Integrative Medicine and the Treatment of Childhood Mental Health Disorders

by
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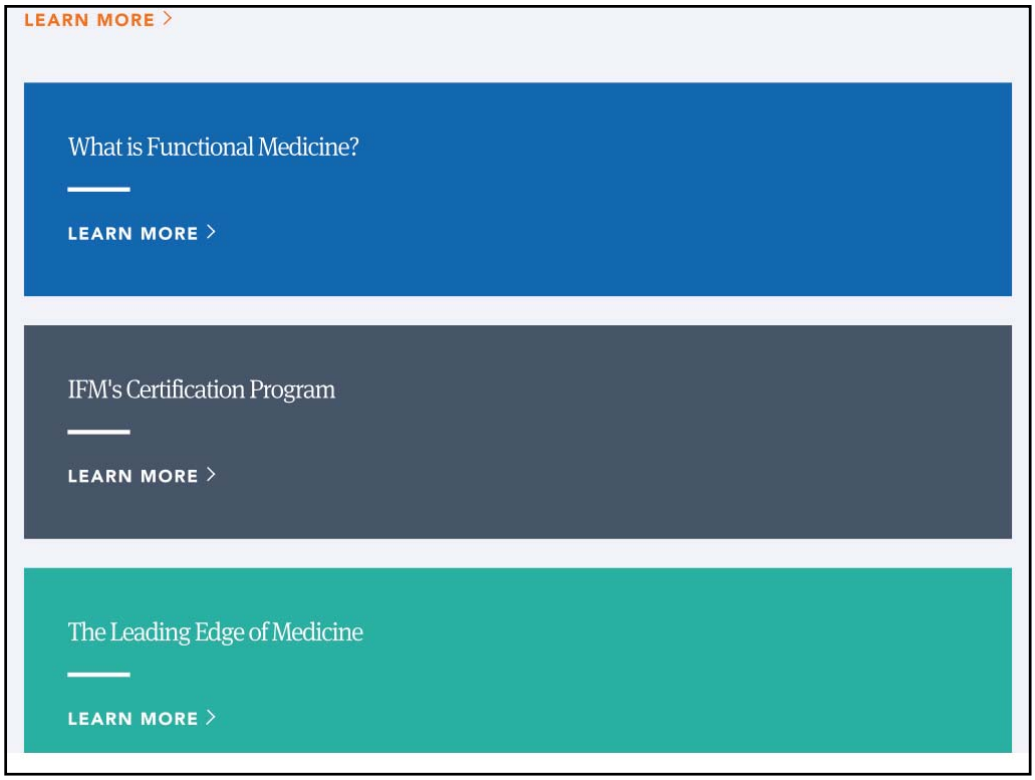
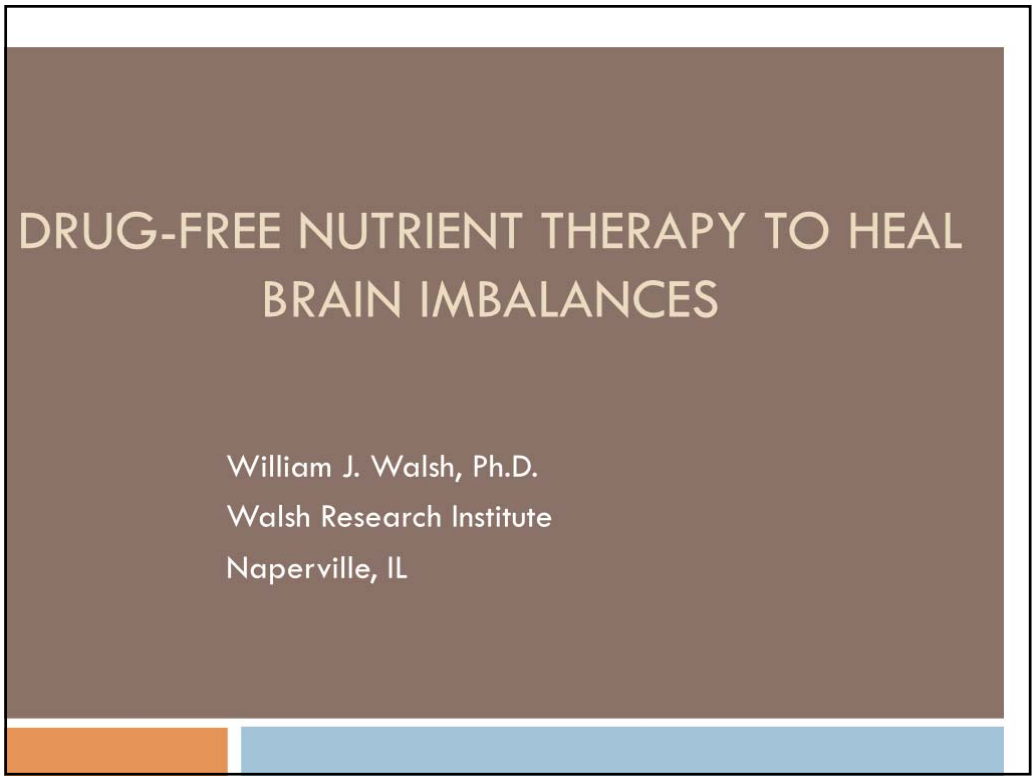
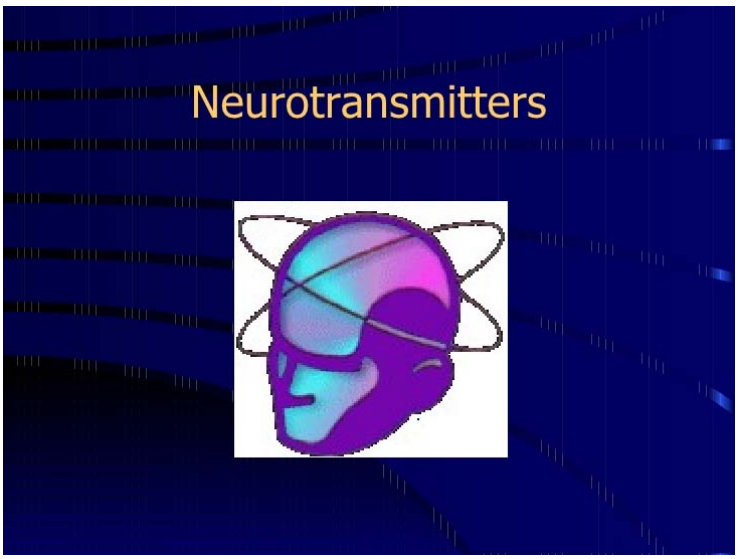


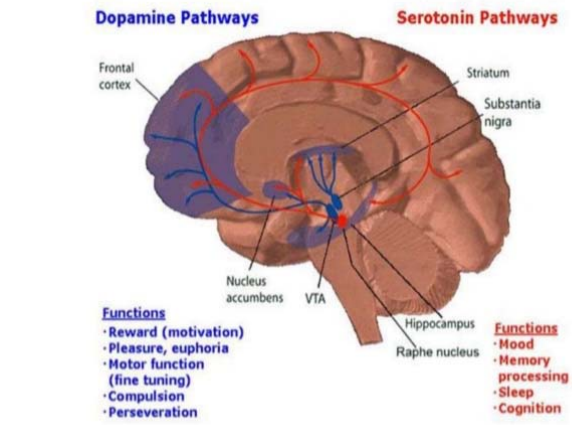
Functional Medicine looks for the root cause of conditions, not just at the the symptoms.





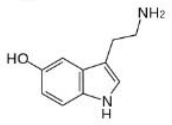
Neurotransmitters

Neurotransmitters are molecules that act as chemical signals between nerve cells.



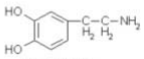
SEROTONIN (5-HT)

- Synthesized in two steps from the amino acid ***tryptophan***
- Regulates attention and other complex cognitive functions, such as sleep (dreaming), eating, mood, pain regulation.
- Too little serotonin has been shown to lead to depression, anger control etc.



DOPAMINE

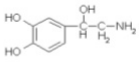
- Is synthesized in three steps from the amino acid ***tyrosine***.
- Associated with reward mechanisms in brain.
- Generally involved in regulatory motor activity, in mood, motivation and attention.
- **Schizophrenics** have too much dopamine.
- Patients with **Parkinson's Disease** have too little dopamine.



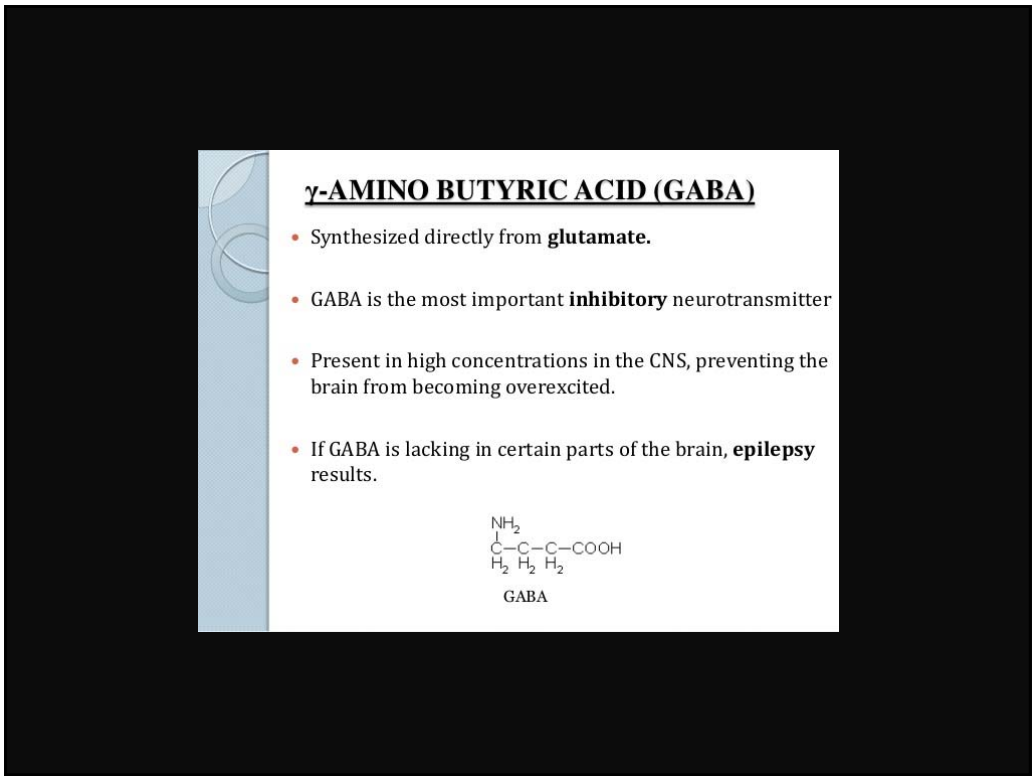
Dopamine

NOREPINEPHRINE *(nor adrenaline)*

- **Synthesized** directly **from dopamine.**
- Direct precursor to epinepherine.
- It is synthesized in four steps from tyrosine.
- Synthesized within vesicles.
- Norepinephrine is strongly associated with bringing our nervous systems into "high alert."
- It increases our heart rate and our blood pressure.
- It is also important for forming memories.



Norepinephrine



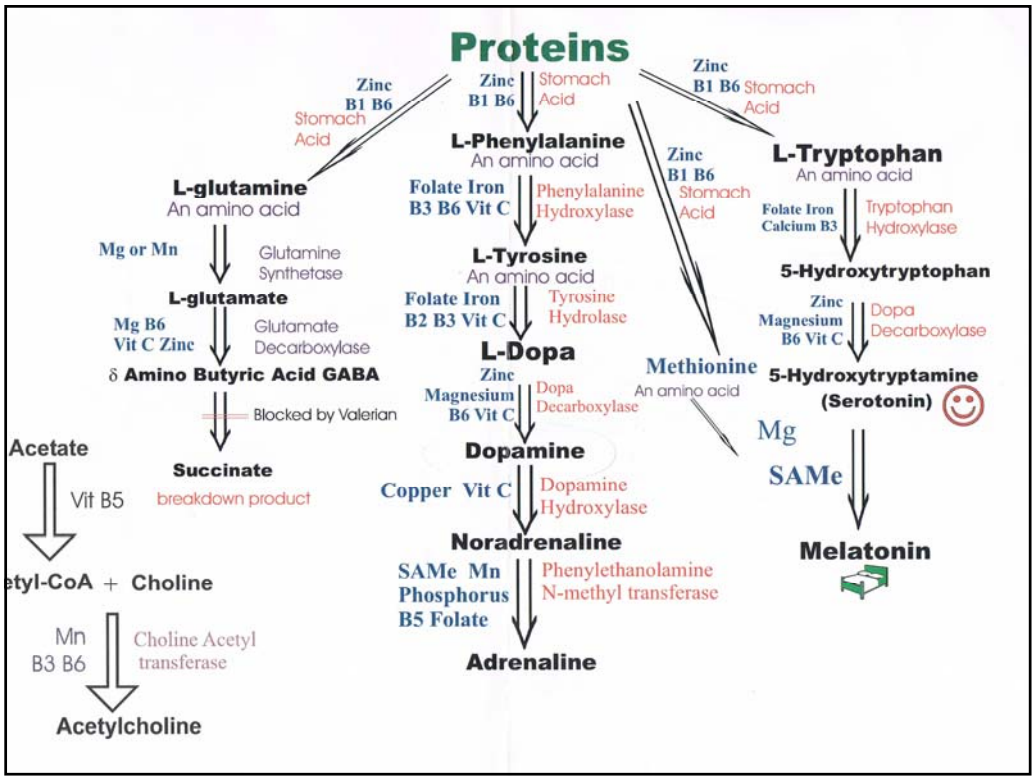
- In order to determine the cause of a mental health problem, I look for specific nutrient deficiencies and biomarkers that relate to the production of neurotransmitters. I also look for medical conditions that may mimic a mental health disorder.

Common Nutrient Deficiencies in Patients with Mental Health Disorders

- zinc
- B6
- vitamin D
- Magnesium
- Cholesterol
- Iron

- I measure nutrient levels through basic labs at Lab Corp. Insurance generally covers these labs as long as patients do not have an HMO and they have met their deductible.

- Deficiencies of zinc and B6 and magnesium lead to a lowered production of Serotonin, Dopamine, and Gaba.



The Copper / Zinc Story

- Zinc is involved in the production of Dopamine, Serotonin, and Gaba (the calming neurotransmitter)
- When Zinc is low, the body's production of certain neurotransmitters also is low.
- In addition, often copper is high when certain genetics are present. High copper turns Dopamine into Adrenaline and causes anxiety.
- I treat low Zinc, high Copper patients with fairly high doses of Zinc which causes their bodies to get rid of the copper.

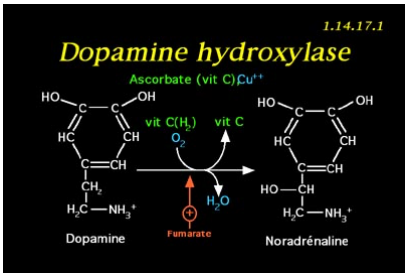
- Studies also show that children with the diagnosis of ADHD have lower serum levels of zinc than non-ADHD children.

lower zinc leads to lower serotonin, lower dopamine, and lower Gaba

Food Sources of Zinc

Seafood, spinach, meat, poultry, eggs, beans and peas, nuts and seeds.

Too much Copper - Too Much Adrenaline!



High Copper/Low Zinc

- 4 year old boy who was recently diagnosed with autism - he has a short attention span and all of the typical symptoms of autism and is in early intervention behavioral programs.
- 11 year old girl who has ADHD and severe behavioral problems - in special ed - on multiple medications which are sedating to knock down the adrenaline.
- 15 year old girl on birth control pills to control her cycle and hormones, now with severe anxiety.

Magnesium

Magnesium is also a cofactor in the production of serotonin, dopamine, and gaba.

In a population based study conducted in the U.S. from 2007 to 2011, researchers found a significant association between very low magnesium intake and depression, especially in younger adults. Studies have also shown a recent decline in magnesium intake due to the standard American diet. Magnesium rich foods include dark leafy greens, nuts, seeds, fish, beans, whole grains, avocados, yogurt, bananas, and dark chocolate.

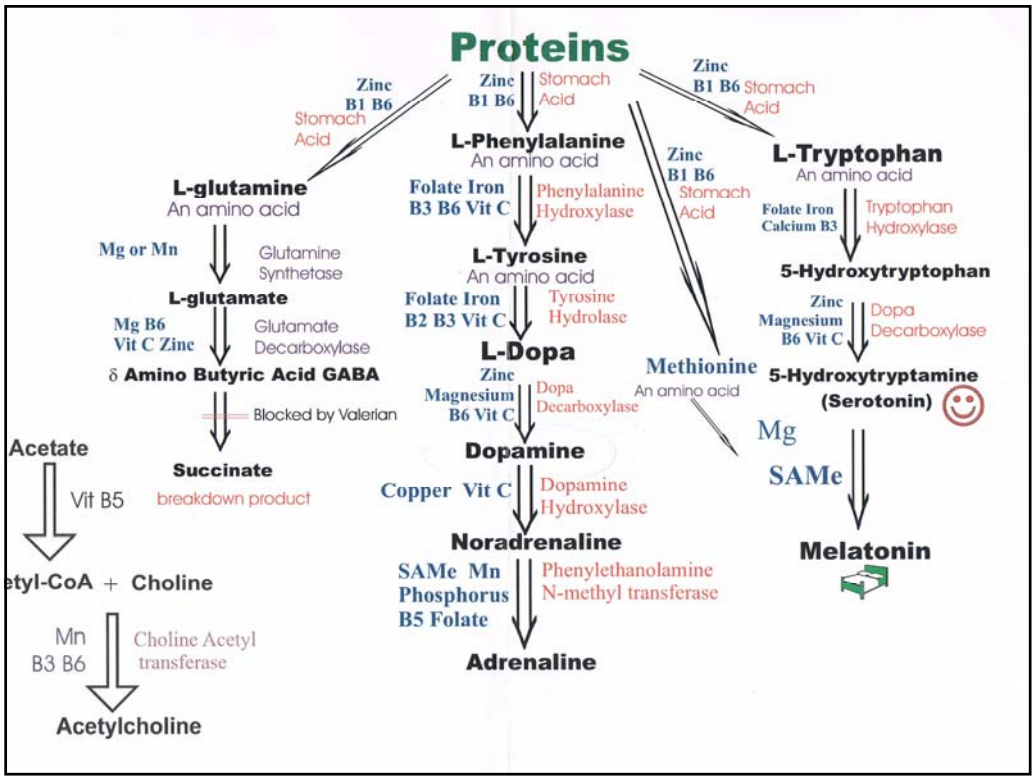
- Low magnesium levels have also been correlated with ADHD behavioral traits.

Iron

Iron is also a cofactor in the production of serotonin and dopamine.

Studies have shown an association between anemia and depression.

Iron rich foods include green leafy vegetables, lima and navy beans, lentils, avocados, beets, dates, prunes, red meat, liver, eggs, and pumpkin seeds.



Cholesterol

- Some brain experts believe that a low cholesterol may impair cognitive functions. There is not a lot of data on this as of yet. I try to keep my patients cholesterols above 150 mg/dl by encouraging the intake of cholesterol rich foods or sometimes even a cholesterol supplement. Studies show a higher incidence of low cholesterol in patients with autism.

Vitamin D

- Several studies have demonstrated that lower levels of Vitamin D are related to higher rates of depression in adolescents and adults.

- Besides nutrient deficiencies, I also look at other causes of mental health disorders. I look for pyrrole disorders, thyroid disease and methylation defects.

Thyroid Disease

- I check all of my patients for thyroid disease because hyperthyroidism can cause anxiety and hypothyroidism can cause fatigue and lethargy.

Pyrrole Disorder

- Most people, including doctors, have never heard of pyrrole disorder. Pyrroles are a byproduct of hemoglobin synthesis and do not cause any harm. However, when they are excreted in the urine, they lead to a dramatic loss of B6 and Zinc, creating very low B6 and Zinc levels and consequently low neurotransmitter levels. The amount of pyrroles excreted in the urine is genetically determined. I test all of my patients for excessive pyrroles in their urine so I can know if they have an ongoing loss of B6 and Zinc.

Symptoms present in pyrrole disorder

- poor stress control
- fearfulness
- sensitivity to bright lights and loud noises
- high irritability and temper
- little or no dream recall
- poor short term memory
- extreme mood swings
- severe inner tension

Elevated pyrroles in urine

- 7 year old with abdominal pain and school avoidance. The main lab finding is extremely elevated pyrroles in the urine.
- 6 year old boy with the diagnosis of autism - but also has rages directed at his mom - kicking, hitting, punching walls, etc. His labs show elevated pyrroles in the urine.
- 5 year old girl who is described as dark and moody, but is an angel around strangers. Positive pyrroles.

Methylation

- Methylation is a chemical reaction that occurs in every cell and involves adding a methyl group to another molecule - optimal methylation is important in neurotransmitter production and breakdown.

Methylation Disorders

I look at a whole blood histamine as a biomarker for methylation. Patients with high whole blood histamines usually have a lower production of neurotransmitters. Patients with low whole blood histamines usually have a higher production of neurotransmitters. Seventy percent of the general population has normal methylation. But, adults and children with mental health issues often have neurotransmitters which are too low, but occasionally too high.

Undermethylation - low neurotransmitters

- Extremely anxious teenagers
- 95% of the autistic population
- Most patients with ADHD
- Depressed patients
- Most patients with OCD

Overmethylation - high neurotransmitters

- patients with panic attacks
- patients with anxiety and depression
- patients who have terrible side effects when prescribed SSRIs and stimulants
- patients with hallucinations

Books to Read

- Finally Focused by James Greenblatt, MD
- Nutrient Power by William Walsh, PhD

website

- walshinstitute.org

Thank you