone/2-Hydroxyestrone Ratio	<dl	\geq 0.09



Continued Follow-up

- Then had a wrist injury with tendonopathy and had steroid injections, hot flushes increased markedly, with breast tenderness
- Suspected dysbiosis and estrogen metabolism shifts
 - Patient had increased dietary sugar, reduced methylation support and stopped flax seed
- Addressed this and checked metabolism (June, 2014)
 - Still high 4OH
 - Added I3C to encourage 2 OH pathway
- All breast tenderness resolved, sleep issues continued on and off but much better
- After “divorce,” all sleep issues resolved
 - Patient on reflection admits that at onset of severe symptom relationship concerns were beginning to become apparent, but she was in denial





Estrogen Metabolism Plus (FMV) June, 2014

Urine Tests		
Estrogen Metabolites		Reference Range
2-Hydroxyestrone (FMV urine)	7.1	9.2-76.6 mcg/g Creat.
16 α -Hydroxyestrone (FMV urine)	3.6	2.4-20.3 mcg/g Creat.
2-Methoxyestrone (FMV urine)	2.0	\geq 1.7 mcg/g Creat.
4-Methoxyestrone (FMV urine)	<dl	\geq 1.9 mcg/g Creat.
4-Hydroxyestrone (FMV urine)	5.2	\leq 5.3 mcg/g Creat.
2-Hydroxyestrone/16 α -Hydroxyestrone Ratio (FMV urine)	2.0	1.7-2.8
2-Methoxyestrone/2-Hydroxyestrone Ratio	0.28	\geq 0.09



Today's Presenters



Michael Chapman



Marion Owen, MD

Explore
WWW.GDX.NET

*for more information and
educational resources, including...*

LEARN GDX – Brief video modules

LIVE GDX – Previous webinar recordings

GI University – Focused learning modules

Conferences – Schedule of events we attend

Test Menu – Detailed test profile information

MY GDX – Order materials and get results

Questions?



Additional Education Materials:

WWW.GDX.NET

Sample Reports,
Support Guides,
Kit Instructions, FAQs,
Payment Options, and
much more!

The screenshot shows the Genova Diagnostics website homepage. At the top, the Genova Diagnostics logo is on the left, and navigation links for 'HOME', 'CLINICIANS', and 'PATIENTS' are on the right. The 'CLINICIANS' link is circled in red. Below the navigation is a banner for 'NutrEval® with Genomics' featuring a man and a woman in a kitchen. A 'LEARN MORE' button is present in the banner. Below the banner are three main content blocks: 'Getting Started' with a 'NEW USERS' button, 'Test Menu' with a 'SEARCH TESTS' button, and 'MYGDX Login' with a 'LOG IN' button. The 'LOG IN' button is circled in red. At the bottom, there is an 'Online Education' section with a 'LEARN NOW' button, which is also circled in red. The text in the 'Online Education' section reads: 'Visit our Medical Education section for access to LIVE GDX Webinars, Educational Modules, Conferences, and LEARN GDX – short learning modules that demonstrate the clinical utility and diagnostic significance of key biomarkers. The modules are absolutely free to view!' and 'Start Using These Free Resources Today!'.

LearnGDX Seminar Series

- *One-day event on February 20th, 2016*
- *Located in Atlanta, GA*
- *Speakers include Dr. Filomena Trindade & Dr. Andrea Girman*
- *Open to all account holders for \$299*
- *Registration includes a GI Effects Comprehensive Stool Test*



LearnGDX Seminar Series

MICROBIOME & GUT HEALTH

Saturday, February 20, 2016

Genova Diagnostics Laboratory- Atlanta, Ga



Genova Diagnostics is proud to introduce our LearnGDX Seminar Series.

This educational workshop will cover the Microbiome and Gut Health in clinical practice as well as the application of laboratory testing to relative conditions commonly treated.

It is impossible to ignore the importance of the microbiome and its obvious role in gut health, but also its overarching impact on overall health. Conditions like Irritable Bowel Syndrome (IBS), Inflammatory Bowel Disease (IBD), Autism, and metabolic/autoimmune disorders have all been associated with alterations in the gut microbiome.

Regardless of your specialty, microbiome analysis and understanding can amplify clinical utility and enhance patient outcomes.

SPEAKERS INCLUDE:



Filomena Trindade, MD, MPH

Teacher, author, and recognized international lecturer in Functional, Anti-Aging, and Integrative Medicine



Andrea Girman, MD, MPH

Director of Medical Education
Genova Diagnostics

EVENT SCHEDULE

- 8:00-8:30: Registration / Exhibit Break
- 8:30-9:00: Introduction/Event Overview (Leadership Team)
- 9:00-10:30: **The Microbiome in Clinical Practice: Diabetesity** (Filomena Trindade)
- 10:30-10:45: Snack/Exhibitor Break
- 10:45-11:45: **GI Effects Report Review** (Andrea Girman)
- 11:45-1:00: Exhibitor Break/LUNCH (Provided)
- 1:00-2:00: **GI Effects in Clinical Practice: Interactive Case Study Review**
- 2:00-2:30: **Strategies for Incorporating Specialty Diagnostics into Clinical Practice** (Filomena Trindade)
- 2:30-3:00: Q & A Session
- 3:00-4:30: Exhibitor Break and Lab Tours

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Nutritional Status and Hormone Balance

Marion Owen, MD

27 January 2016

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