Introduction to Functional Medicine:

A New Conceptual Paradigm for Addressing Mental Illness & Addiction

Presented by: The Academy for Addiction and Mental Health Nutrition
Mary Braud, MD and Christina Veselak, LMFT, CN
Why Do We Need a New Paradigm?

- Treatment failure is common in traditional psychiatry and addiction treatment
- Many medications have severe side effects and fatalities
- Health solutions are in the hand of medical professionals rather than the patient or the family
- Promotes stigma and misunderstanding
- Promotes a fatalistic attitude, which disempowers, discourages, and creates an “illness identity”

*Basic root causes are not identified or addressed*
Old Paradigm

- A team of health care specialists:
  - Psychiatrist, pulmonologist, allergist, neurologist, and gastroenterologist

- No one asks: *How is everything connected?*

- Their job: match the pill to the ill!

- We are asking the wrong questions
Do Anti-Depressants Work?

Selective serotonin reuptake inhibitors versus placebo in patients with major depressive disorder. A systematic review with meta-analysis and Trial Sequential Analysis

“SSRIs might have statistically significant effects on depressive symptoms, but all trials were at high risk of bias and the clinical significance seems questionable. SSRIs significantly increase the risk of both serious and non-serious adverse events. The potential small beneficial effects seem to be outweighed by harmful effects.”

Jakobsen et al. BMC Psychiatry (2017) 17:58
Main Adverse Events Related to Use of Newer Generation Anti-Depressants

- Gastrointestinal (nausea, vomiting, GI bleeding)
- Hepatotoxicity and hypersensitivity reactions (dermatologic and vascular manifestations)
- Weight gain and metabolic disturbances
- Cardiovascular (QT interval prolongation, basal heart rate and HRV, hypertension, orthostatic hypotension)
- Genitourinary (urinary retention, incontinence)
Main Adverse Events Related to Use of Newer Generation Anti-Depressants

- Sweating
- Sleep disturbances
- Affective (apathy, switching into hypomania or mania, paradoxical effects)
- Suicidality
- Central nervous system (seizure threshold, extrapyramidal side effects, serotonin syndrome, headache, stroke)
- Hyponatremia
- Osteoporosis and fractures
- Bleeding
Main Adverse Events Related to Use of Newer Generation Anti-Depressants

- Discontinuation syndromes
- Ophthalmic (glaucoma, cataract)
- Hyperprolactinemia
- Risk during pregnancy and breast feeding
- Risk of malignancies
- Sexual dysfunction

By: André F. Carvalho, Manu S. Sharma, André R. Brunoni, Eduard Vieta, Giovanni A. Fava

*Psychotherapy and Psychosomatics* 2016;85:270-288
What Are the *Right* Questions?

- Are there viable alternatives to psychotropic medication?

- Is there a different way of thinking about mental illness?
The New Paradigm

- Believes that root causes exist, can be identified, and effectively treated, often by using diet, nutrients and other non-pharmaceutical means
- Believes that illness is multi-causal and therefore health is multi-factorial
  - Believes that for the brain to work optimally, it must be fed optimally!
The New Paradigm

- Believes that the body is an interconnected whole and doesn’t separate the brain from the rest of the body
- Puts power for change and health back into the hands of the patient and family
- Values the entire person, (body, mind and soul), in their entire life context
New Paradigm Pioneers

- Abram Hoffer: Orthomolecular Treatment for Schizophrenia, April 11, 1999
  The Vitamin Cure for Alcoholism: Orthomolecular Treatment of Addictions, May 1, 2009

  Dr. Hoffer was a Canadian biochemist, physician and psychiatrist who began treating patients with mental illness, with nutrients in the 1950’s. He died in 2009.

- Carl Pfeiffer, PhD, MD: Nutrition and Mental Illness: An Orthomolecular Approach to Balancing Body Chemistry, April 1, 1988
  Mental and Elemental Nutrients, January 1976

  Dr. Pfeiffer was a physician and biochemist who researched the impact of nutrients in those with chronic mental illness. He died in 1988.
New Paradigm Pioneers

- **Roger Williams, PhD**: *The Prevention of Alcoholism through Nutrition*

  Dr. Williams was a biochemist who isolated and named folate and played a role in discovering vitamin B5 and B6, and lipoic acid. He promoted the notion of biochemical individuality, which is one of the cornerstones of functional medicine. He popularized the role of nutrition in physical and mental health. He died in 1988.

- **Jeffry Bland, PhD**: Based in Gig Harbor, Washington, Dr. Jeffrey Bland has been an internationally recognized leader in the nutritional medicine field for over 25 years. Dr. Bland founded Health Comm International, Inc. in 1984, and served as its Chief Executive Officer until a merger with its strategic partner, Metagenics, in 2000. He was one of the founder of the Institute for Functional Medicine, (IFM) is one of the leaders in providing education in functional medicine to MDs and other healthcare providers.
FUNCTIONAL MEDICINE

is a personalized, systems-oriented model that empowers patients and practitioners to achieve the highest expression of health by working in collaboration to address the underlying causes of disease.
One Condition: Many Imbalances

- Inflammation
- Hormones
- Genetics & Epigenetics
- Diet and Exercise
- Mood Disorders

One Imbalance: Many Conditions

- Obesity

- Inflammation

- Heart Disease
- Mental Illness
- Arthritis
- Cancer
- Diabetes
Central Nervous System Disorders

- Major Depression
- Schizophrenia
- Bi-Polar Disorder
- Anxiety Disorder/OCD
- ADHD
- Autism Spectrum Disorders
- Addiction
- Violence
- Dementia
- Chronic Pain
Central Nervous System Disorders

- Are Complex and Multi-faceted
  - Many Causes
  - Many Influencers
  - Many Solutions
Causes and Influencers

- Nutrient Deficiencies
- Hypoglycemia
- Inflammation
- Food Intolerances
- Gut Dysbiosis
- Genetics
- Hormone Dysregulation
- Toxic Reactions
Nutrient Deficiencies as a Causal Factor

- **Feed the Brain Before Tweaking the Brain!!!**
- The brain *requires* specific nutrients in the right amounts to function. Without them it can’t function optimally!
- **What are these nutrients?**
  - Protein to create the amino acid precursors for the neurotransmitters
  - Vitamin and mineral co-factors
  - Omega 3 fatty acids, cholesterol and phospholipids for neuronal cell membrane function
  - Water
Preventing Nutrient Deficiencies

**THIS REQUIRES:**

- **Adequate Diet (Food Intake)**
  - Protein, fruits, vegetables, healthy fats, whole grains, water
  - Low calorie, low protein and low fat diets are dangerous

- **Adequate Digestion**
  - Sufficient HCL, Sufficient Bile and Pancreatic Enzymes
  - Digestive enzymes decrease as we age

- **Adequate Absorption**
  - Healthy, balanced micro-biome; integrity of endothelial cells
  - Dysbiosis has been shown to cause emotional and behavior sx (Brain Maker, by Dr. Perlmutter)
B Vitamin Deficiency Symptoms

- **B1 - Thiamine:** Mental confusion, depression, fatigue, apathy, anxiety, inability to concentrate or tolerate pain.
- **B2 - Riboflavin:** Brain & nervous system changes. Mental sluggishness, depression.
- **B3 - Niacin:** Fear, depression, suspicion, insomnia, weakness, irritability, mental confusion.
- **B5 - Pantothenic Acid:** Fatigue, disturbed sleep, depression, irritability, adrenal exhaustion.
- **B6 - Pyridoxine:** Mental confusion, depression, anxiety, insomnia, lack of hydrochloric acid, glucose intolerance, lack of dream recall.
- **B12 - Cobalamin:** Apathy, paranoia, poor memory & concentration
- **Folic Acid:** Poor digestion, constipation/diarrhea, apathy, poor memory, irritability
Mineral Deficiency Symptoms

- **Calcium:** Leg and feet cramps, irritability, tenseness, insomnia, anxiety
- **Chromium:** Diabetes, hypoglycemia
- **Iron:** Weakness, inability to concentrate, poor memory, depression
- **Magnesium:** Poor memory, insomnia, weakness, tremor, fatigue, anxiety, depression, menstrual cramps
- **Manganese:** Decreased dopamine: low energy, drive & sense of reward
- **Zinc:** Anorexia, apathy, hallucinations, confusion, depression, irritability, anger and violence, impaired memory and concentration; (low zinc leads to toxic levels of copper)
Pyroluria: A Disorder of B6 and Zinc Deficiency

- Genetic Disorder - Worsens as the patient ages and is under stress
- Symptoms are:
  - Extreme mood swings and violence
  - Moderate to severe social anxiety
  - Moderate to severe general anxiety
  - Moderate to severe depression
  - ADHD and other learning issues
- Lab Findings: Elevated levels of Kryptopyrroles in urine
- Walsh: approx. 20% of depression pts. Larson: 40-60% tested alcoholics
- Treatment: Large doses of Zinc and B6 with other supportive nutrients
Other Vitamin Deficiency Symptoms

- **Vitamin C:** Fatigue, loss of appetite, mental disorders, adrenal fatigue
- **Vitamin D:** Fatigue, depression, schizophrenia
- **Vitamin E:** Fatigue, restlessness, insomnia,
- **Choline:** Poor memory
- **Inositol:** Poor sleep, anxiety
- **Biotin:** Fatigue, depression, blood sugar impairment
Symptoms of Essential Fatty Acid Deficiency and Imbalance

- Low Omega 3s (DHA & EPA): Depression, Fatigue, Learning and Attention issues, Aggressiveness and Homicide, Post partum.
- Low GLA (a conditional essential fatty acid): Depression, Alcohol Craving
- Very Low Cholesterol: Increased homicide and suicide, Autism
Low Cholesterol and Violent Crime

- **Golomb BA¹, Stattin H, Mednick S.**
- **Author information**

**Abstract**

**BACKGROUND:**

Community cohort studies and meta-analyses of randomized trials have shown a relation between low or lowered cholesterol and death by violence (homicide, suicide, accident); in primates, cholesterol reduction has been linked to increased behavioral acts of aggression (Kaplan J, Manuck S. The effects of fat and cholesterol on aggressive behaviour in monkeys. Psychosom. Med 1990;52:226-7; Kaplan J, Shively C, Fontenot D, Morgan T, Howell S, Manuck S et al. Demonstration of an association among dietary cholesterol, central serotonergic activity, and social behaviour in monkeys. Psychosom. Med 1994;56:479-84.). In this study we test for the first time whether cholesterol level is related to commission of violent crimes against others in a large community cohort.

**RESULTS:**

One hundred individuals met criteria for criminal violence. Low cholesterol (below the median) was strongly associated with criminal violence in unadjusted analysis (Men: risk ratio 1.94, P=0.002; all subjects risk ratio 2.32, P<0.001). Age emerged as a strong confounder. Adjusting for covariates using a matching procedure, violent criminals had significantly lower cholesterol than others identical in age, sex, alcohol indices and education, using a nonparametric sign test (P=0.012 all subjects; P=0.035 men).

**CONCLUSIONS:**

Adjusting for other factors, low cholesterol is associated with increased subsequent criminal violence.
# Common Symptoms of Low Blood Sugar

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Reported Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nervousness/Anxiety</td>
<td>94%</td>
</tr>
<tr>
<td>Irritability</td>
<td>89%</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>87%</td>
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<tr>
<td>Depression</td>
<td>86%</td>
</tr>
<tr>
<td>Forgetfulness</td>
<td>69%</td>
</tr>
<tr>
<td>Insomnia</td>
<td>67%</td>
</tr>
<tr>
<td>Constant Worrying</td>
<td>62%</td>
</tr>
<tr>
<td>Anti-social behavior</td>
<td>47%</td>
</tr>
<tr>
<td>Crying Spells</td>
<td>46%</td>
</tr>
<tr>
<td>Suicidal Intent</td>
<td>20%</td>
</tr>
</tbody>
</table>
Hypoglycemia Hypothesis of Relapse

- Missing a meal may be the number one relapse trigger for all addictions!
- There are several interconnected reasons for this
Hypoglycemia Hypothesis of Relapse

1. A well-functioning PFC is crucial to sobriety
2. For the PFC to be able to create willpower, it needs an adequate supply of glucose
3. Relatively low blood sugar reflects in lower glucose supply to the PFC thus less willpower
4. Low or dropping blood sugar results in a surge of adrenaline and other stress hormones
5. These chemical impair effective signaling in the PFC
6. Executive functioning is impaired, leading to lack of use of recovery and relapse prevention skills in response to a relapse trigger
7. A hypoglycemia induced stress response may stimulate a conditioned response towards use of addictive substances and behaviors
Process of Reactive Hypoglycemia

Eating a high carbohydrate meal with lots of simple sugars

- Dramatic rise in blood sugar levels.
- Over-production of insulin
- Dramatic drop in blood sugar levels
- Release of adrenaline to release stored sugar

Symptoms and Cravings
HYPOGLYCEMIA AND NEUROPSYCHIATRIC/PSYCHIATRIC DISORDERS

Brain on Fire

Inflammation is associated with:

- Depression
- Anxiety
- Schizophrenia
- Bi-polar disorder
- PTSD
- Meth Addiction
- Alcoholism
- Chronic pain
Causes of Brain Inflammation

- Childhood and Adult Emotional/Physical Trauma & Pain
- Generalized inflammation
- Leaky gut and a leaky blood/brain barrier
- Food Intolerances and Allergies
- Bio-Toxins (Lyme & Black Mold)
- Heavy Metals and other environmental toxins
- Infectious Agents such as Bacteria, Viruses, Candida, Bacterial Debris
- Diabetes and impaired glucose metabolism
- Head trauma and loss of oxygen
Leaky Gut  ➔  Leaky Blood/Brain Barrier

- The purpose of the BBB is to protect the brain from toxic and inflammatory material.
- When intact it does this very well.
- When impaired, microscopic material and other inflammatory signals get through, creating an immune response in the brain that leads to symptoms:

  Depression, Fatigue, Anxiety, Pain, Psychosis!
What the Heck is Leaky Gut?

- The tube known as the digestive tract has several functions.
- One of these functions is to keep the world out of our bodies while allowing select nutrients to enter the body.
- This barrier is no thicker than a cell (with some mucus.)
- It is maintained through a complex interplay between our digestive cells, immune cells and the microbes that live inside the digestive tract (known as the microbiome.)
- This barrier is impacted by a number of factors: gluten, casein, medications, toxins, abnormal microbiome, and stress.
“Numerous studies have found the same kinds of features in people with anxiety disorder as those with depression: higher levels of inflammation in the gut, higher levels of systemic inflammation, lower levels of the brain’s growth hormone, BDNF, (especially in the hippocampus), higher levels of cortisol and an overreactive stress response and increased permeability of the gut.” (pg 86 in Brainmaker)

“When the balance of gut bacteria isn’t right, other biological pathways—be they hormonal, immunological or hormonal—aren’t right either!” (pg 87 Brainmaker)
Food Intolerances & Allergies

- IgE Mediated Food Allergies:
  - Fast Acting; Histamine Mediated
- IgG Mediated Food Sensitivities:
  - Up to 48 hours post consumption
  - Immune response to food particles in blood
- Gluten Intolerance: Genetic (Celiac) and Non-Genetic
- Casein Intolerance (milk protein)

**Can Cause EVERY Psychiatric Symptom!**

(Brain Allergies: The Psychonutrient Connection; by William H. Philpott, MD, 1980)
References

- Frontiers in Human Neurosciences, March 2016, Vol 10
  “Bread and Other Edible Agents of Mental Disease,” by: Bressan P, Kramer P

- Abstract
  We present the implications for the psychological sciences of the findings that, in all of us, bread (1) makes the gut more permeable and can thus encourage the migration of food particles to sites where they are not expected, prompting the immune system to attack both these particles and brain-relevant substances that resemble them, and (2) releases opioid-like compounds, capable of causing mental derangement if they make it to the brain. A grain-free diet, although difficult to maintain (especially for those that need it the most), could improve the mental health of many and be a complete cure for others.
Methylation Pathway SNPs

- Methylation runs everything in the body
- There is a complex pathway designed to produce the right number of methyl groups, managed by a series of genes
- We can be over or under methylated or both!, depending upon the combination of genetic SNPs (single nucleotide polymorphisms) occurring, leading to a series of major or minor psychiatric symptoms.
- Knowing your MTHFR status is not enough!!!
- Common SNPs are:
  - MTHFR, COMT, VDR, CBS
Resources

- **Nutrient Power**, by Dr. Walsh;
- **Depression-Free Naturally**, by Joan Mathews Larson;
- Dr. Amy Yasko and Dr. Ben Lynch (websites)
- For a thorough genetic evaluation which you can order yourself: 23&Me or Ancestry.com
  - followed by Geneticgenie.com,
  - followed by Knowyourgenes.com for comprehensive, affordable genetic testing and analysis
Reward Deficiency Syndrome

- Discovered by Dr. Kenneth Blum (*Alcohol & the Addicted Brain*, 1991)
- Is characterized by a genetically influenced deficiency in D2 receptor sites, *and other NTs that support the reward pathway*
- Leads to low dopamine activity and a resulting lack of normal enjoyment
- A genetic test identifying addiction type susceptibility is in process
**Reward Deficiency Syndrome**

- Leads to the full range of addictive behavior throughout an addicted family system:
  - Substance abuse, Eating disorders, Process disorders such as gambling and sex
  - ADHD, Tourettes, and Autism Spectrum Disorders
  - Depression and Anxiety
- Can be modified through balanced amino acid therapy, (see Synaptamine) over a period of about 10 months, sometimes longer.
Un-Happy Hormones

► Thyroid
  ► Hypothyroid: Fatigue, depression, anxiety
  ► Hyperthyroid: Anxiety, insomnia, rapid heart beat
  ► Autoimmune/Hashimoto’s Thyroiditis

► Adrenals
  ► High Cortisol at night → INSOMNIA
  ► Low Cortisol in morning → fatigue and depression

► Reproductive
  ► PMS: Often due to low blood sugar and low serotonin
  ► Post Partum Depression: Often low EFA’s, Hashimoto’s, high copper
  ► Menopause: Very high risk time for mental health and addictive disorders
Toxic Influences

- Heavy Metals
- Bio-Toxin Illness
  - Toxic Mold/Sick Building Syndrome
  - Lyme Disease
  - Candidiasis
- Environmental Toxins
  - Pesticides, Parabens, Food Additives, Glyphosphates

Toxic Burden is the Cumulative Impact of all the Above!
Toxic Influences

- Bog down detoxification pathways leading to toxic overload and inflammation
- Slow down and impair metabolic pathways such as methylation and enzymes
- Toxic metals compete with essential metals, impairing their normal function
- Negatively impact genetic expression
- Impair proper neuronal signaling
Symptoms of Heavy Metal Toxicity

- **Mood swings**- Aluminum, lead, manganese, and mercury
- **Depression**- Aluminum, lead, mercury, thallium, and tin
- **Anxiety**- Aluminum, arsenic, lead, manganese, mercury, and thallium
- **Irritability**- Aluminum, arsenic, mercury, thallium, and tin
- **Laughing/Crying**- manganese
- **Mania**- lead, mercury, and tin
- **Violence**- Aluminum, lead, mercury, thallium, and tin
- **Shyness/Social Withdrawal**- Mercury
- **Hallucinations**- Aluminum, arsenic, lead, manganese, thallium, and tin
Symptoms of Heavy Metal Toxicity

- Bizarre behavior- Aluminum, and arsenic
- Suicidal- Aluminum, arsenic, lead, and mercury
- Homicidal- Aluminum and mercury
- Confusion- Aluminum, lead, thallium, and tin
- Insomnia- Aluminum, lead, manganese, thallium, and tin
- Developmental delay- Lead, thallium, and tin.

Possible Illnesses or Symptoms Caused by Biotoxins such as MOLD

- Fibromyalgia
- Migraine headaches or chronic headaches
- Depression
- ADD/ADHD
- Chronic fatigue syndrome
- Recurrent sinus infections or chronic sinusitis
- Brain fog, aches & pains, and general yuckiness
Possible Illnesses or Symptoms Caused by Biotoxins such as MOLD

- Asthma that is unresponsive to conventional therapy,
- Autoimmune diseases such as: psoriatic arthritis, celiac disease, irritable bowel syndrome and rheumatoid arthritis
- Spots in front of the eyes, poor visual contrast sensitivity
- Hormonal imbalances
- Heavy metal toxicity
Neuro-Psychiatric Lyme Disease

Neuropsychiatric symptoms can emerge either early or late in the disseminated phase of infection.

- Cognitive symptoms, brain fog, word loss, slow processing
- Irritability, easy tearfulness, anxiety, and depression.
- Rarely, obsessive compulsive disorder, paranoia, auditory/visual hallucinations, or full blown mania.
- Sleep disturbances are common, with patients more often reporting a need for many hours of sleep, including daytime naps.
Neuro-Psychiatric Lyme Disease

- Sensory hyperarousal occurs in about 50% of patients with later stage neurologic Lyme disease, most often affecting hearing and/or vision.

- These patients may resort to wearing earplugs, sound protectors, and/or sunglasses indoors. Normal sensory stimulation may over-stimulate, causing confusion and triggering a limbic alarm as if one had been assaulted.

- Headaches are common
Empowering the Client/Patient

- Educating the client leads to a partnership between client and provider
- Creating a healing community and support system - optimal healing does not occur in a vacuum
- Stress Management Practices
- Restoring a sense of meaning and purpose for their life
- Promoting sleep, relaxation and play in restoring a strong sense of self efficacy
- Supporting a sense of spirituality and spiritual practices