



# Functional Approach to Postnatal Depletion Syndrome

**Lahnor Powell, ND, MPH**

Atlanta Medical Education Specialist | Department of Medical Affairs | Genova Diagnostics



# Lahnor Powell, ND, MPH

Medical Education Specialist | Department of Medical Affairs | Genova Diagnostics



# Overview of this Presentation

- Define what is the postnatal depletion syndrome, common symptoms, and how long it can impact women
- Review literature as it relates to nutritional demands during the postnatal time-frame
- Using a NutrEval Profile case, discuss common patterns viewed with nutrition testing

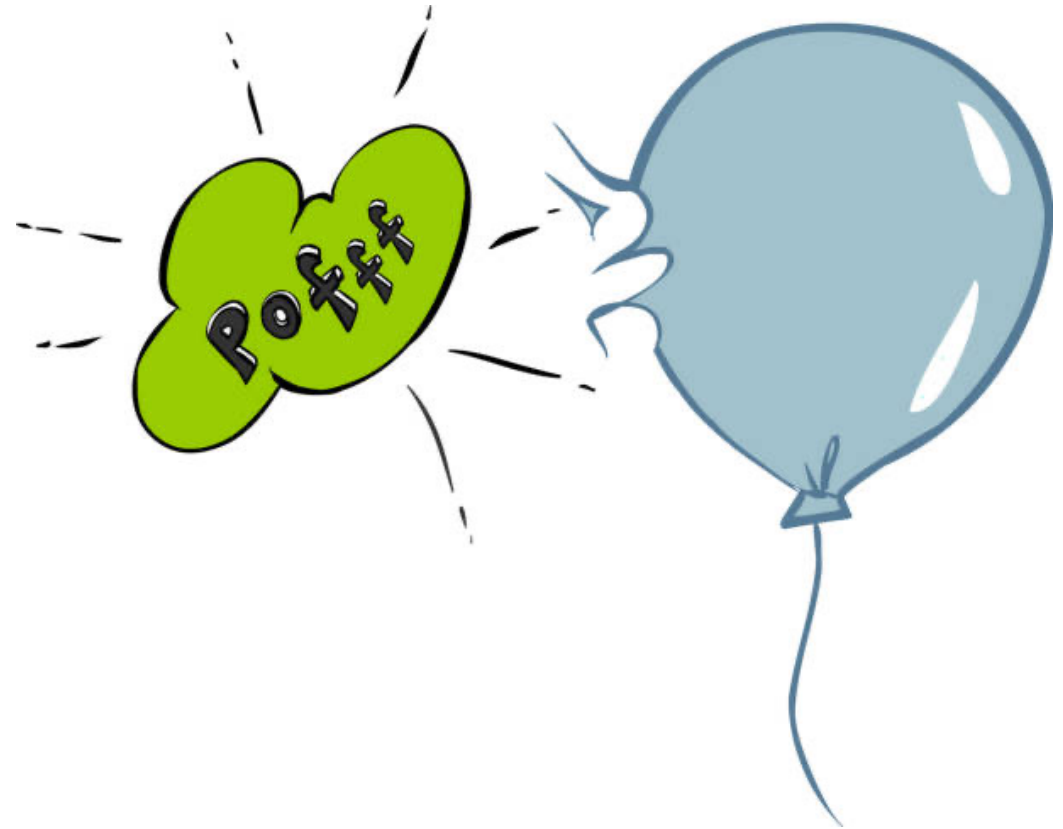




# Postnatal Depletion Syndrome

Defined by Dr. Oscar Serrallach as a constellation of symptoms affecting all spheres of a mother's life after she gives birth

1. Nutrient insufficiency
2. Sleep deprivation
3. New mother's role change





# Symptoms of Postnatal Depletion

- Anxiety
- Baby Brain
- Depression
- Easily Bruised
- Fatigue
- Hair loss and brittle nails
- Inflammation
- Insomnia
- Irritable
- Joint aches and pains
- Loss of self-confidence
- Low libido
- Overweight
- Sensitivity to light and sound
- Thinning and loose skin
- “Tired but wired”



# Postnatal Depletion Duration

- If not properly managed, can last up to **10 YEARS**
- Many considerations
  - Babies' health status
  - Breastfeeding
  - Diet and nutrition
  - Pregnancy related complications
  - Social support system
  - Sleep
  - Stress management



# Postnatal Nutrition

Iron

Zinc

Vitamin B12

Vitamin D

Copper

B-Vitamins

Magnesium

Trace Elements

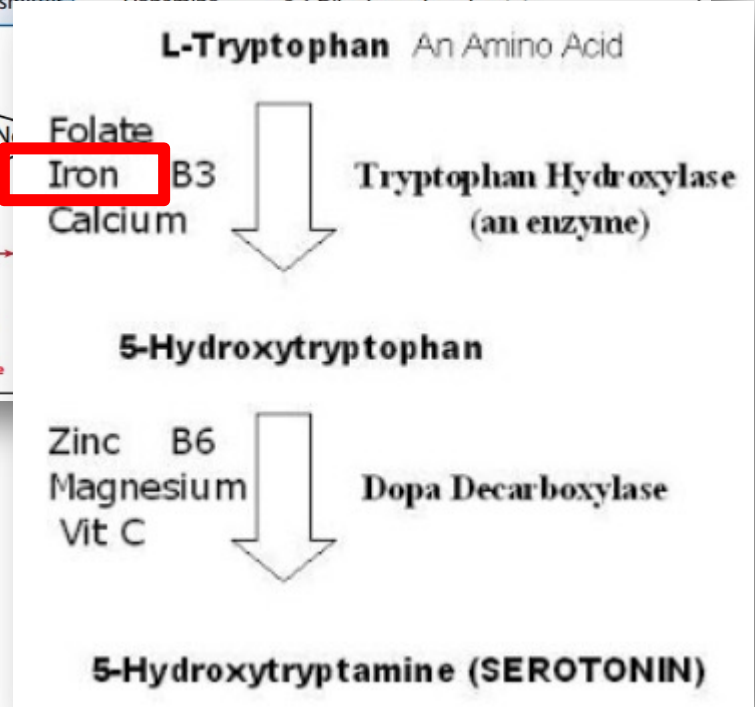
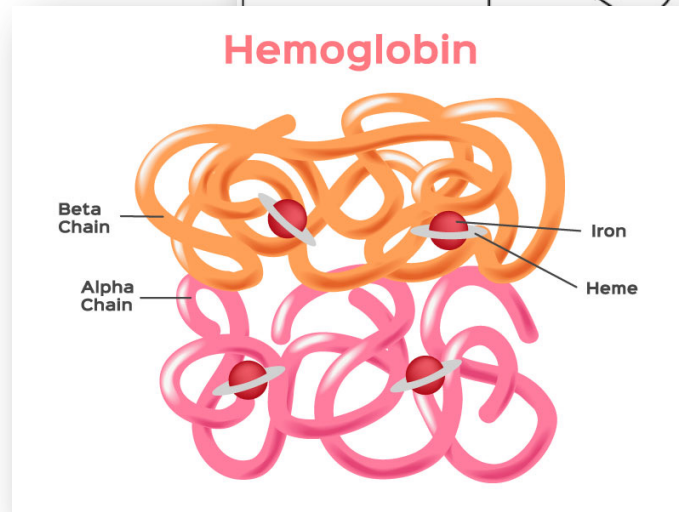
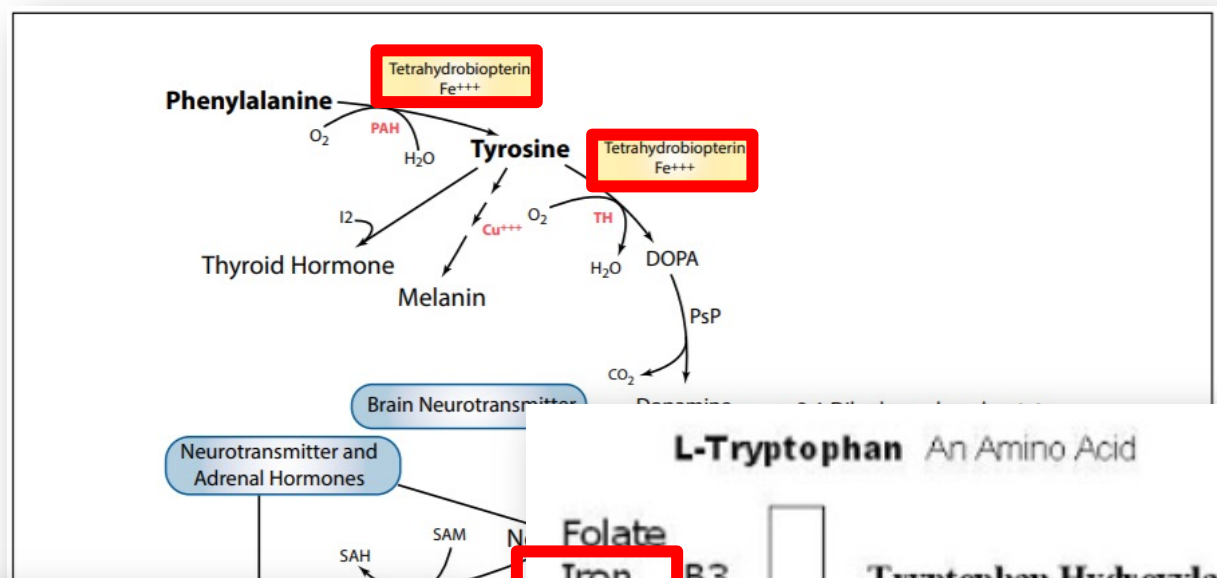
Vitamin C

Fat-Soluble Vitamins



# Postnatal Nutrition - Iron

- Nutrient need typically decreases after pregnancy, but some may remain iron deficient
- Symptoms of iron deficiency
  - Altered cognition
  - Depressive symptoms (PPD)
  - Fatigue

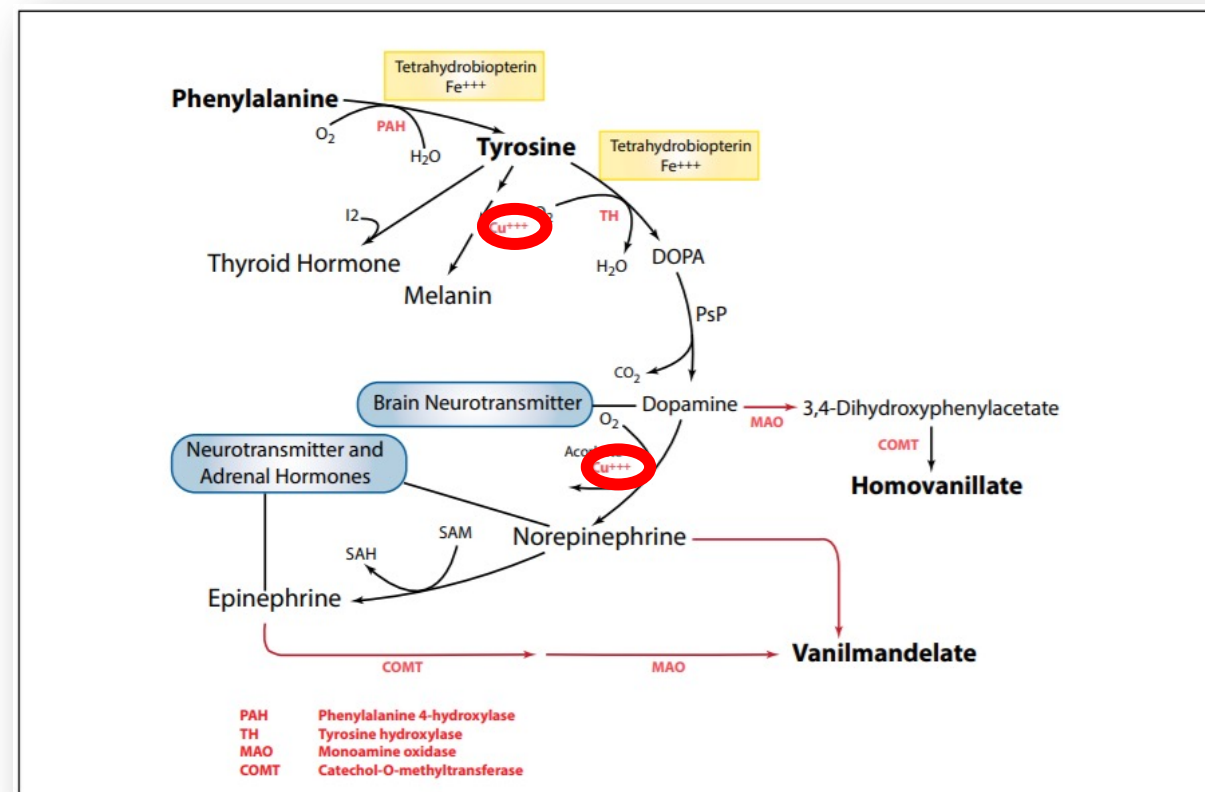






# Postnatal Nutrition - Copper

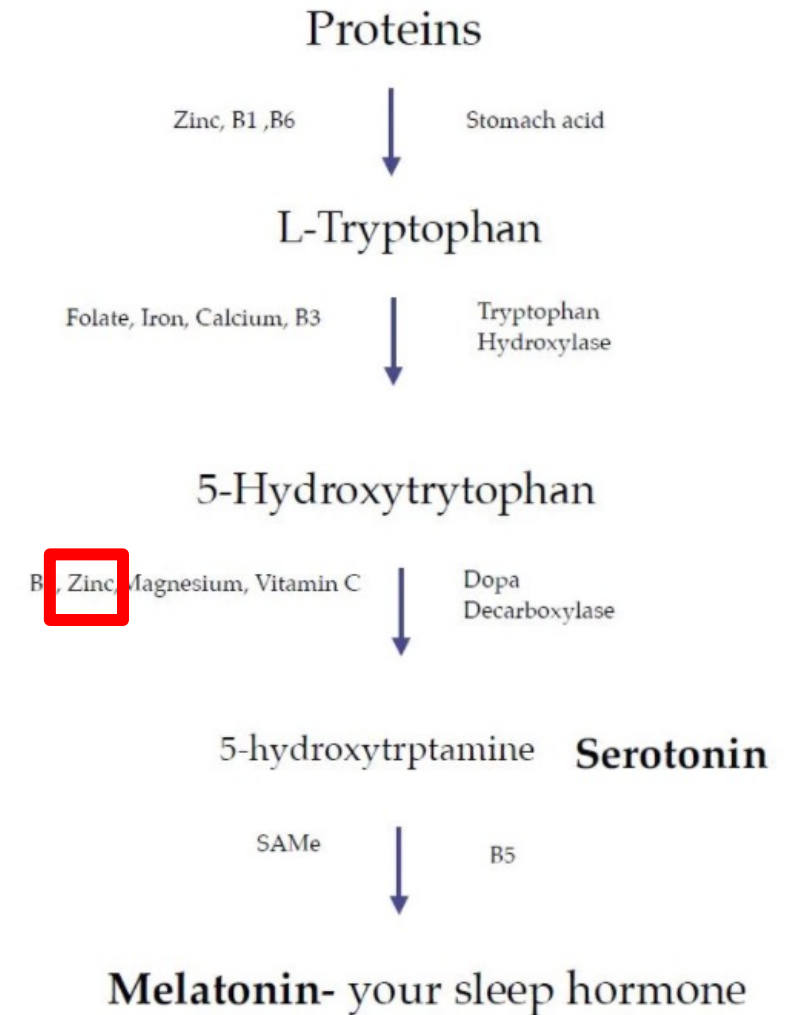
- During pregnancy, copper nearly doubles and drops after delivery
  - Red blood cell and vessel formation
- Copper excess
  - Increased Norepinephrine (vigilant)
  - Reduce Dopamine (pleasure)
  - Pro-oxidant causing inflammation
  - Fatigue





# Postnatal Nutrition - Zinc

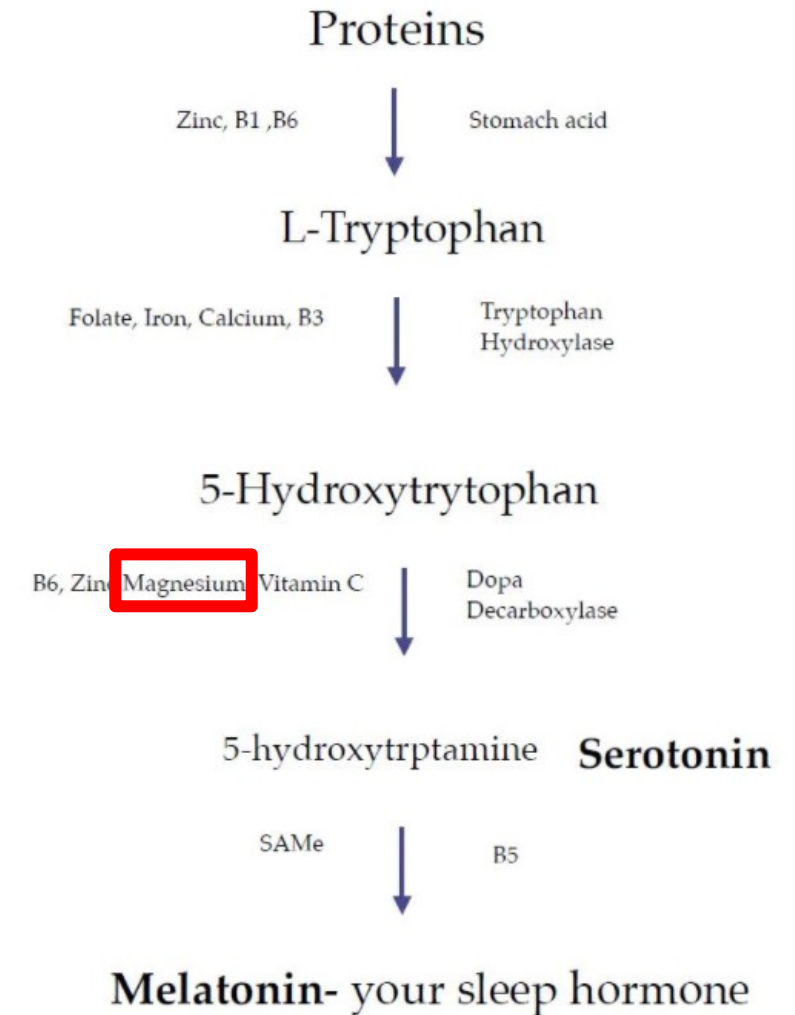
- Promotes immune system health
- Synthesizes DNA
- Serotonin production
- Regulates hormones
- Symptoms of Zinc deficiency
  - Depression
  - Low stomach acid





# Postnatal Nutrition - Magnesium

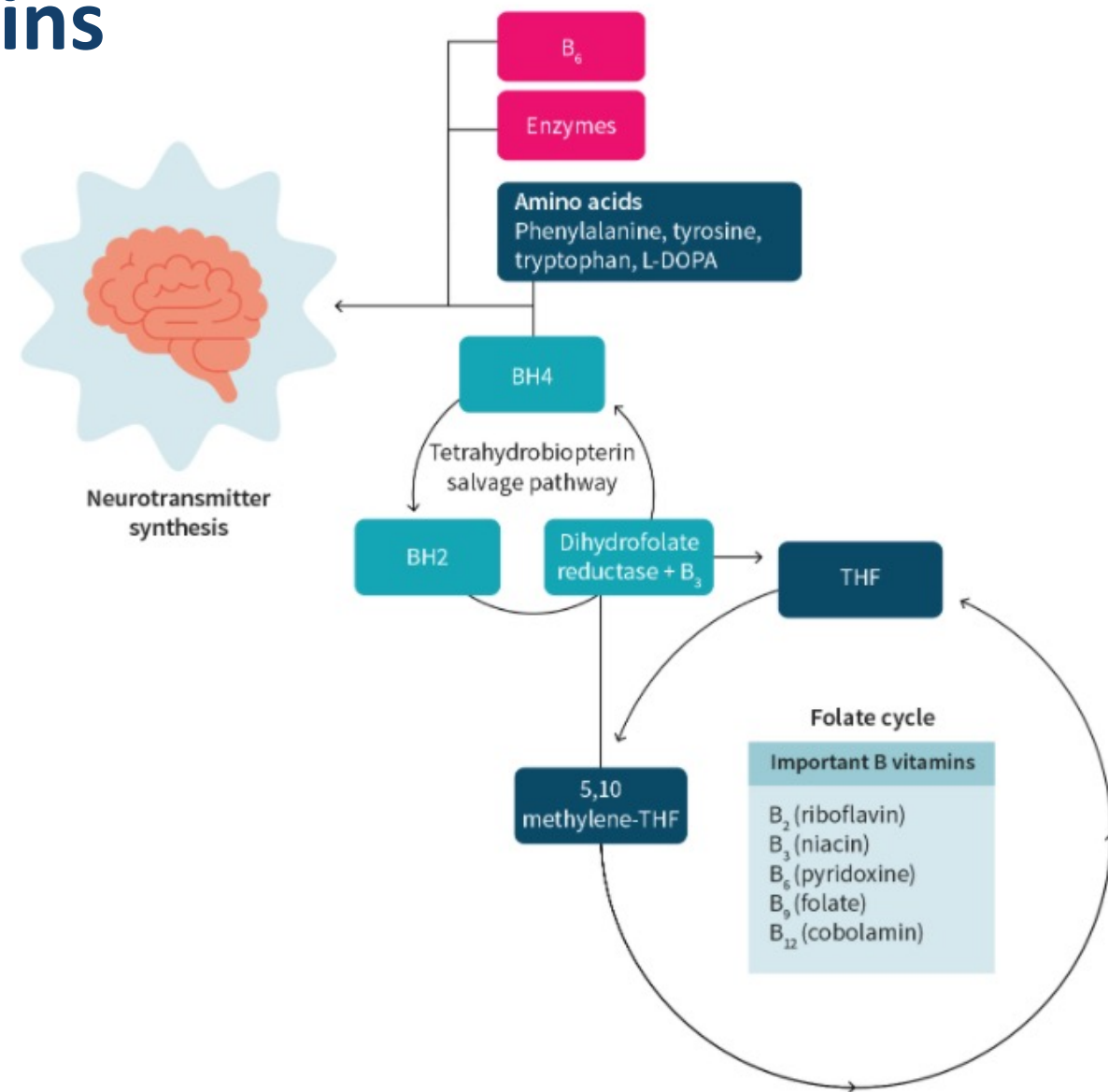
- Mama-Mineral
- Important in the function of other minerals
- Symptoms of Magnesium deficiency
  - Headaches
  - Constipation
  - Depression
  - Irritability
  - Muscle Tightness
  - Poor concentration
  - Fatigue





# Postnatal Nutrition – B Vitamins

- Vitamin B12 Derived from food and gut bacteria
- Vitamins B-6, 9, and 12 needed for red blood cell formation
- Methylation
- Energy production
- Healthy mood





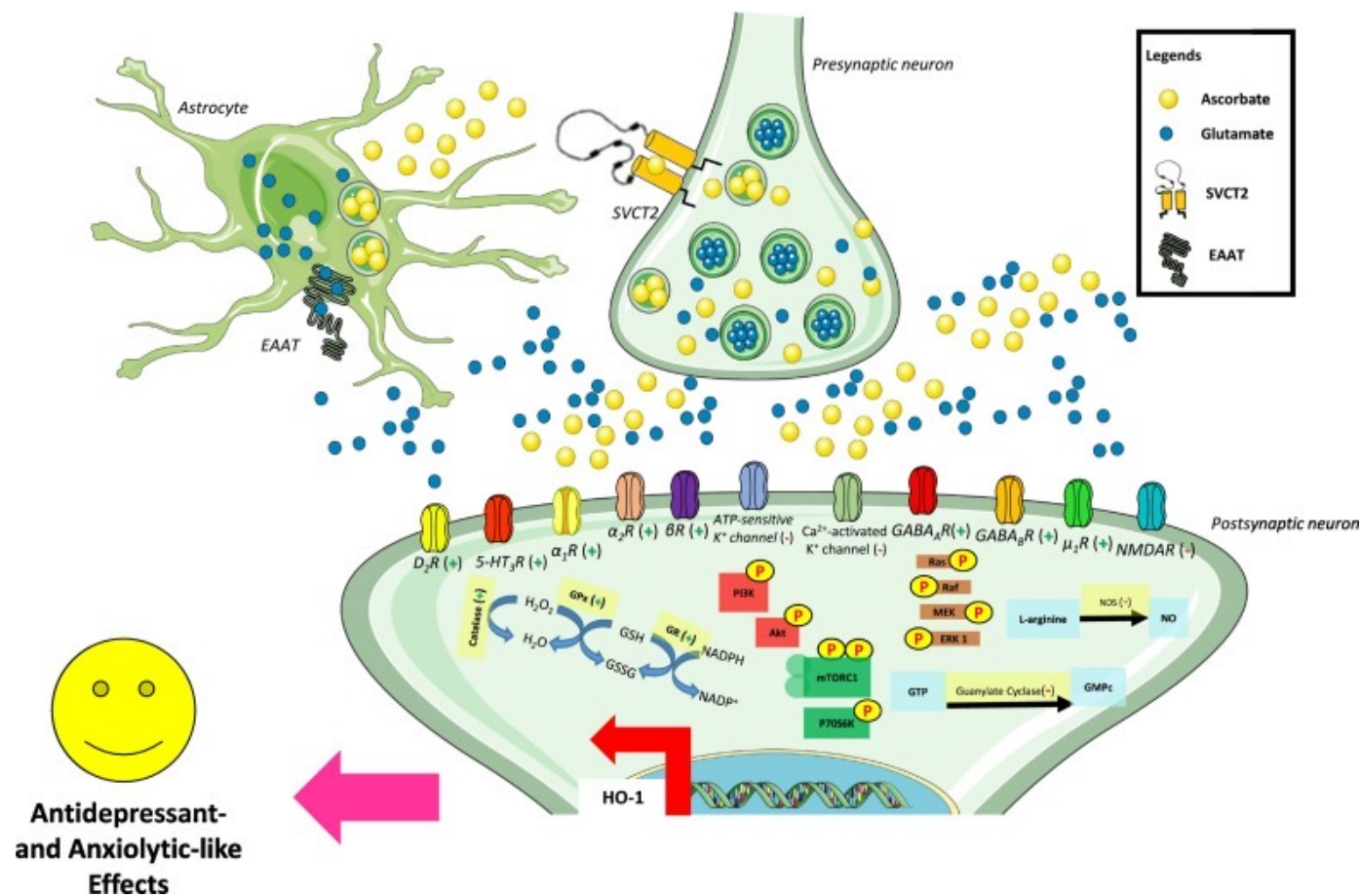
# Postnatal Nutrition – Fat Soluble Vitamins

- Vitamin A: Immune system
- Vitamin D: Bone Health
  - Deficiency linked to Postpartum Depression
  - Deficiency and Excess linked to sex hormone imbalances
- Vitamin E: Antioxidant
- Vitamin K: Bone Health



# Postnatal Nutrition – Vitamin C

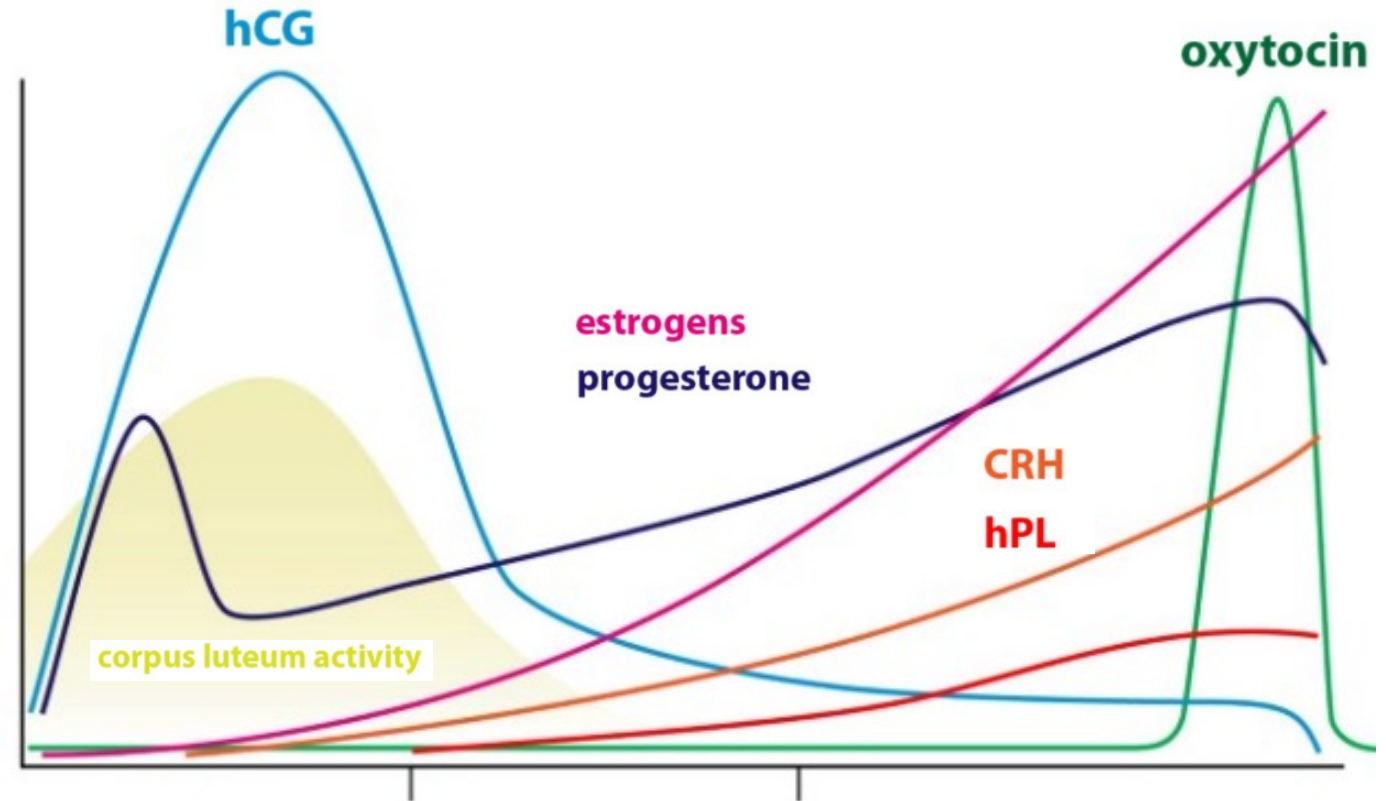
- Boost Immune System
- Important for collagen synthesis
- Antioxidant
- Supports cognitive function
- Anti-depressant and anxiety
- Cortisol management





# Pregnancy and Postnatal Hormones

- Estrogen and Progesterone
  - Increases in pregnancy and decreases within 48 hours of baby delivery
- CRH, hPL, and oxytocin
  - Increase postnatal
- Thyroid Hormone
  - Increases 50% by the third trimester
  - Can shift to over or underactive
  - 1:12 diagnosed with Hashimottos postnatal



Serrallach O. (2018). New York, NY: Hachette Book Group.

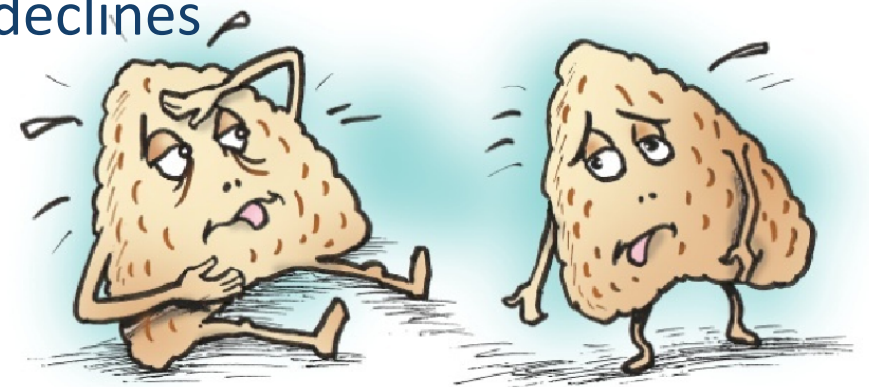
Johnson KA. (2017). Boulder, CO. Shambhala Publications, Inc.

<https://izzygrandic.medium.com/why-pregnant-women-are-moody-f8ab3f0dc01c>.



# Postnatal Cortisol

- Cortisol production is controlled by mother until the last trimester when the placenta takes over
  - Thought to contribute to ‘nesting’ or surges in energy during the third trimester
- Stress On/Stress Off
  - Contributing factor of baby brain
  - Too many simultaneous and multiplying demands
- After Stress On/Stress Off bodies cortisol production declines







# Clinical Case Featuring the Metabolomix+

Focusing on interpretation and clinical application

For more detailed information and the 1,000+ literature references,  
please see the *NutrEval & Metabolomix+ Support Guide*:

<http://www.gdx.net/nutrealguide>

# 34 y/o Stay-at-Home Mother of 3 Young Children

- CC – anxiety and new onset of panic attacks, joint aches and pains, exhausted, poor sleep, headaches, sugar cravings, GI problems, and low blood pressure
- DIET – cooks all meals and several cups of coffee
- MEDICATIONS/SUPPLEMENTS – hormonal birth control
- EXERCISE – 3 times per week (light cardio for 20 minutes) and morning meditation
- SOCIALLY – little local support and husband travels for work

## 3001 NutrEval Plasma - Plasma and Blood





# Nutrient Need Overview

- Algorithm-derived nutrient needs based on patient results
  - Antioxidants
  - B-Vitamins
  - Minerals
  - Essential Fatty Acids
  - GI Support
  - Amino Acids

Nutrient Need Overview													
	Nutrient Need										DRI	Suggested Recommendations	Provider Recommendations
	0	1	2	3	4	5	6	7	8	9			
<b>Antioxidants</b>													
Vitamin A											2,333 IU	3,000 IU	
Vitamin C											75 mg	500 mg	
Vitamin E / Tocopherols											22 IU	100 IU	
α-Lipoic Acid												100 mg	
CoQ10												60 mg	
Glutathione													
Plant-based Antioxidants													
<b>B-Vitamins</b>													
Thiamin - B1											1.1 mg	10 mg	
Riboflavin - B2											1.1 mg	50 mg	
Niacin - B3											14 mg	30 mg	
Pyridoxine - B6											1.3 mg	10 mg	
Biotin - B7											30 mcg	100 mcg	
Folate - B9											400 mcg	400 mcg	
Cobalamin - B12											2.4 mcg	500 mcg	
<b>Minerals</b>													
Magnesium											320 mg	600 mg	
Manganese											1.8 mg	3.0 mg	
Molybdenum											45 mcg	75 mcg	
Zinc											8 mg	20 mg	
<b>Essential Fatty Acids</b>													
Omega-3 Fatty Acids											500 mg	500 mg	
<b>GI Support</b>													
Digestive Support/Enzymes												5,000 IU	
Microbiome Support/Probiotics												25 billion CFU	
<b>Amino Acids (mg/day)</b>													
Arginine	443	Methionine	166	<p>Recommendations for age and gender-specific supplementation are set by comparing levels of nutrient functional need to optimal levels as described in the peer-reviewed literature. They are provided as guidance for short-term support of nutritional deficiencies only.</p> <p>The Nutrient Need Overview is provided at the request of the ordering practitioner. Any application of it as a therapeutic intervention is to be determined by the ordering practitioner.</p>									
Asparagine	0	Phenylalanine	83										
Cysteine	245	Serine	209										
Glutamine	764	Taurine	0										
Glycine	1,248	Threonine	0										
Histidine	101	Tryptophan	0										
Isoleucine	353	Tyrosine	343										
Leucine	627	Valine	0										
Lysine	0												



## Interpretation

### Antioxidants

#### Vitamin A / Carotenoids



- Beta-carotene & other carotenoids are converted to vitamin A (retinol), involved in vision, antioxidant & immune function, gene expression & cell growth.
- Vitamin A deficiency may occur with chronic alcoholism, zinc deficiency, hypothyroidism, or oral contraceptives containing estrogen & progestin.
- Deficiency may result in night blindness, impaired immunity, healing & tissue regeneration, increased risk of infection, leukoplakia or keratinosis.
- Food sources include cod liver oil, fortified cereals & milk, eggs, sweet potato, pumpkin, carrot, cantaloupe, mango, spinach, broccoli, kale & butternut squash.

#### Vitamin E / Tocopherols



- Alpha-tocopherol (body's main form of vitamin E) functions as an antioxidant, regulates cell signaling, influences immune function and inhibits coagulation.
- Deficiency may occur with malabsorption, cholestyramine, colestipol, isoniazid, orlistat, oestra and certain anti-convulsants (e.g., phenobarbital, phenytoin).
- Deficiency may result in peripheral neuropathy, ataxia, muscle weakness, retinopathy, and increased risk of CVD, prostate cancer and cataracts.
- Food sources include oils (olive, soy, corn, canola, safflower, sunflower), eggs, nuts, seeds, spinach, carrots, avocado, dark leafy greens and wheat germ.

#### CoQ10



- CoQ10 is a powerful antioxidant that is synthesized in the body and contained in cell membranes. CoQ10 is also essential for energy production & pH regulation.
- CoQ10 deficiency may occur with HMG-CoA reductase inhibitors (statins), several anti-diabetic medication classes (biguanides, sulfonylureas) or beta-blockers.
- Low levels may aggravate oxidative stress, diabetes, cancer, congestive heart failure, cardiac arrhythmias, gingivitis and neurologic diseases.
- Main food sources include meat, poultry, fish, soybean, canola oil, nuts and whole grains. Moderate sources include fruits, vegetables, eggs and dairy.

#### Plant-based Antioxidants



- Oxidative stress is the imbalance between the production of free radicals and the body's ability to readily detoxify these reactive species and/or repair the resulting damage with anti-oxidants.
- Oxidative stress can be endogenous (energy production and inflammation) or exogenous (exercise, exposure to environmental toxins).
- Oxidative stress has been implicated clinically in the development of neurodegenerative diseases, cardiovascular diseases and chronic fatigue syndrome.
- Antioxidants may be found in whole food sources (e.g., brightly colored fruits & vegetables, green tea, turmeric) as well as nutraceuticals (e.g., resveratrol, EGCG, lutein, lycopene, ginkgo, milk thistle, etc.).

● Function of Nutrient ● Cause of Deficiency

## Interpretation

### B-Vitamins

#### Thiamin - B1



- B1 is a required cofactor for enzymes involved in energy production from food, and for the synthesis of ATP, GTP, DNA, RNA and NADPH.
- Low B1 can result from chronic alcoholism, diuretics, digoxin, oral contraceptives and HRT, or large amounts of tea & coffee (contain anti-B1 factors).
- B1 deficiency may lead to dry beriberi (e.g., neuropathy, muscle weakness), wet beriberi (e.g., cardiac problems, edema), encephalopathy or dementia.
- Food sources include lentils, whole grains, wheat germ, Brazil nuts, peas, organ meats, brewer's yeast, blackstrap molasses, spinach, milk & eggs.

#### Riboflavin - B2



- B2 is a key component of enzymes involved in antioxidant function, energy production, detoxification, methionine metabolism and vitamin activation.
- Low B2 may result from chronic alcoholism, some anti-psychotic medications, oral contraceptives, tricyclic antidepressants, quinacrine or adriamycin.
- B2 deficiency may result in oxidative stress, mitochondrial dysfunction, low uric acid, low B3 or B6, high homocysteine, anemia or oral & throat inflammation.
- Food sources include milk, cheese, eggs, whole grains, beef, chicken, wheat germ, fish, broccoli, asparagus, spinach, mushrooms and almonds.

#### Niacin - B3



- B3 is used to form NAD and NADP, involved in energy production from food, fatty acid & cholesterol synthesis, cell signaling, DNA repair & cell differentiation.
- Low B3 may result from deficiencies of tryptophan (B3 precursor), B6, B2 or Fe (cofactors in B3 production), or from long-term isoniazid or oral contraceptive use.
- B3 deficiency may result in pellagra (dermatitis, diarrhea, dementia), neurologic symptoms (e.g., depression, memory loss), bright red tongue or fatigue.
- Food sources include poultry, beef, organ meats, fish, whole grains, peanuts, seeds, lentils, brewer's yeast and lima beans.

● Function of Nutrient ● Cause of Deficiency

## Interpretation

### Minerals

#### Magnesium



- Magnesium is involved in >300 metabolic reactions. Key areas include energy production, bone & ATP formation, muscle & nerve conduction and cell signaling.
- Deficiency may occur with malabsorption, alcoholism, hyperparathyroidism, renal disorders (wasting), diabetes, diuretics, digoxin or high doses of zinc.
- Low Mg may result in muscle weakness/spasm, constipation, depression, hypertension, arrhythmias, hypocalcemia, hypokalemia or personality changes.
- Food sources include dark leafy greens, oatmeal, buckwheat, unpolished grains, chocolate, milk, nuts & seeds, lima beans and molasses.

#### Molybdenum



- Molybdenum is a cofactor for enzymes that convert sulfites to sulfate, and nucleotides to uric acid, and that help metabolize aldehydes & other toxins.
- Low Mo levels may result from long-term TPN that does not include Mo.
- Mo deficiency may result in increased sulfite, decreased plasma uric acid (and antioxidant function), deficient sulfate, impaired sulfation (detoxification), neurologic disorders or brain damage (if severe deficiency).
- Food sources include buckwheat, beans, grains, nuts, beans, lentils, meats and vegetables (although Mo content of plants depends on soil content).

## Essential Fatty Acids

#### Need for Omega-3s



- Omega-3 (O3) and Omega-6 (O6) fatty acids are polyunsaturated fatty acids that cannot be synthesized by the human body. They are classified as essential nutrients and must be obtained from dietary sources.
- The standard American diet is much higher in O6 than O3 fatty acids. Deficiency of EFAs may result from poor dietary intake and/or poor conversion from food sources.
- EFA deficiency is associated with decreased growth & development of infants and children, dry skin/itch, poor wound healing, and increased risk of infection, cardiovascular and inflammatory diseases.
- Dietary sources of the O6 Linoleic Acid (LA) include vegetable oils, nuts, seeds and some vegetables. Dietary sources of the O3 a-Linolenic Acid (ALA) include flaxseeds, walnuts, and their oils. Fish (mackerel, salmon, sardines) are the major dietary sources of the O3 fatty acids EPA and DHA.

● Function of Nutrient ● Cause of Deficiency

## Interpretation At-A-Glance

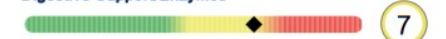
### Microbiome & Digestive Support

#### Microbiome Support/Probiotics



- Probiotics have many functions. These include: production of some B vitamins and vitamin K; enhance digestion & absorption; decrease severity of diarrheal illness; modulate of immune function & intestinal permeability.
- Alterations of gastrointestinal microflora may result from C-section delivery, antibiotic use, improved sanitation, decreased consumption of fermented foods and use of certain drugs.
- Some of the diseases associated with microflora imbalances include: IBS, IBD, fibromyalgia, chronic fatigue syndrome, obesity, atopic illness, colic and cancer.
- Food sources rich in probiotics are yogurt, kefir and fermented foods.

#### Digestive Support/Enzymes



- Pancreatic enzymes are secreted by the exocrine glands of the pancreas and include protease, lipase and amylase.
- Pancreatic exocrine insufficiency may be primary or secondary in nature. Any indication of insufficiency warrants further evaluation for underlying cause (i.e., celiac disease, small intestine villous atrophy, small bowel bacterial overgrowth).
- A high functional need for digestive enzymes suggests that there is an impairment related to digestive capacity.
- Determining the strength of the pancreatic enzyme support depends on the degree of functional impairment. Supplement potency is based on the lipase units present in both prescriptive and non-prescriptive agents.

### Functional Imbalances

#### Mitochondrial Dysfunction



- Mitochondria are a primary site of generation of reactive oxygen species. Oxidative damage is considered an important factor in decline of physiologic function that occurs with aging and stress.
- Mitochondrial defects have been identified in cardiovascular disease, fatigue syndromes, neurologic disorders such as Parkinson's and Alzheimer's disease, as well as a variety of genetic conditions. Common nutritional deficiencies can impair mitochondrial efficiency.

#### Need for Methylation



- Methylation is an enzymatic process that is critical for both synthesis and inactivation. DNA, estrogen and neurotransmitter metabolism are all dependent on appropriate methylase activity.
- B vitamins and other nutrients (methionine, magnesium, selenium) functionally support catechol-O-methyltransferase (COMT), the enzyme responsible for methylation.

#### Toxic Exposure



- Methyl tert-Butyl Ether (MTBE) is a common gasoline additive used to increase octane ratings, and has been found to contaminate ground water supplies where gasoline is stored. Inhalation of MTBE may cause nose and throat irritation, as well as headaches, nausea, dizziness and mental confusion. Animal studies suggest that drinking MTBE may cause gastrointestinal irritation, liver and kidney damage and nervous system effects.
- Styrene is classified by the US EPA as a "potential human carcinogen," and is found widely distributed in commercial products such as rubber, plastic, insulation, fiberglass, pipes, food containers and carpet backing.
- Levels of these toxic substances should be examined within the context of the body's functional capacity for methylation and need for glutathione.

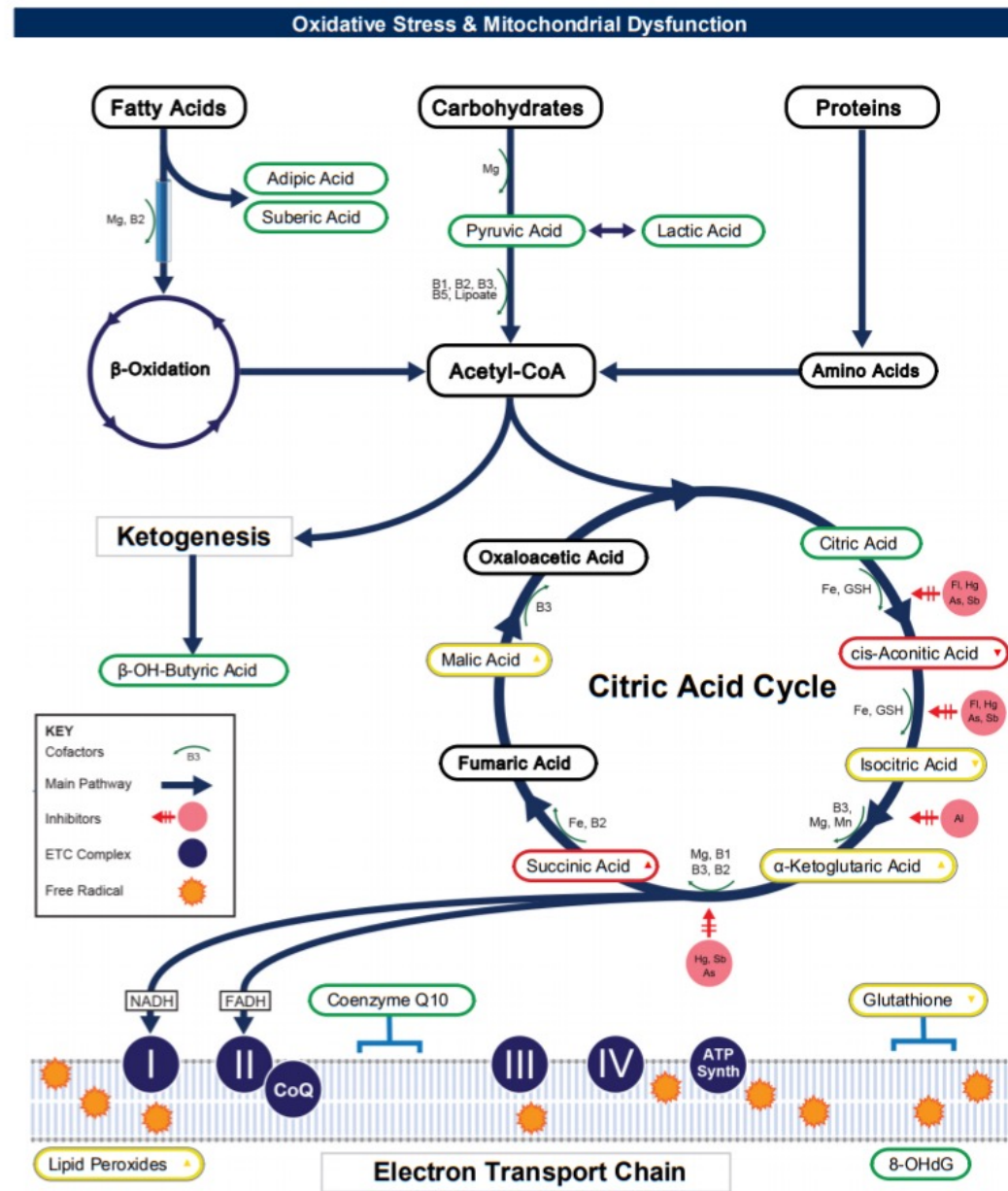
### KEY

● Function of Nutrient ● Cause of Deficiency ● Complications of Deficiency ● Food Sources of Nutrient



# Organic Acids

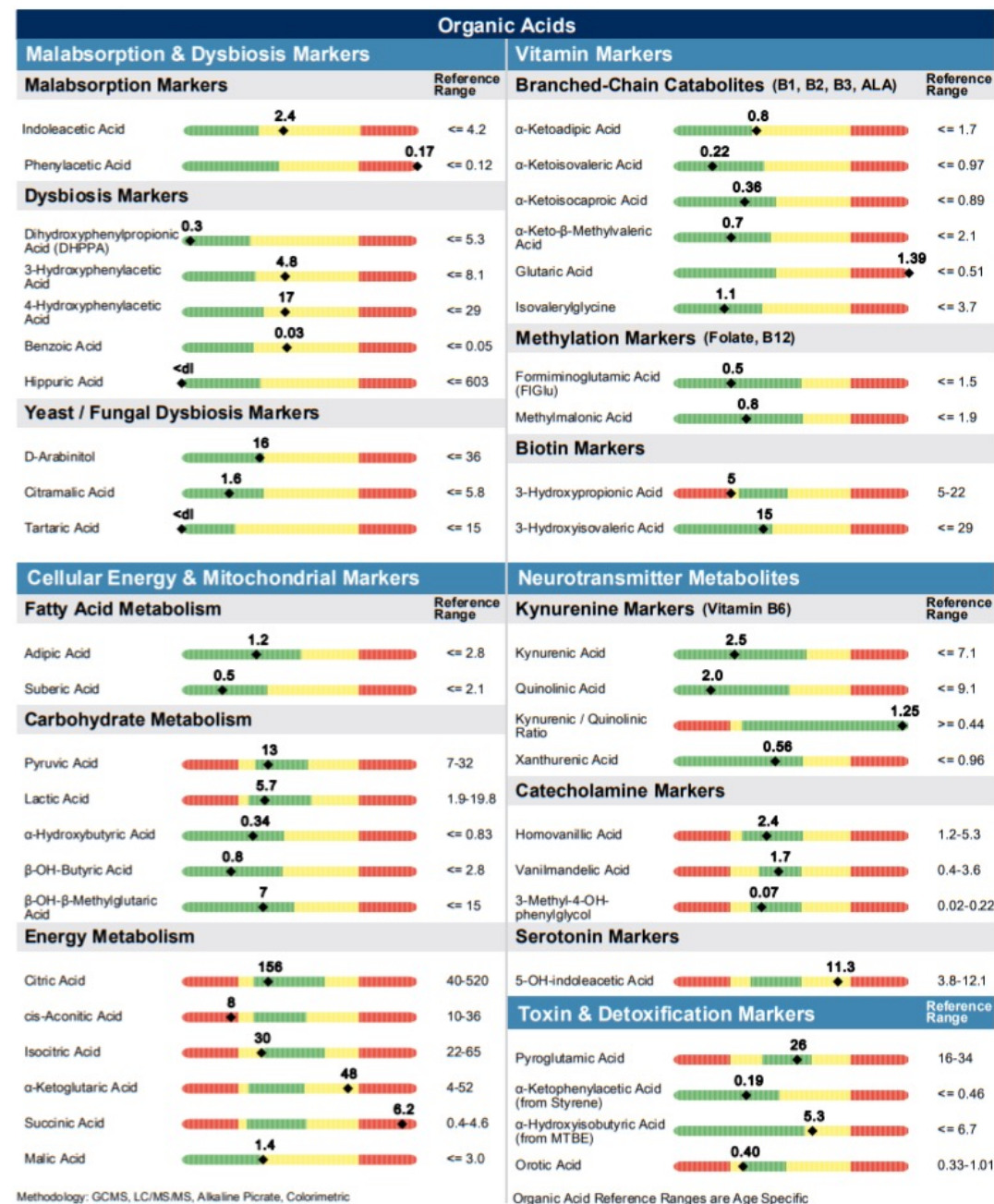
- Macronutrients are ultimately metabolized into ATP
- Cellular metabolism backups or blockages
  - Low intermediates could be macronutrient deficiency
  - Elevations could be insufficient cofactors or heavy metal presence
- Electron Transport Chain
  - Oxidative stress/damage = imbalanced antioxidants and free radicals





# Malabsorption & Dysbiosis

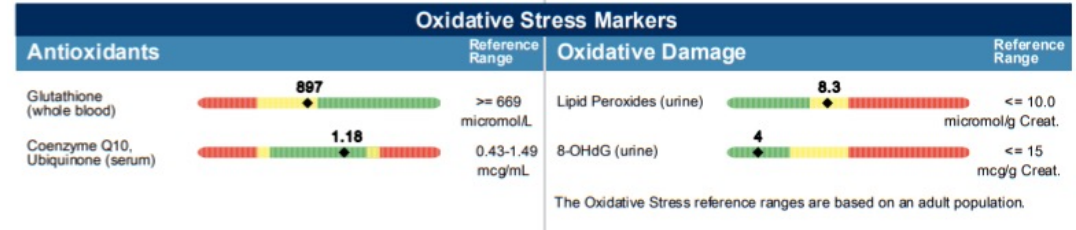
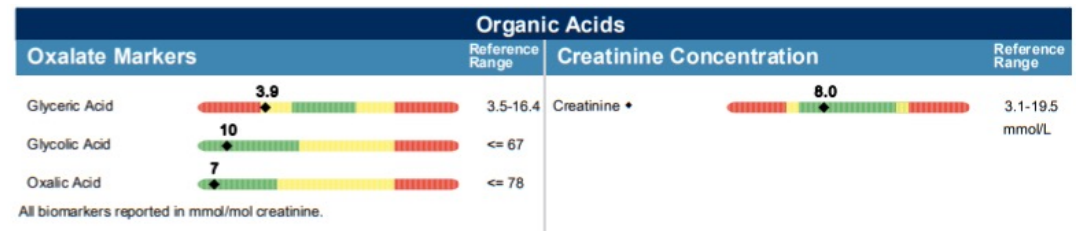
- Malabsorption Markers
  - Highs suggest incomplete digestion
- Dysbiosis / Yeast Fungal
  - Bacterial and fungal metabolites
  - Consider stool test
- Vitamin Markers
  - Glutaric Acid indicates B2 Deficiency
- Neurotransmitter Metabolites
  - 5-HIAA indicates Mg, Mn, B-vitamin deficiency
- Toxin & Detoxification Markers
  - High MTBE metabolite





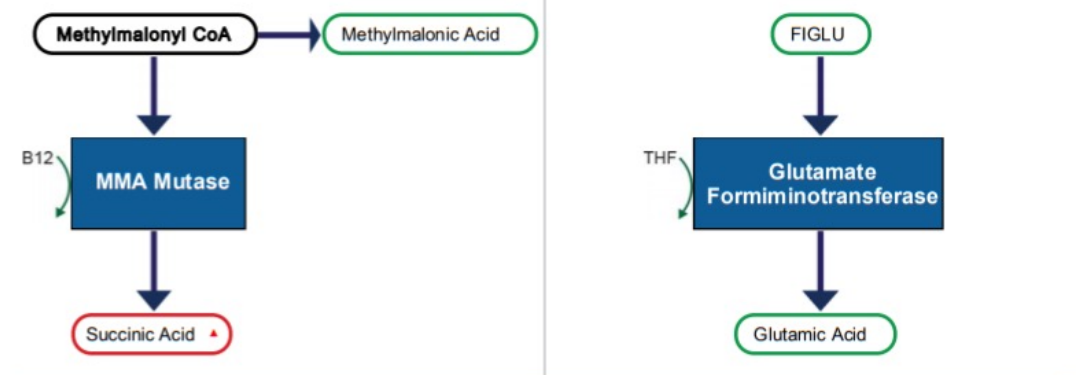
# Oxalate & Oxidative Stress

- Oxalate
  - Glyceric acid is derived from serine (AA) and fructose
- Oxidative Stress
  - Low glutathione (glutamine, glycine, and cysteine)
  - Elevated lipid peroxides

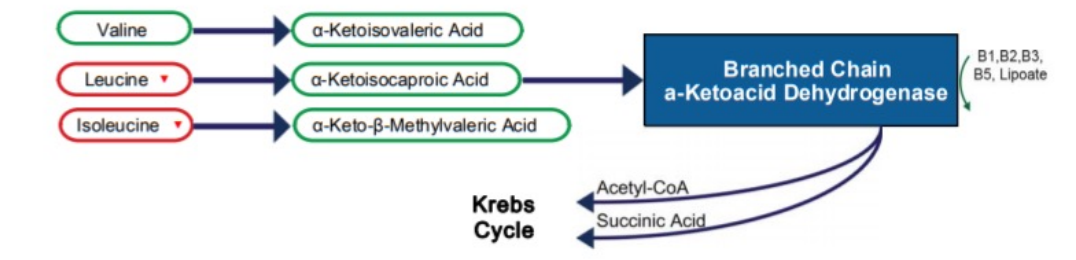


## Pathways

### Methylation Markers



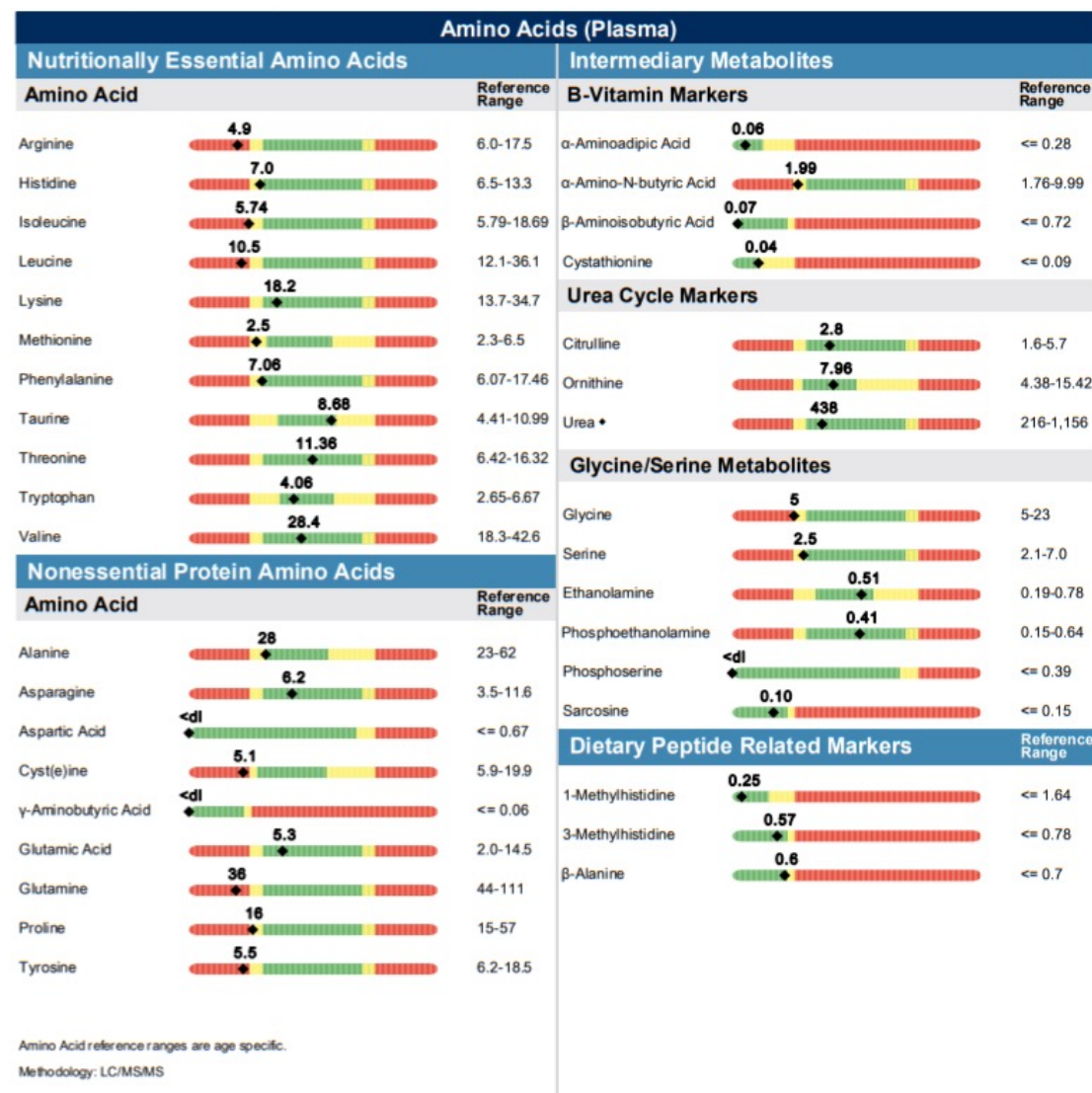
### Branch-Chain Amino Acid Metabolism





# Amino Acids

- Essential and Non-Essential AAs
  - Low trend
    - Intake, increased utilization, and/or maldigestion/malabsorption

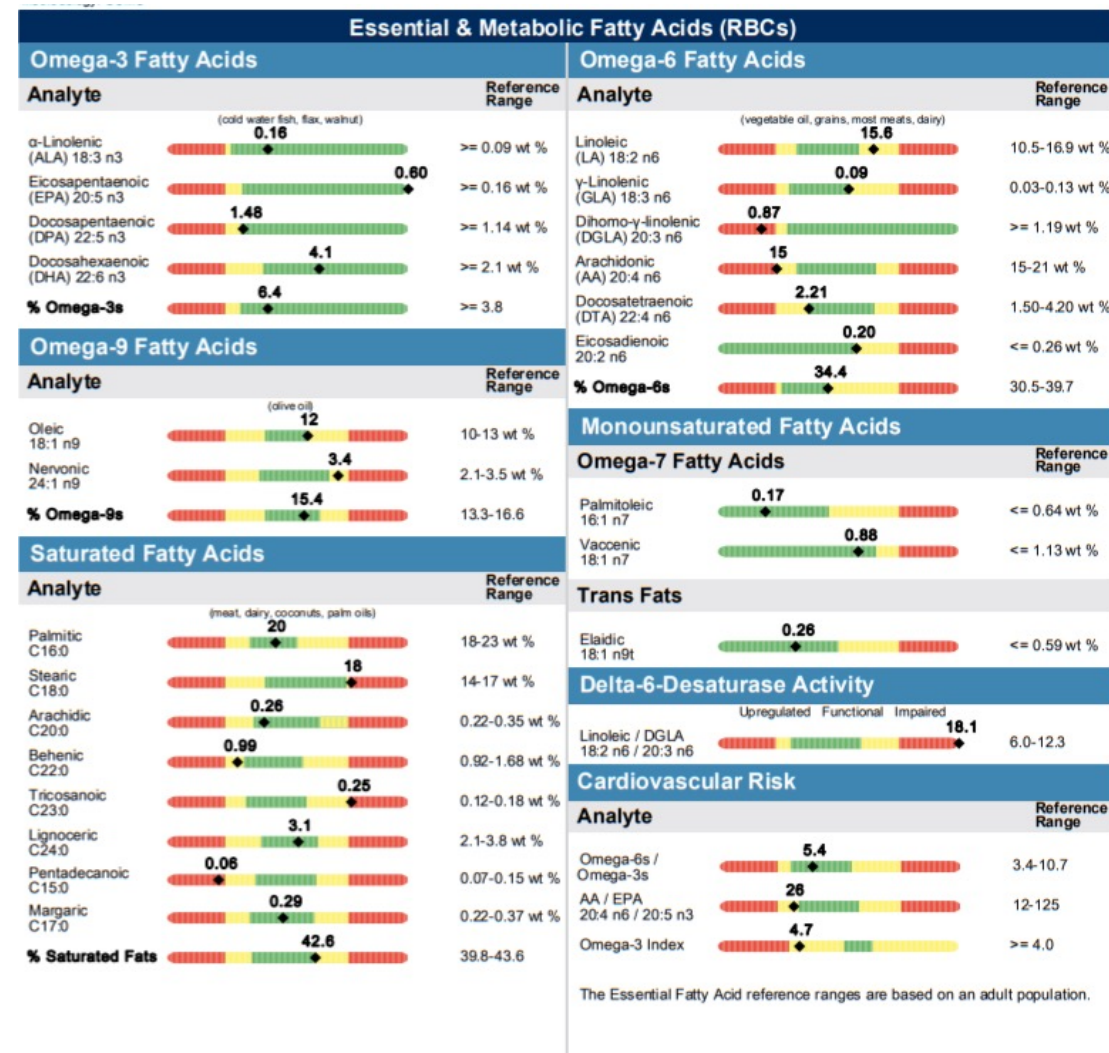






# Fatty Acids

- Omega 3
  - Low omega 3-Index
  - Low DGLA
    - Elongase Enzyme requires B3/5/6/7 and Vitamin C



The Essential Fatty Acid reference ranges are based on an adult population.



# Elemental Markers

- Nutrient Elements
  - Low Magnesium
  - Low Potassium
  - Low Selenium
- Toxic Elements
  - Current Exposures

Elemental Markers				
Nutrient Elements			Toxic Elements*	
Element		Reference Range	Element	Reference Range
Copper (plasma)	114.5	75.3-192.0 mcg/dL	Lead	0.36 <= 2.81 mcg/dL
Magnesium (RBC)	37.3	30.1-56.5 mcg/g	Mercury	3.50 <= 4.35 mcg/L
Manganese (whole blood)	6.2	3.0-16.5 mcg/L	Arsenic	1.8 <= 13.7 mcg/L
Potassium (RBC)	2,449	2,220-3,626 mcg/g	Cadmium	0.11 <= 1.22 mcg/L
Selenium (whole blood)	138	109-330 mcg/L		
Zinc (plasma)	123.8	64.3-159.4 mcg/dL		

\* All toxic Elements are measured in whole blood. The reference ranges for Lead, Mercury, and Cadmium are derived from the 95th percentile from NHANES

# Treatment Plan

- Multivitamin
- Fish Oil
- Protein Powder daily
  - Assist in making GSH
- GI Microbiome Support
  - Probiotics
  - Consider stool testing
- Encourage iron rich foods
  - Get serum Hemoglobin

## 3001 NutrEval Plasma - Plasma and Blood



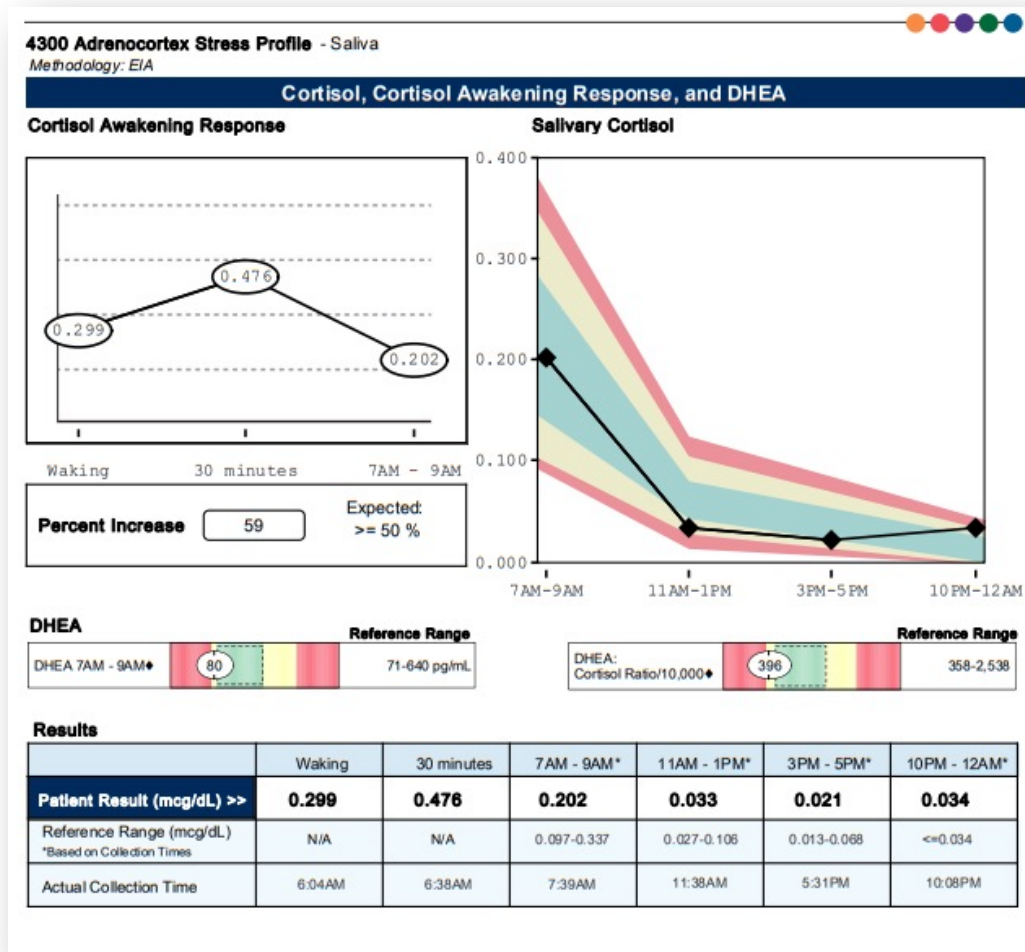
**Functional Imbalance Scores**

Key: 0-4 : Minimal Need for Support    5-7 : Moderate Need for Support    8-10 : High Need for Support

Need for Antioxidant Support	Need for Mitochondrial Support	Need for Inflammation Support	Need for Reduced Exposure	Need for Methylation Support
Oxidative Stress	Mitochondrial Dysfunction	Omega Imbalance	Toxic Exposure	Methylation Imbalance
<b>6</b>	<b>6</b>	<b>4</b>	<b>6</b>	<b>5</b>
Cyst(e)ine ▼ Lipid Peroxides ▲ 8-OHdG ● Glutathione ▼ Taurine ● Citric Acid ● cis-Aconitic Acid ▼	Glutathione ▼ CoQ10 ● Magnesium ▼ FIGLU ● Methylmalonic Acid ● Glutaric Acid ▲ Lactic Acid ● Pyruvic Acid ● Citric Acid ● cis-Aconitic Acid ▼ Isocitric Acid ▼ α-Ketoglutaric Acid ▲ Succinic Acid ▲ Malic Acid ▲ Adipic Acid ● Suberic Acid ● Manganese ●	Omega-3 Index ▼ Omega 6/3 Ratio ● α-Linolenic Acid ● Arachidonic Acid ▼ Linoleic Acid ▲ γ-Linolenic Acid ● Dihomo-γ-linolenic Acid ▼	Lead ● Mercury ● α-Hydroxyisobutyric Acid ▲ α-Ketophenylacetic Acid ● Arsenic ● Cadmium ● Pyroglutamic Acid ● Orotic Acid ▼ Citric Acid ● cis-Aconitic Acid ▼ Isocitric Acid ▼ Glutaric Acid ▲	Methylmalonic Acid ● Methionine ▼ Glutathione ▼ FIGLU ● Sarcosine ● Vanilmandelic Acid ● Arginine ▼ Glycine ● Serine ● Creatinine ●



# Adrenocortex Stress Profile



- Cortisol Awakening Response
  - Continue morning meditation
- Treatment considerations
  - Vitamin C (1-2 grams daily)
  - Ashwagandha (1 gram BID)
  - Licorice (150-400 mg daily)
  - Thyroid evaluation



# Special Considerations at the Postnatal Visit

- Evaluate emotional lability
- Assess diet, sleeping habits, and support system
- Discuss exercise regimen
- Pregnancy complications follow up
  - Gestational Diabetes: Fasting Blood Glucose and Insulin
  - Preeclampsia: Blood Pressure
  - Heavy Bleeding: Iron
- Functional Medicine Testing
  - Nutrition/Micronutrient
  - GI Function (stool test)
  - Hormones (sex hormone, thyroid, and adrenal health)

The collage features three primary test reports from Genova Diagnostics:

- 3000 NutrEval FMV - Urine:** Amino acids report showing a score of 7 for oxidative stress and a need for antioxidant support. Key nutrients listed include Cysteine, Lipid Peroxides, Glutathione, and various organic acids.
- 2200 GI Effects™ Con:** A stool profile report with a score of 5, indicating a need for digestive support. It lists biomarkers for pancreatic elastase, protein breakdown, and fecal fats.
- 4300 Adrenocortex Stress Profile - Saliva:** A graph showing cortisol levels over a 24-hour period. The graph includes data points for waking (0.440), 30 minutes (0.660), 7AM-9AM (0.200), 11AM-1PM (0.100), 3PM-5PM (0.060), and 10PM-12AM (0.034). It also shows DHEA levels and a cortisol ratio.

# Maternal Nutritional Needs During Lactation

BONUS TOPIC

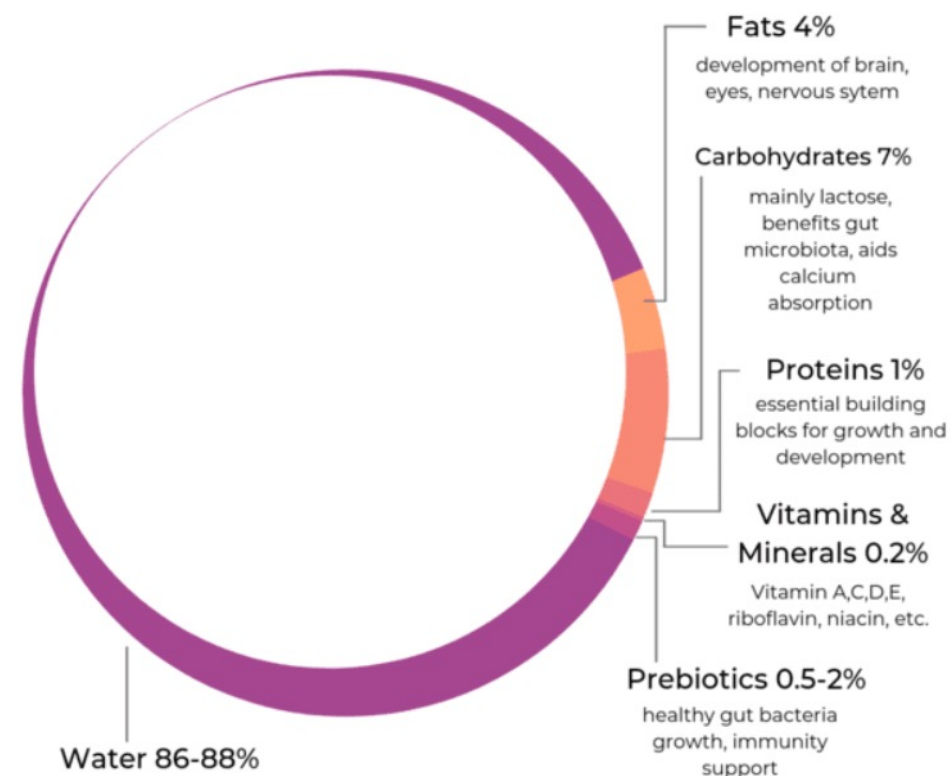
## NEWBORN STOMACH SIZE GUIDE:





# Breast Milk Composition Changes As Baby Grows

- **Colostrum:** first few days
  - Antibodies, good bacteria, and other protective cells
- **Transitional Milk:** first few weeks
  - Higher fat and lactose (carbohydrate)
- **Mature Milk:** after the first 4 weeks
  - High in proteins, lactose (carbohydrate), and other vitamins/minerals



**The nutritional content of the breast milk changes as baby grows to ensure all nutrient needs are met!**



# Mother's Breastfeeding Demand

- Women who breastfeed require approximately 500 additional kcal/day beyond what is recommended for non-pregnant women
- The recommended daily allowance for protein during lactation is an additional 25 g/day
- Both fat (vitamins A, D, K) and water-soluble vitamins (vitamins C and B) are secreted into breast milk and their levels are reduced in breast milk when there is a maternal vitamin deficiency
- The quantitative and caloric value of breast milk does not change with dieting and exercise







# Nutrients Passed from Mother into Breast Milk

## Mother's Diet to Breast Milk

- Fat (DHA and Lauric Acid)
  - DHA and Lauric Acid
- B-complex
- Vitamin A
  - 4000 to 10000 IU daily
- Vitamin D
  - 600 to 4000 IU daily
- Vitamin C
  - 120 to 2000 mg daily
- Iodine
  - 290 to 1100 mcg daily

## Mother to Breast Milk (despite diet)

- Calcium
  - 1300 to 3000 mg daily
- Iron
  - 10 to 45 mg daily
- Zinc
  - 13 to 40 mg daily
- Copper
  - 1.3 to 10 mg daily
- Folate
  - 500 to 1000 mcg daily



**Presenter:**  
**Lahnor Powell, ND, MPH**

**US Client Services: 800-522-4762**

**UK Client Services: 020.8336.7750**

***We look forward to  
hearing from you!***

***Questions?***



# Upcoming <sup>LIVE</sup> GDX Webinar Topics

Register for upcoming <sup>LIVE</sup> GDX Webinars online at [WWW.GDX.NET](http://WWW.GDX.NET)

Patient Dropship/Online Registration: <https://youtu.be/YHd0ID9GVG4>

Subscribe to our weekly Podcast at [WWW.GDX.NET/THE-LAB-REPORT](http://WWW.GDX.NET/THE-LAB-REPORT)



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.





# Functional Approach to Postnatal Depletion Syndrome

**Lahnor Powell, ND, MPH**

Atlanta Medical Education Specialist | Department of Medical Affairs | Genova Diagnostics

