Healthy Foundations for Children with PANDAS and PANS

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Malmo, Sweden
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Dedicated to children with PANDAS / PANS everywhere

And to their loving courageous families and providers
My Practice

- Nurse Practitioner since 1989
- Private (group) practice, Integrative Medicine, in Orange, California
- No current academic or institutional affiliation (privileges or constraints)
- Prior to my son’s illness: mostly clinical nutrition / Food as Medicine practice
- July 7 2006 – my son’s big PANDAS break
- Took 3.5 yrs to diagnose PANDAS and another 3.5 yrs to get him better
- Began treating children with PANDAS / PANS in 2010
- 100% of my practice is PANDAS / PANS children
- Treated over 600 children (40 sibling groups) and their families

As I share some tools I use in my practice, it’s important to talk to your provider before trying them
My son’s illness taught me a lot about PANDAS / PANS

**Structural / cranial**

**Dietary / gluten**

**Immune / autoimmune/celiac**

**Infections / strep, EBV, HME, mycoplasma, staph, yeast**

**Environmental / mold**

**Recovery / trauma, limbic, psychological, neurologic, social**

This is a Multifactorial Illness

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Healthy Soil
(Not Compacted, Moist, Lots of Nutrients)

Unhealthy Soil
(Compacted, Dry, Lack of Nutrients)

Nothing happens in a vacuum

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Integrative Medicine is simply a different way of looking

- Like a look under the hood
- Focus not just on the illness, but also on big picture health of the person and the many underlying factors that contribute to health or illness regardless of and along side the illness itself
- More about regulation of the “terrain” (personal metabolism) so that the person can better endure and heal from whatever stresses or exposures may come their way
- Address biological, chemical, structural, psychological, environmental, social and spiritual aspects of health and illness
- Open to evidence-based conventional, complementary and alternative therapies from around the world
- Sometimes called Functional Medicine
There are resources in Europe
This kind of medicine is very personal to me

*It saved my life more than once*

**How did I find it? It was fate**

- 26 yrs old
- Charge Nurse Acute Peds surgical unit
- Almost Daily Headaches
- Fatigue / brain fog in the afternoons
- Told Normal for a 26 yr old
  
  "That’s why they make aspirin”
  
  “That’s why they make coffee”
- Before the days of Dr. Google
- My boyfriend knew a ‘holistic’ doctor in Boulder
What I learned from the “Holistic” Doctor

Food As Medicine

• Orthomolecular Medicine = “correct molecule” = Nutrient therapy
• Optimal health - achieved using substances already natural to the body (vitamins, minerals, amino acids, trace elements and fatty acids)
• A person’s nutritional status and environment influence the expression of genetic characteristics and which diseases they get ( “Epigenetics”) 
• Biochemical individuality– subtle differences in how bodies respond to the environment, due to variations in anatomy, physiology and genetics. Because of this, to achieve optimal health, each person requires a slightly different balance of nutrients (Dr. Roger Williams)
• Dr. Linus Pauling (1968) was ahead of his time and won 2 Nobel Prizes
Why We Need A Wide Variety Diet

50-100 trillion cells require a lot of raw materials to build.

These can only come into us through the content (nutrient value) of food- vitamins, minerals, enzymes, phytonutrients, fats...

Food takes on many meanings but our need for nutrients is black and white.
What I discovered about my habits

(I had thought they were pretty good)

Never remember drinking a glass of water ever for any reason

Currently -ate same 4 foods every day - broccoli, apples, cheese and bread
(I thought it was the 4 food groups)

Grew up with 50% of my diet coming from Hostess, Coca Cola, and Captain Crunch

I drank milk maybe once a day growing up

Often got tired after I ate which I realized is why I didn’t like to eat breakfast

Also realized I had been constipated my entire life

It would never occur to me in a million years that beans came from anything other than a can

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Foods Affect Us in Many Ways

The nutrient value and other properties of foods affect our body and our ability to produce healthy cells

Some foods contain **antioxidants** that protect cell and mitochondrial membranes, DNA

Some promote **inflammation** (excessive /processed carbs, sugars, processed meats, cooked fats, sodas)

Some support **digestion** (ferments, bitters, demulcents, fibers, peptides)

Some are **anti-inflammatory** (fish oil, fruits and veg high in antioxidants, turmeric, ginger, seeds)

Omegas and **phospholipids**-membranes and nerve transmission (egg yolks, sunflower seeds, meats, fish, hemp, chia, flax seeds, EFA)

Some support the **structure** of tissues – glucosamine, collagen, calcium, minerals

Some supply nutrients that help body systems to **process** vitamins, enzymes, glutathione

Some support cooling, warming, mucous-producing, hydrating, drying, high or low glycemic (blood sugar regulating), high or low histamine ...
What came next surprised me

Results within 4 WEEKS
Headaches completely gone
Radical improvement in energy and focus
Better sleep
No brain fog after meals
Digestion felt better, lighter
Increased overall feeling of well being and optimism
I was hooked on learning this

Treatment
• Half my plate vegetables and fruits
• Increase variety and colors of food
• Reduce/avoid cheese
• Drink water every day
• Multivitamin
• Digestive enzyme
• Include probiotic food (yogurt)
Increased nutrient **variety** / density = increase in cofactors for processing as well as for structure

More **colors** (rainbow) = PHYTONUTRIENTS to work in different systems and **REDUCE INFLAMMATION**

Reducing cheese – unlocked more **protein** options, less constipation

Water = **hydration** – common denominator of every single process and chemical the body produces

**Digestive** enzymes – break down foods, liberate nutrients, clean out GI

Yogurt – probiotics – jump-started my own **fermentation** again

How could that possibly happen?
Rainbow Diet is Simple for Kids to Understand

**RED**
Contains Lycopene, ellagic acid, Quercetin, and Hesperidin, fibre, Vitamin A and C. Some of these include watermelon, strawberries, cherries, tomatoes, red peppers, and red onions.

**ORANGE AND YELLOW**
Contains flavonoids, lycopene, potassium, vitamin C, and beta-carotene. Examples of these are oranges, grapefruit, lemons, bananas, carrots, sweet potatoes, pumpkin, and corn.

**GREEN**
Contains fibre, lutein, calcium, folate, vitamin C, Beta-carotene. Green fruits and vegetables include green apples, artichokes, arugula, asparagus, avocado, honeydew, green pears.

**WHITE**
Contains Beta-glutens, EGCG, SDG, and lignans. Examples are garlic, ginger, mushrooms, onions, white corn, turnips, white corn, and white peaches.

**PURPLE & BLUE**
Lutein, zeaxanthin, Vitamin C, fibre, flavonoids. These include eggplant, cabbage, endive, plums, and blueberries.

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Rainbow foods list https://sharonpalmer.com
Anti-inflammatory Bingo

Shoot for 5000 points daily

Phytonutrients contain anti-oxidants that protect cells and DNA from damage
Many kids I see are dehydrated... and taking so many meds and supplements

**WATER IS THE PRIMARY SUBSTRATE OF ALL CELLS TISSUES ORGANS**

- How can things possibly dissolve and move around properly?
- How can they hydrate/cleanup cells /eliminate daily waste?
- How can they secrete enough digestive enzymes?
- How can they not feel brain fog and irritable and even dizzy?
- How can they not feel hot, tired, achy, headache, tightness?
- Not enough fluid = increased Histamine (thirst mechanism) –
- Dry Mouth is a Late Sign of dehydration, not an early sign

**FIND THINGS TO DRINK THEY LIKE AND PUSH THEM**
Many kids live on carbs, don’t eat enough, or don’t eat enough protein/fat to stabilize their blood sugar … how would you feel if you did that?

- All carb diets are HIGH GLYCEMIC = turn to sugar very quickly in the blood, then bottom out
- Makes kids feel irritable, foggy, tired, restless, anxious
- Proteins, fats, fiber = LOW GLYCEMIC = Blood Sugar stability
- Kids cannot fall asleep or stay asleep if their blood sugar bottoms out – bedtime protein snack AND again if awakens
- FOOD / PROTEIN every 2-3 hours throughout the day at school, when they get home/ before after-school activities
- MUST find alternatives to processed food/grain diet – nut-based and bean-based flours and cereals
  - elanaspantry.com
  - https://thecoconutmama.com/simple-coconut-flour-muffins
- Generate a LIST of protein foods and snacks your child will eat and send to school – yogurt tubes, jerky, pre-mixed protein drinks, nuts or PBJ/ABJ/SBJ, chicken nuggets or sausage, ham/turkey rollups, cheese sticks, bean/cheese quesadilla strips / mini quiche cupcakes / full fat dairy

Look for ways to sneak in – oils, collagen/egg protein

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A + B = C
A = sickness symptoms
B = symptoms from underlying issues and habits
C = sickness symptoms + other symptoms
Healthy Fats Create Healthy Cells and Brains

FATS CREATE STRUCTURE
- Scaffolding for cell and mitochondrial membranes, brain, nerve sheath, skin, hormones, neuro-transmitters, biliary tract
- Brain = 60% fat, and at least half of that is phospholipids

FATS CREATE FUNCTION – electricity and signal transmission in diverse systems and processes
- Brain function and BBB, cell membrane transmission, DNA stability, immune function, skin barrier function, prostaglandin and hormone production, neurotransmitter signaling, absorbing fat soluble vitamins (A, D, E, K), digestive function, and bile production.

FAT IMBALANCE = BOTH not enough good fats + too many bad fats = displacement/inflammation/ poor foundation / wrong signaling / lost receptors

Fats, fatty acids and phospholipids must come in through FOOD = “essential”
OMEGA 3 (DHA) and OMEGA 6 (arachidonic) are BOTH ESSENTIAL to brain function

Currently 7228 studies on pubmed exploring fatty acids’ role in mental health

Omega 3

- Impact size of neurons, learning & memory, auditory and olfactory responses to stimuli, nerve and brain growth, anti-inflammatory pathways, synaptic pathways, neurotransmission and gene expression
- **Supplementation 1g/day** = reduction of depression, anxiety, mania, mood disorders but very high dosages did not work (possibly due displacing Omega-6 off the membrane – but they don’t work that well as membrane lipids and cause downstream problems)

Omega 6

- Structural, synaptic and membrane lipid
- Precursor of bioactive molecules that regulate inflammatory process in immune cells
- Become prostaglandins – support tissue healing, blood flow, proper clot formation, etc
- BUT Omega 6 in excess can = inflammation... anxiety, depression, mood disorders

**THE BALANCE SHOULD FAVOR OMEGA 3 but need BOTH**
Omega 3 and Omega 6
*Dietary Sources of Bioactive Lipids*

**OMEGA 3**
- Fatty fish, caviar, seaweed, algae, walnuts, seeds /cold pressed seed oils (flax, hemp, chia) and olive oil to some degree

**OMEGA 6**
- Caviar, egg yolk, avocado, (ideally raw) nuts, seeds, sunflower butter, cold-pressed olive/safflower/ seed oils

**OMEGA 6 to AVOID**
- processed / over-processed / heat extracted oils, fast foods, oils as a leftover byproduct to food processing (soy, Crisco, corn, canola and ‘vegetable’ oils are good examples), burned, rancid, Hydrogenated or Partially Hydrogenated oils, Trans-fats (artificial fats made by hydrogenation – shortening and margarine)

**PHOSPHOLIPIDS**
- beef, chicken, fish, eggs, cabbage, carrots, leafy green, edamame/ soy

**SATURATED FATS THAT DO NOT CONTAIN EFA’s**
- coconut oil / organic grass-fed butter / ghee –good but need to limit
Helpful tips to Improve Nutrition

Correct nutrient deficiencies even if you have to sneak supplements in

- Collagen protein, liquid minerals (like Energy Boost by Morning Star) – no taste
- Many B12 supplements are teeny cherry candy tasting chews or liquids
- Essential fatty acids / healthy fats to foods/smoothies and/or apply oils and phosphatidyl choline to skin (topical absorption!)
- If your child monitors the plating of food but you are able to cook their pasta, add vegetables or minerals or Elyte or Kombu seaweed into the cooking water, they won’t know!
- Try bean or lentil pasta for added protein, eggs / egg protein
- Remember that fats, minerals and vitamins act as cofactors in every biological and cellular process
- Everyone is unique and requires or tolerates different things, but basics apply to everyone

Low Appetite?
Cyproheptadine, Grow and Thrive, digestive enzymes or Professional formulas Digestive Enzyme Drops (increase vagal tone), ginger candy or tea with honey and lemon, liver support, digestive bitters, hydration!
Chemicals not normally found in nature that end up stored in body tissues are called Xenobiotics.

BIOACCUMULATION: When chemicals accumulate in the organs faster than the body can rid of them.

Many pesticides, pollutants, heavy metals and mycotoxins accumulate in fat ("lipophilic").

The brain and nerves and myelin and bone marrow are abundantly fat-based, as is breast milk and breast tissue.

Others dissolve in water so move around or accumulate in different tissues / organs.

Detoxification supports normal routes of excretion, also targeting and clearing chemicals in both fatty and watery tissues.
What are toxins and where do they come from?

- Industrial pollution
- Food additives
- Water
- Air
- Clothing
- Fumes
- Mold and other microbial byproducts
- Building materials
- Body care products
- May impact every cell and organ system
Same child after detox program

NOTICE ALL THE METALS AND CHEMICALS ARE GONE

This test: IGL (German lab)

Another good testing option: Great Plains GPL-Tox
What you can do about toxins in your home

- Find source and remove / mitigate (ie reduce plastics, use water filters, air purifiers, change cleaning products to more natural (Meyers, Thieves, Seventh Generation, Maleleuca, Ecover etc)
- Use only non-toxic bug sprays in your home (Evo-raider, Badger, Greener Ways...)
- Organic foods – focus on reducing the worst non-organic offenders:
  - Meat, Dairy, Apples, Baby Food, Strawberries/ Blueberries, Peaches / Nectarines, Celery, Peanut Butters, Potatoes, Milk, Greens, Tomatoes, Bell Peppers, Grapes, Cucumbers, Hot Peppers
  - These foods are often heavily sprayed with multiple dangerous pesticides you cannot simply wash off (no skin, or hold a lot of water...) or they concentrate pesticides (milk, meat)
What you can do about toxins in your child

Supplements are truly unique to each situation and child

Here are some of the things I use that may safely help their little bodies get rid of environmental toxins:

- **HYDRATION** - you MUST wash them away – I suggest water/electrolytes
- Bioray Line – NDF Kids Calm or Focus for little ones, NDF drops for older
- PEKANA Line – Apo hepat, Renelix, Itires, Viscum, Tox Ex – organ supports
- Beyond Balance Line – ToxEase GL or capsules, Cognease Detox
- Results RNA ACZ spray / Coseva Advanced TRS spray (zeolite)
- Binders – Chlorella pyrenoidosa, GI Detox Plus, zeobind, charcoal (careful)
- B vitamins, Glutathione, calcium d-glucarate – support pathways
- **MINERALS** – you must use minerals to replace toxins/metals from site
- Phosphatidyl choline COMPLEX – caps or liquid that must be blended in liquid, or intravenous therapy

It’s best to start with low, intermittent doses and talk to your provider before starting supplements.
Simple detox supports you can do at home

Epsom salt baths, baking soda baths, lymph scrubs or simple massage, castor oil pack on tummy followed by clockwise belly massage

Vigorous exercise for 5 minutes

Leafy greens, broccoli, lemon water, increasing fruits and vegetables in general, parsley, cilantro, ginger, celery, watermelon and many others, fermented veg and veg juice

Detox teas, ginger tea, warm broths

Far-infra red sauna, far-infra red heating pads, Biomat, Ampcoil / Bemer(?)
Mold and Mycotoxins

Molds and yeasts are a natural life form and recycle organic waste. Live in moist environments, on most agricultural products worldwide, and some thrive in water damaged building materials. Not all produce mycotoxins.

**Affects on Health**

- Allergies
- Infections / overgrowth (intestine, skin, sinus...)
- Mold illness or Sick Building Syndrome from mycotoxins
- **CIRS – Chronic Inflammatory Response Syndrome**

**CIRS – priority if present**

20-25% of people are genetically unable to breakdown and excrete mycotoxins efficiently. So if exposed, mycotoxins may build up in them, and a bunch of other downstream inflammatory cytokines run amuck.

**Mycotoxins can be** immunosuppressive, inflammatory and even carcinogenic.

Mycotoxins build up in different organs and in the endocrine system. They can also attach to DNA and literally change the way genes work or turn/off (‘epigenetic’).
Testing for Mold Illness and Mycotoxins

**CHILD**
- HLA = Genetic propensity to develop mold illness - HLA DRB1,3,4,5,DQB1 (Labcorp)
- Visual Contrast Sensitivity Testing (nervous system impact)
- Urine mycotoxins - Great Plains, Realtime Labs
- Biochemistry markers – TGFB1 / MMP9 / VIP / MSH
- MARCONS testing – special nasal culture – Microbiologydx.com
- Gene Expression by Nanostring: Inflammation Explained (GENIE) / ProgenX.com*

**HOME**
- ERMI Test – Environment Relative Mold Index
  - PCR Testing on collection of dust using cloths / vacuum bags done by you (parent)
- Air testing – good for allergens, possibly ineffective at identifying water damage molds that cling to surfaces and don’t disperse in the air

*Dr Ritchie Shoemaker, www.survivingmold.com
**ERTSMI -2 SCORECARD**

We use a point system. Units are Score/10g.

10 points can be assigned for:
- Aspergillus spee strain index >6000
- Aspergillus flavus strain index >5000
- Chaetomium globosum >2500
- Stachybotrys chartarum >125
- Wallenia sebi >1250

*6 points can be assigned for:
- Aspergillus spee strain index 1000-6000
- Aspergillus flavus strain index 1000-5000
- Chaetomium globosum 25-125
- Stachybotrys chartarum 25-125
- Wallenia sebi 500-2500

*4 points can be assigned for:
- Aspergillus spee strain index 100-1000
- Aspergillus flavus strain index 100-500
- Chaetomium globosum 5-25
- Stachybotrys chartarum 5-25
- Wallenia sebi 100-400

**ERTSMI -2 Result = 32**

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**ERTSMI -2 INTERPRETATION**

**SE = Spore Equivalents**
SE/mg = SE/milligrams of sample
Logs = Logarithms
ND = None Detected

**Sample Size**
5.0 mg

**GROUP 1: WATER DAMAGE MOLDS**
- Aspergillus flavus/oryzae: ND
- Aspergillus fumigatus: 14
- Aspergillus niger: 48
- Aspergillus ochraceus: 9,867
- Aspergillus penicillioides: 39,197
- Aspergillus restrictus: 114
- Aspergillus sclerotiorum: 3
- Aspergillus sydowi: ND
- Aspergillus unguis: ND
- Aspergillus versicolor: 250
- Aureobasidium pullulans: 442
- Chaetomium globosum: 25
- Cladosporium sphaerospermum: 12
- Eurotium (Asp.) asperellum: 686
- Paeillosporium varioides: ND
- Penicillium brevicaule/fusca: 18
- Penicillium corylophilum: 50
- Penicillium crustosum: 442
- Penicillium purpureogenum: 12
- Penicillium spinulosum: 27
- Penicillium variable: 4
- Sporidesmium brevicaule/fusca: 22
- Stachybotrys chartarum: 2
- Trichoderma viride: 25
- Wallenia sebi: 10,458

**GROUP 2: COMMON INDOOR MOLDS**
- Alternaria alternata: ND
- Acremonium strictum: 3
- Aspergillus ustus: 308
- Cladosporium cladosporioides: 80
- Cladosporium herbarum: 19
- Epicoccum nigrum: 71
- Mucor amphibius: 162
- Penicillium chrysogenum: 133
- Rhizopus stolonifer: 7

**Sum of Logs**: 13.2

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[https://www.survivingmold.com/diagnosis/hertsmai-2](https://www.survivingmold.com/diagnosis/hertsmai-2)
The following HLA-DR haplotypes were detected:

- 7-2-53 - Mold Susceptible
- 16-5-51 - Post Lyme Syndrome

DRB1: 07
DRB1: 16
DRB3: 02
DRB3: 01
DRB4: 01
DRB4:
DRB5: 02
DRB5:
DQB1: 02
DQB1: 05

http://www.myhousemakesmesick.com/hlacalc/
Key Steps to Healing Mold Illness

**REMOVE EXPOSURE**
Most Important Thing

**BIND MYCOTOXINS**
Chlorella pyrenoidosa, activated/coconut/bamboo charcoal, clay, Chitosan, Pectasol, CSM/Welchol (limit)

**PROMOTE SYSTEMIC DETOX**
Liver / GB/ kidney/ GI
Herbals, Glutathione, supports like Pure encapsulations LIVER-GI Detox Tox Ease by Beyond Balance

**TREAT COLONIZING MOLDS / YEAST (LAST)**
Anti-fungal oral medications: (nystatin, Diflucan, itraconazole, ampho B)
Herbals: Biocidin, GSE, Phytostan, SPF722, Garlic, OnGarde /Thieves, monolaurin
Nasal sprays: Silver, Seagate Olive Leaf, GSE, BEG
Biofilm – enzymes BFM-P

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GI ISSUES
Why is the digestive tract and stool sampling important for children with PANDAS and PANS?

In The GI system we can find hidden triggers for children with PANDAS/PANS

- infections (strep, bacteria, fungal, protozoa)
- Inflammatory processes (test for this)
- Food allergies / gluten reactions
- The large intestine is primarily immune /lymphoid tissue (GALT)
- Increased GI permeability can trigger autoimmunity**

Many children with PANDAS and PANS have stomach aches and food intolerances
Mutualism with our intestinal microbiota is a prerequisite for healthy existence (Slack et al, 2014)
Mystery of the Microbiota-Gut-Brain-Immune Axis

Trillions of Gut Microbes exert direct effects on CNS / immune / organs
- Bi-directional dialogue with brain / CNS / HPA axis
- Immune / autoimmune – produce and modulate cytokines / Treg / Breg
- Inflammation - reduce microglial and systemic activation markers
- Possess antioxidant and free radical scavenging abilities
- Produce and modulate neurotransmitters and neuropeptides (some strain specific)
- Influence fermentation / digestion / nutrient absorption and production

Indirect effects - Bacterial metabolites - SCFA / butyrate
- SCFA are immunomodulatory
- interact with nerve cells by stimulating the sympathetic and autonomic nervous system via GPR 41 and 43
- Butyrate crosses BBB, modulate brain development, reduce neuro-inflammation
- regulate microglia homoeostasis and are necessary for brain development and brain tissue homoeostasis
- regulate release of gut peptides and tryptophan metabolism which in turn affect gut–brain hormonal communication
- Ammonia / D-lactate – pose known health issues

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Microbiota-Gut-Brain-Immune Axis in PANDAS

Our intestines and the bacteria in them directly influence our emotions, moods and behavior, AND vice versa *

• Links between gut flora populations and mood, mental state, social behavior, repetitive behaviors, host innate and adaptive immunity, inflammation, redox capacity and oxidative stress and gene expression

• Changes in bacterial balance are associated with neurologic inflammation**

• Changes in the Gut Microbiome are associated with changes in brain development (glial cells) and Blood Brain Barrier ***


Bacteria can reduce depression and anxiety

BIFIDOBACTER LONGUM
• Reduced anxiety = celexa with stronger anti-depressant effects
• Thought to increase vagal tone
• Enhanced cognition and coordination in mice with anxiety (Savignac et al, 2014 & 2015)

LACTOBACILLUS HELVETICUS
• May attenuate depression and anxiety
• via GABA modulation in amygdala, cingulate, hippocampus, locus coeruleus, and prefrontal cortex (Bravo et al, 2011)

TRANS-GALACTOOLIGOSACCHARIDE (Prebiotic fiber)
• Promotes the growth of good bacteria, promotes fermentation
• Reduced anxiety induced by inflammation by modulating cortical 5-HT2A receptor and IL-1 beta levels in male mice (Schmidt et al, 2015)

*Examples of mood probiotic brands:*
GARDEN OF LIFE Mood+ Probiotic
LIFTED Mood Boosting Probiotic

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DEAL WITH SEVERE CONSTIPATION right away – and before adding antibiotics if at all reasonable

- Water, electrolytes, probiotics, fiber, oils, magnesium citrate, demulcent foods, aloe, rhubarb, digestive bitters, ginger honey and lemon tea before meals, Ready Set Go, NDF Pooper, CleanseMore capsules, Easy Going, hot castor oil pack to belly / massage, digestive enzymes, Restore, buyrate, fermented foods, fresh organic celery/veg juice, stool softener, meds

- If none of these are working, consider the possibility of yeast, dysbiosis, parasites, food allergies, gluten, structural eval, cranial sacral or referral to GI specialist

- Kids need to poop every day at least once or more
**GI Testing: Doctor’s Data**

**BACTERIAL CULTURE**

1. **GREEN** – Expected / Beneficial Bacteria
   - No growth of entire bacteroides group
   - Overgrowth clostridia species = metabolites (ammonia...)

2. **YELLOW** – Overgrowth
   - Strep

3. **RED** – Infection with 2 different bacteria
   - Klebsiella p. and Proteus m.
   - Gram neg bacteria can = leaky gut, autoimmune triggers
   - Produce endotoxin called Lipopolysaccharide (LPS)

**YEAST CULTURE** – No growth but

**YEAST MICROSCOPIC** – Many yeast seen
Integrity of intestinal lining maintained by ‘tight junction’ cells
Changes in microbial balance cause inflammation
Inflammation breaks down barrier proteins in tight junction cells
Undigested food particles, toxins, bacteria and fungal microbes and metabolites “leak” into bloodstream
Immune system recognizes these as invaders and sound the alarm – immune activation / autoimmune / mast cell / inflammation / pain
Altered BBB / CNS effects
Unique situation where pathogenic bacteria inducing autoimmune reactions may be treated with antibiotics – is this part of what we’re seeing with abx therapy?

Restoring microbial integrity can reverse this process
INFLAMMATORY, IMMUNOLOGICAL,
AUTOIMMUNE AND NEOPLASTIC REACTIONS
### GI Testing: Doctor’s Data (pg 2)

**Parasitology – Neg**

**Yeast - Many**

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#### Comprehensive Stool Analysis / Parasitology

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<th>Test</th>
<th>Result</th>
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<tr>
<td>Ascaris lumbricoides eggs</td>
<td>Neg</td>
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<tr>
<td>Capillaria philippinensis eggs</td>
<td>Neg</td>
</tr>
<tr>
<td>Cysticercus cellulosae eggs</td>
<td>Neg</td>
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<tr>
<td>Cryptosporidium eggs</td>
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<tr>
<td>Enterocytozoon bieneusi eggs</td>
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<td>Helminthiases</td>
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<td>Microsporidium</td>
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</tr>
<tr>
<td>Norwalk virus</td>
<td>Neg</td>
</tr>
<tr>
<td>Protozoan</td>
<td>Neg</td>
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<td>Undetermined</td>
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**Fungi**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
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<tbody>
<tr>
<td>Candida albicans</td>
<td>Many</td>
</tr>
</tbody>
</table>

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*Image of yeast cells under microscope.*
GI Testing: Doctor’s Data (pg 3)

**DIGESTION /absorption - normal**

**INFLAMMATION – normal BUT**
- Lactoferrin and calprotectin are well within the range BUT...most kids have zero or non-detectible levels = evidence of low grade inflammation

**IGA – immune activation - normal**
- often high with infection or significant food reactions like gluten, dairy
- Low – possibly inborn, but could be long standing issues, poor fermentation, low butyrate
- If low – SBI Protect, enteragam, butyrate, probiotics, colostrum, arabinogalactan, other prebiotics
GI Testing: Doctor’s Data (pg 4)

SHORT CHAIN FATTY ACIDS
End result of fermentation
SCFA’s are like The Mom - keep everyone in order
Absorb ammonia/reduce inflammation
Butyrate is part of the Gut-Brain-Immune Axis
• Modulate brain inflammation / microglial cells
during prenatal development AND BEYOND

TOTAL Butyrate low –
Acetate high (evidence of imbalance/inflammation)
The contribution of the (maternal) gut microbiome to neurodevelopment and neuropsychiatric disorders
(Warner, 2018) (through butyrate production)

Butyrate, neuroepigenetics and the gut microbiome: Can a high fiber diet improve brain health?
(Bourassa et al, 2016)

Mid-life microbiota crises: middle age is associated with pervasive neuroimmune alterations that are reversed by targeting the gut microbiome.
(Boehme, 2019) (through butyrate production)

Butyrate and SCFA’s
Link intestinal function to the brain

ORAL:
Cal-mag butyrate
Sodium butyrate
Butyrate rectal suppositories or enemas for severe IBD
Just Adding Fiber can do WHAT??

“The proposed mechanisms for the neuroprotective effects of butyrate and the diseases which may benefit from butyrate treatment or a high fiber diet.”

Increasing Butyrate Naturally

- Foods high in resistant starch such as beans, oats, and potato salad or pasta salad (potato and pasta that are eaten cold).
- Foods high in pectin such as apples, peaches and apricots.
- Foods high in inulin include chicory root fiber, Jerusalem artichoke, onions and leeks.
- One highly researched soluble dietary fiber is chicory root fiber, the most common source of inulin used in supplements. It is best known for its ability to increase bifido-bacteria (butyrate producing) in the colon.
- Probiotic foods and ferments

Adapted from Peter Finkle, 2018
GI Testing: Doctor’s Data (pg 5)

SENSITIVITY
Whenever they find an infection, they test the microbe to see what it responds to (of their choices)
Look for something in the GREEN ZONE to treat with
### Principles of GI Treatment

<table>
<thead>
<tr>
<th>Replenish</th>
<th>Put in the Good bacteria which may be missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remove</td>
<td>Take out the Bad or overgrown bacteria, yeast etc</td>
</tr>
<tr>
<td>Reduce</td>
<td>Reduce inflammation</td>
</tr>
<tr>
<td>Repair</td>
<td>Repair the environment and gut lining</td>
</tr>
</tbody>
</table>

### This Patient’s Treatment

- Spore forming + prebiotic (Megasporebiotic / megaprebiotic)
- Uva ursi for one month, followed by a month of IMN-GI, then Biocidin
- Cal-Mag Butyrate (before #2)
- Demulcent foods
- PC (90% of mucous lining)
- Mega-mucosa – add in one month
**Understanding Food Allergy / Sensitivity Testing**

**IgE Food Reactions**
- Usually – inborn allergies that produce histamine
- Mast cell activation syndrome – you may see elevated and changing IgE responses

**IgA Food Reactions**
- Inborn, gut-based reaction against food (antibody produced by the mucous membrane / intestinal lining)
- In times of GI inflammation, it's possible the gut will react against foods temporarily with more IgA reactions

**IgG Food Reactions**
- Developed sensitivities against foods due to a leaky gut
- Minute food particles drift out of intestine through the leaky lining and into the blood stream, where the immune system sees it and launches an attack against it
When to consider mast cell activation

- IgE (histamine type) food reactions that weren’t there before
- Histamine food reactions that keep changing from one day to the next
- Child cutting out more and more foods (not associated with OCD / sensory) “don’t feel good”
- Allergy symptoms with negative allergy testing
- Histamine reactions with food i.e. flushing, sweating, stomach aches, dizzy, palpitations, red ears, just not feel good with eating
- Allergists most likely to diagnose

**TESTING**

Blood: IgE, serum tryptase, histamine, chromogranin-A, food allergies

Urine: n-methyl histamine or prostaglandin-D

**TREATMENT** – often need to layer

Mast cell stabilizer medicines: ketotifen, gastrocrom
Natural: Isoquercetrin, Neuroprotek
Anti-histamines often help
DAO Enzymes (i.e. Hist-DAO) if histamine is really built up or DAO snps
Low histamine diets and probiotics
Cyrex blood test array for gluten

Gluten can attack the brain directly with no stomach involvement (TTG3 & 6)
Gluten can create a morphine-like molecule called gluteomorphine
Routine testing is INSUFFICIENT

If your child has a gluten problem, letting them eat it is making everything worse
Some special diets

**Gut and Psychology Diet (GAPS)** – excellent reboot for extreme imbalance
- True induction phase is highly limited, lots of prep BUT you can simply incorporate some of the healing foods even without doing it 100%, and you will still get a lot of benefit
- High histamine – heavy on bone broth and fermented foods

**Membrane Diet** – modified ketogenic – Patricia Kane
- Clean protein, healthy fats and oils, vegetables, very low grain but some other carbs ok

**Specific Carbohydrate Diet (SCD)** – for GI health and yeast reduction
- Limit on sugars, specific starches / carbs – focus on whole foods, veg, protein, meat, good oils

**Autoimmune Diet** – anti-inflammatory – very similar, usually grain free

**Low FODMAP** – specific for SIBO (small intestine bacterial overgrowth)
- limits foods with certain kind of sugar that can cause severe bloating

**High Alkaline Diet** – anti-inflammatory diet (50-60%+ vegetables and fruits)

**Mediterranean Diet** – anti-inflammatory
- focus on fish, veg, nuts, whole grains, olive oil
GI Yeast

• Many children have been on and off antibiotics their entire lives without probiotics or yeast treatment
• Yeast overgrowth can cause behavior issues, brain fog, stomach aches
• Yeast overgrowth in sinus, ear canal, mouth (thrush), stool, vagina, scalp – culture everything
• Blood testing candida IgM, IgA, IgG / elispot (Armin)
• Consider oral anti-fungals with long term antibiotic to prevent /treat overgrowth
  • Herbals or monolaurin– (watch out for high doses of oregano – hot)
  • Topical anti-fungals – OTC, tea tree, garlic oil, nutribiotic drops, rx
• Nystatin (locally acting in GI), Diflucan (systemic)
• Low sugar diet with natural ferments
• Routine use of multiple high dose probiotics with antibiotic use (2 or more) – shoot for 25-50 billion in smaller children/100 billion daily for bigger kids – PLUS Sacchymromyces boulardii / cal-mag butyrate
• Yeast can produce a Die-off reaction (flare of symptoms or Jarish-Herxheimer reaction) – use a binder like charcoal, pectasol, GI Detox, chlorella 1-2 hours after taking the medicine, with molybdenum
GI Take Aways

- Information about the gut, the gut-brain-immune- axis and microbiome is inconsistent and still evolving
- Do the best you can to ensure a healthy digestive tract
- Use probiotics with antibiotics – probiotics and fermentation end products may reduce depression, anxiety and inflammation
- Treat for intestinal yeast
- Use fermented foods and fiber daily
- Don’t minimize GI symptoms
- Find a way to do testing – even kids with minimal GI issues + brain issues – there IS a connection

We may never understand it in our lifetime, but we cannot ignore it
I have seen cranial and other structural work, in the hands of the most skilled professionals – be a *game changer*.

This may come from promoting the flow of blood, lymphatic drainage and CSF in the head, so everything can move and drain, and being sure that the cranium and neck are in proper alignment.

Inefficient blood and lymph drainage can put pressure on and damp down the functions of the cranial nerves especially the Vagus nerve (CN X - digestion and respiration), glossopharyngeal (CN IX - swallowing, and gag reflex) and spinal accessory nerves CN XI (motor control of the head and neck muscles)

Cranial / Craniosacral therapy decongests the drainage system to promote free flow of fresh CSF and drain waste and debris into the lymphatic system for excretion.
Reducing Infections during school

- Wash hands and change clothes after school especially during the winter
- Suck on probiotic lozenges after school, such as Metagenics Ultra Flora Children’s chewable to reduce oral microbial load
- Xylitol gum, rinses or lollipops are also antimicrobial and good for the ride home from school
- Consider simple herbal immune supports like elderberry syrup, olive leaf, ginger, Viralox spray during the winter months; IMN-B (formulated for strep by Susan McCamish)
- Prophylactic antibiotics
# Reducing Inflammation

<table>
<thead>
<tr>
<th>NSAIDs- can cause GI side effects</th>
<th>Herbs and nutrients that may suppress TH17</th>
<th>Herbal blends I like a lot</th>
</tr>
</thead>
</table>
| • use demulcents to protect mucous layer – bone broth, slippery elm, aloe, DGL, root vegetables baked or in soup (turnips, parsnips, carrots, rutabaga, potato), baked apples, prebiotics (arabinogalactan, SBI protect, Megaprebiotic / mucosa) | • Japanese knotweed, boswellia, ginger, allicin, nettles, hydrangea, curcumin (mixed experience, possibly liposomal is better)  
• Dan shen / skullcap  
• Vit D, bioflavonoids quercetin, low dose Vit A | • Inflamaway (capsules), Cyflacalm II (glycerite), Advanced Inflammation Control (capsules), Relax and Restore, Baikal/ Red Sage (woodland essence) Boswellia Phytosome, Neuro Protek |
Reducing Inflammation

Essential Fatty Acids
• SPM Active, DHA/EPA, Body Bio Balance Oil, phospholipids, butyrate

Low Dose Naltrexone LDN (may reduce glial activation)

Steroids

Reduce allergens
• Dust mite protocol, anti-histamines /air filters / sinus oils, lufeel, neti pots, xylitol nasal rinse, DHIST, Isoquercetrin
• Please AVOID foods you know your child cannot tolerate or is allergic to

Clean Eating Reduces Inflammation
Reducing Symptoms: support sleep

- Liposomal melatonin, magnesium, theanine, PharmaGABA (liposomal or lozenge), phosphatidylserine, skullcap/passion flower/lemon balm, Relax and Restore (mainemedicinals.com) California poppy, magnolia, catnip, zizyphus sleep, Somcupin, Sleep Rescue, Calm Spirit by Health Concerns, Resolve and Stabilize, consider Clear Heat by Health Concerns if child is very hot, or Quiet Calm by KAN (may help tics)(talk to your provider first)
- Warm bath with oil and essential oils like lavender, vetiver, bergamot in bath, on feet or in diffuser; massage warm coconut oil on feet/head/spine, foot massage / reflexology
- Nighty-night Tea by Traditional Medicinals – soak 2 bags covered for 20 minutes and drink
- Hypoglycemia: if your child wakes up at night or has unstable blood sugar – AVOID sugars/carbs in the evening, protein snack before bed and at wake up
- Weighted Blanket
Reducing symptoms

Reduce anxiety

- Low dose SSRI / neuro transmitter modulating supplements (like L-Theanine / PharmaGABA, 5-HTP, glycine, taurine, inositol )(consider testing through Drs Data, ZRT or Meridian labs)
- Magnesium, Chinese skullcap / passion flower / lemon balm, ashwaghanda, ANS/CNS spray, NeuroImmune Stabilizer (methylation) cream, Psy-stabil, Rescue remedy, Dan shen, phosphatidyl serine, magnolia
- All the anti-inflammatories
- Increasing Detox supports may help dramatically

Reduce fatigue

- Adaptogenic herbs as eleuthero, ashwaghanda, schisandra, holy basil, licorice, Juvecal, Vital or Power Adapt, or adrenal tissue like cytozyme-AD for severe fatigue, post steroid fatigue, rebound
- Homeopathics like HAD adrenal drops, Bioactiv Adrenal drops, Pekana Supren, Energetix Adrenal Tone
Reducing symptoms

Reduce stress

• Extra fluids, minerals, cooked foods, baths, oils consumed and rubbed on skin, extra sleep, less sugar, modified school attendance or other activities, throwing a ball, playing badminton in the backyard, bike, dance at home
• Body centered therapies – cranial, structural, lymphatic, massage, acupressure
• Cognitive Behavioral Therapy; Family Support; PT, OT (motor and sensory or spatial issues)
• Any possible ways of remembering to find or create JOY or humor even for a minute

Parents

• You MUST find ways to stay connected to each other
• Find ways to connect to others to reduce the isolation - online, support groups, gym or yoga class, force yourself to get outside or to participate in any possible activity you can retain to feel normal
• THERAPY FOR SUCCESS and STRENGTH – Family / Marital / Personal
Parent Support Groups*

62 support groups in 36 states

11 International groups (Australia, UK, Italy, Netherlands, Canada)

106 Facebook Support Groups

“PANDAS moms on Facebook people my world where my friends used to be”

*http://www.pandasnetwork.org/research-resources/support-groups/
Recovery

Repairing the Damage

• Neurological Retraining / Repatterning / Neurofeedback
• Cognitive Behavioral Therapy
• PTSD and trauma therapy
• Somatic or Body centered therapies (Feldenkrais, Alexander Technique, Mastugova, Bowen etc)
• Limbic Retraining – DNRS, Brain spotting
• Family therapy
• Plenty of EFA’s and phospholipids for mitochondrial and cell membrane rehabilitation
• Continue GI supports / be sure there is no yeast left behind
Recovery / Repatterning

Repetitive thoughts driven by brain inflammation and OCD become habits and need to be untangled and re-wired
Brain map comparison after just 2 neurofeedback sessions

- Neurofeedback uses the information as a guide to retrain the brainwaves towards optimal function.
- Addresses mental imbalances by catering to certain brainwaves and patterns.
- Over multiple sessions maybe provide decrease or elimination of pathological conditions or imbalances.
Books for educators
Books for children
Books for parents
ABOVE ALL

Never Ever Ever Give Up...
on your child or on yourself