

The Second Brain

By Faith Haley

Most people are only just beginning to hear about the importance of a healthy gut and its correlation to brain health. Scientists have begun to realize that there are so many neurons in the gut – innumerable really – that they’ve begun to call our intestines, the “second brain”.

The health of your brain depends on the health of your gut. Your intestinal organisms, the unseen world known as your microbiome, are major participants in your body’s systems i.e. neurotransmitters, immunity, inflammation, detoxification, vitamin production and nutrient absorption, whether you feel hungry or full, focusing on a task and how you metabolize calories and fat. They also determine whether you suffer from some of these maladies: allergies, asthma, ADHD, cancer, and Type 2 diabetes, to name a few. They are also behind depression as your gut produces more serotonin than your brain does. Ninety percent of the serotonin you manufacture each day is manufactured by the nerve cells in your gut! *In fact, recent research is revealing that our second brain may not be “second” at all. It can even act independently from our main brain and control many functions without the brain’s input or help.* ¹ In other words, it is affecting so much more than we ever realized. Therefore, we need to better understand what is happening in our gut and most of us need to make some major changes, especially when it comes to helping our children.

In The Neurodevelopmental Approach we discuss the importance of an organized Central Nervous System (CNS). Most would agree that the Central Nervous System is comprised of the brain and spinal cord; however, *you must also consider your intestinal or enteric nervous system, the one that’s intrinsic to the gastrointestinal tract. The central and enteric nervous systems are created from the same tissue during fetal development, and they are connected via the Vagus nerve. Vagus means “wanderer”, an apt name for this nerve, which wanders through the digestive system.* ²

Our intestinal tract and our brain are intrinsically linked.

Get Educated

Understanding the “gut-brain” connection is going to take a person a considerable amount of time and energy. You’ll need to read books like [The Microbiome Solution](#) by Dr. Robynne Chutkan and [Brain Maker](#) by Dr. David Perlmutter to more fully understand that important connection. There’s an abundance of information out there, but those two books will give you a good start.

I want to just highlight a few areas here to begin your education about eating healthy, wisely and the importance of turning your health around or the health of your child. In saying “health” I’m referring to metabolic issues that may well be one of the root causes behind your struggling child.

Something has happened to the intestines of many young Americans. Many suffer from learning disabilities, allergies, asthma, chronic constipation, IBD and anxiety to name a few common maladies many of which we see in our clients.

Over one-third of the babies in this country are being born by C-section and are being fed with formulas instead of being breast-fed for at least a year. They are developing recurring ear infections that are treated with antibiotics and more antibiotics. Many have developed autism, ADHD, and many other problems. Why? I'll try taking just a few of these like ADHD and develop not only the "why" behind them but also the dangers.

Let's Begin With ADHD

Did you know that most children in the United States with ADHD were born by C-section, not nursed or at least for very long? They have a history of ear infections for which antibiotics were prescribed. Yes, this is what they have in common. You probably don't know that around the world ADHD is rarely seen. Almost 100% of drugs used and prescribed and used are here in the United States. *New statistics have 2-3 year olds now being medicated for ADHD. No data is available to know what these medications are actually doing to the still developing brain.* ³

There are many mothers who are unable to nurse their babies because of low milk production. I had always thought the culprit was hormonal; but according to the findings of authors, the culprit lies in the gut. Milk production is a bi-product of the mother's microbiome. Yes, milk production is dependent upon the bacteria in a mother's gut. The healthier her flora, the more milk she can produce for her baby.

I want to include a note here about C-sections. Sometimes they are lifesaving, for sure. I wouldn't have some of my grandchildren if it weren't for wonderful doctors and C-sections, but they should be avoided if at all possible and not considered as a convenience option for birth. These are some of the risks:

- *A five-fold increased risk of allergies*
- *Triple the risk of ADHD*
- *Twice the risk of autism*
- *An 80 percent increased risk of celiac disease*
- *A 50 percent increased risk of becoming obese as an adult*
- *An increased risk of dementia*
- *A 70 percent increased risk of type-1 diabetes* ⁴

It's been discovered that children with ADHD have significantly lower levels of GABA, an important neuro-transmitter. GABA stands for **Gamma Amino Butyric Acid** that is manufactured in the body

by the amino acid glutamine. This is an important chemical manufactured by your gut bacteria and serves as a neurotransmitter in the Central Nervous System. It calms down nerve activity by inhibiting transmissions and normalizing brain waves. In short GABA can keep anxiety in check. Can you see the correlation? C-sections, formula-fed babies, mothers with unhealthy flora, antibiotics given too often all equal a huge mess.

What can help to make some improvement in this area? Well there are specific types of Lactobacillus and Bifidobacterium that produce GABA in abundance. Probiotics like Lactobacillus acidophilus and supplements with essential fatty acids can help gut flora repair the lining of the gut. We'll discuss some good rule of thumb options for you here shortly to help with finding a good probiotic for you and your family.

It's becoming clearer now. Antibiotics are a major threat to your microbiome and should only be used in life-threatening situations. According to Dr. Robynne Chutkan a five-day course of antibiotics can destroy a third of your gut bacteria. The process of repopulating can take months or even years. Again, reading these books is of utmost importance!

Definitions From Dr. Chutkan's book, The Microbiome Solution:

Many people do not know what probiotics are much less prebiotic foods or synbiotics. Here are some of the definitions:

***Probiotics** are defined by the World Health Organization as "live microorganisms which, when administered in adequate amounts, confer a health benefit on the host." Basically, they're live bacteria, usually ingested in pill, powder, or liquid form.*

***Prebiotics** are non-digestible food or ingredients that promote the growth of beneficial microorganisms in the intestines. In other words, they're food for your gut bacteria. Examples of prebiotics include oats, bananas, onions, garlic, leeks, asparagus, and artichokes.*

***Synbiotics** are a combination of prebiotics and probiotics that are found primarily in fermented foods such as pickles, sauerkraut, kimchi, and kefir. In addition to being good food for gut bacteria, they also provide significant amounts of live bacteria themselves. Cabbage, for example is high in indigestible plant fiber that can nourish gut microbes, but when fermented to sauerkraut, it also provides Lactobacillus species. 5*

New Science:

Not all conditions can be improved by using a probiotic; it is a new science after all. However, conditions that have seen improvements are as follows: IBS, leaky gut, sinus infections, acne,

travelers' diarrhea, UTIs, yeast infections and there may also be help for the following in some individuals: allergies, anxiety/depression, ADHD, autism, autoimmune diseases, chronic fatigue syndrome obesity and heart disease.

The "big obstacle" in the use of probiotics is this. It's a new science. Many microbial species remain unknown. The probiotic industry must be able to grow a culture and keep it alive on the shelf. You can't replace bacteria you can't cultivate. Probiotics are a type of medicine and therefore need to be used wisely and cannot be applied to any and all situations.

Results can vary just like they do with a person on a neuro program. The end game depends on your starting point. The longer a person has been on antibiotics, the longer a probiotics program takes to make the desired changes.

Probiotics have been around for a very long time-perhaps thousands of years. They can stimulate the immune system, reduce inflammation, help in the detoxification process, help to produce essential vitamins and improve the integrity of the gut lining.

It's important to use good probiotic formulas designed to work together as different strains of bacteria can compete with each other or interact negatively. Supervision by a doctor/professional is recommended. No one size fits all when it comes to probiotics.

Probiotic Recommendations:

Here are some good recommendations when looking for a good probiotic. Be sure to read the labels before buying. The best ones need refrigeration.

- *Probiotics need at least 50 billion CFU of these two bacteria groups: Lactobacilli and Bifidobacteria.*
- *Needs multiple compatible strains of bacteria made to work together. Should contain at least seven different strains.*
- *Needs enteric coating so bacteria will be protected from stomach acid.*
- *Shelf life is important – needs to be refrigerated or at least the better ones do. 6*

There are other qualities to consider but those are the main ones. I took a look at the probiotic that I, personally have been using lately. It only had 20 billion CFUs, didn't need to be refrigerated and

had about 10 different strains, that I'm assuming are working together. I decided to use up what I have here and then invest in a better probiotic now that I realize the importance of doing so.

Take Inventory

On page 175 of Dr. Chutkan's book, [The Microbiome Solution](#) there's a chart – *Table 12-3* that tells you all about the different strains in common probiotics. It's very informative giving you information about the importance of each one and where they are found naturally. For instance, *Streptococcus thermophiles is found in fermented milk products such as yogurt and can help digest lactose in the intestines.* ⁷ Now that's informative! I certainly have a lot of friends who could benefit from that piece of information, don't you! So check it out!

When there's been an alteration of our microbial community through antibiotics, food and drink, daily medications and not to mention our stressful, overscheduled lives, it's a good thing to take inventory and decide the best course of action to get back on track again. It's essential to good health to have a thriving microbiome.

Testimonies

Many years ago I had a friend whose daughter almost died because her gut health was misunderstood by her doctors. She was in college, and ate a diet loaded with the typical college food of donuts, pizza, beer – typical junk. It was rare that she ate anything healthy. In fact, I remember that she ate lots of candy bars – high fructose sugar. One day she became very sick with diarrhea, went to the college infirmary and was prescribed a round of antibiotics. It looked like she was better for a while but then became ill again. Once more the doctor prescribed another round of antibiotics. She would get better for a while and then succumb again to bouts of diarrhea. Eventually she began to lose weight – lots of weight until she was forced to leave college and go home. She wasn't getting any better and had dropped down to under 100 pounds which was much less than what she was supposed to weigh. The doctors insisted that she endure one round of antibiotics after another supposing that she had some very bad bacteria that needed to be killed off in her gut. The problem was that by using so many antibiotics she no longer had any good bacteria to fight off disease and she was overrun with bad bacteria. Her weight continued to drop until she weighed a mere 77 pounds. By this time her parents took her to a doctor who specialized in nutrition. He gave them little hope that she would live but did the best he could. Her "starting point" was extremely low and it took a very long time, and much prayer but he *was* able to turn her microbiome around and saved her life. That doctor was Dr. Whitaker. Some of you may recognize the name. He was an early pioneer of this science. Today that sick little gal in my story is a wife and mother and someone who wouldn't touch a candy bar or an antibiotic if she was offered a million dollars to do so. She doesn't want anything to ever upset her flora ever again. She is a blessed woman who almost lost her life in a battle with an unseen enemy that had been allowed to take over her intestines. Sadly, it is for lack of knowledge that many people are perishing.

As I read Dr. Perlmutter's book I was reminded of a client I had years ago who developed Tourette syndrome after he had strep throat. Before he came down with strep he had been making great advances on his neuro program and his parents were well pleased. He has been able to organize his Central Nervous System and was making great strides. But after a bout with strep throat he went backwards in his development and the parents, not pleased a bit, dropped off the program. I've often pondered what had happened and how I could possibly have helped him. Through the years, eventually I would see more clients who seemed to suffer great setbacks after having strep. It's one reason we ask for that particular piece of information on the History Form. "Has client experienced recurring strep throat?" The question is asked so that we can address this issue with the parents.

Dr. Perlmutter had a client with a similar history to that first client I had who developed Tourette syndrome after having strep throat. You can find the complete story beginning on page 202 of Brain Maker. This is the abbreviated story with a happy ending:

A boy named Christopher came to see me at the age of 13. At the age of six he began to experience tics. He was born full-term, vaginal delivery and was breast-fed for the first year of his life. He was, however, treated with aggressive antibiotics for pneumonia at age three. At age five he has strep throat and required antibiotics once again followed by antibiotics once more for dental surgery the next year. He had once been an excellent student but his grades had begun to decline.

It was at this point that the light was turned on in my brain about the correlation between strep and learning. I had originally thought it was the strep that was the problem but it was actually the antibiotics given for strep throat that was the culprit causing a great inquisition in the gut and upsetting the balance of power for the good guys.

Now back to Dr. Perlmutter's story:

I launched into a discussion of gut health with Christopher and his mother. They were desperate as he was being ostracized in school, having many social issues. I recommended that Christopher consider taking probiotics. It was also suggested that instead of taking them orally that they should consider using an over the counter enema enriched with six capsules of a probiotic supplement. They purchased the enema on their way home and executed the plan immediately. The next morning Christopher's mother called the doctor's office insisting on interrupting the doctor's appointment with another patient. She told the doctor that Christopher had immediately become more calm and asked when they could do it again and could they increase the dosage? After that she began administering 1200 billion units of the probiotics daily by enema. The results – Christopher's Tourette symptoms virtually disappeared.

The doctor doesn't advise that every person is going to get this type of result, but it is truly food for thought, isn't it?

Dr. Perlmutter said this: *I often encounter people who say these ideas are really “outside the box,” but I take this in a positive way. I explain that the real mission is not to keep thinking and acting outside the box, but rather to make the box bigger so that these ideas will become more widely accepted and serve to benefit many more people for whom our “standard of care” is failing.* 8

Tips for a Healthy Gut

A thriving microbiome is the key to good health both to our body and our minds.

- Exercise! Your gut bugs love to exercise! It brings lots of good oxygen into the body. When your child is doing the movement activities on their neuro program they are exercising their gut bus, giving them lots of good oxygen.
- No medications if possible
- No artificial sweeteners
- No sugar – don’t feed the wrong bugs. Sugary, starchy, fat-laden diet encourages the growth of the wrong bacteria. The type food we eat depends on what we want to grow in our gut garden.
- Feed the *Bacteroidetes* bugs that associated with leanness, not the *Firmicutes* bugs that are associated with obesity. 9
- Eat lots of fiber. 25-35 grams daily
- Eat prebiotic foods like – jicama, oats, apples, nuts, flaxseeds, lentils and beans
- De-stress. Stress causes inflammation, one of our body’s biggest enemy. It increases mucus production in the stomach. It also lessens species variation. Harmful bacteria will increase our susceptibility to infection. When we get run down we get sick.
- Meditating on scriptures reminding us not to be fearful but to trust in the Lord can be very healthy for our gut garden. No yoga please!
- No antibiotics unless it’s life-threatening
- No steady junk food diet. Remember, moderation in all things is good.
- No antibacterial products in your home. They lead to an imbalance in and on your body. There’s no advantage over regular soap and water.
- Don’t be too clean! It’s better that kids eat a little dirt outside than ingest Triclosan or other chemicals from hand sanitizers and anti-bacterial products that are made for home use.
- Encourage your child’s natural inclination to get dirty – cherish, inspire, incite
- No chlorinated drinking water. Chlorine is very unhealthy for your gut. It’s like drinking Clorox!
- Try to eat foods free of hormones and pesticides.
- No GMOs in your food! That’s food that has been genetically engineered. It’s been outlawed in most countries except the United States.

That last topic - GMOs is a hot topic indeed, so here's an example for you that will be eye opening:

Biotech companies have inserted the gene for Bt toxin into foods like corn so that the corn crop can produce its own insecticide. FYI: Bt - *Bacillus thuringiensis* – a bacterium that lives in soil and produces a toxin that kills insects by making their intestines burst. Bt corn has permeated the food market by way of high fructose corn syrup. (Think about everything you have in your house that has corn syrup in it and then get rid of it!) Cows are also fed Bt corn. Originally Bt toxin, that kills insects, was thought to be destroyed in our digestive tracts. Right? Stomach acid is very strong. However, *a Canadian study found that Bt toxin was present in 93 percent of pregnant women tested; 80 percent of umbilical blood in their babies and 67 percent of non-pregnant women... 10*

Go Ahead - Get Started

There's so much to be learned. It's a must that you study for yourself and learn what role your child's microbiome is playing in his struggles to learn. It is a key piece of the puzzle.

There's just too much information to be given in a short paper about this topic. However, I'm sure that your interest has been peaked and that you will be delving into these books soon on a quest to a healthier life for yourself and your family.

Here's some good advice from Dr. Chutkan:

- Begin with her Living Dirty and Eating Clean Plan (It's a little easier than Dr. Perlmutter's – in my opinion.)
- Remove damaging practices from your life
- Replace essential bacteria with robust probiotics
- Restore gut health with good foods and appropriate nutrients

May you be blessed in your endeavors!

- 1 Brain Maker, Dr. David Perlmutter, page 27
- 2 Brain Maker, Dr. David Perlmutter, page 27
- 3 Brain Maker, Dr. David Perlmutter, page 90
- 4 Brain Maker, Dr. David Perlmutter, page 36
- 5 The Microbiome Solution, Dr. Robynne Chutkan, page 168
- 6 The Microbiome Solution, Dr. Robynne Chutkan, pages 173-174
- 7 The Microbiome Solution, Dr. Robynne Chutkan, page 175
- 8 Brain Maker, Dr. David Perlmutter, page 206
- 9 Brain Maker, Dr. David Perlmutter, page 39
- 10 The Microbiome Solution, Dr. Robynne Chutkan, page 111