Before becoming a chiropractor, I was a microbiologist and immunologist. The microorganisms that we always talked about were the microorganisms that were always feared—the ones that we needed antibiotics and vaccines for, and were a threat to us and our babies. But the pendulum is now swinging to the 99 percent of the bacteria in the world and our bodies that are our friends. We no longer need to be so paranoid and fearful of the 1 percent that can harm us. The good bacteria, if it is in fact there, will crowd out and displace the 1 percent that can cause trouble.

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STAYING THE COURSE

IMPROVING YOUR
Gut Sense
IN PREGNANCY

By Stephen Marini, D.C., Ph.D.

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I present here, as I do in my neuroimmunology class, the factors leading to optimum neuroimmune development. We do different things that disrupt the delicate balance within our nervous and immune systems. For example, the repeated indiscriminate use of antibiotics certainly interferes with the entire microbiome of the body. The normal commensals in your gastrointestinal, respiratory, urinary and vaginal tracts will be disrupted, displaced and replaced by undesirable microorganisms.

Antibiotics are one of many sources of interference to the microbiome and immune balance. Let’s look at some of the others. Most teenage girls and boys of today and of the past 30–40 years probably did not get breastfed, since the percentage of breastfed children dropped significantly after the baby-boomer generation. Add to this the ever-increasing rate of c-sections that bypass the birth canal flora, and you have a good recipe for the development of a dybiotic bowel (one that is populated by inappropriate bacteria). Since the immune system is intricately linked to the nature and balance of the bowel flora, these newborns are challenged immunologically.

A Terrible Triad

So there is, at the least, a terrible triad pattern we are now in young women. The indiscriminant use of antibiotics has had a drastic effect on their immune systems and microbiomes. Many of them were not breastfed, and not their were their mothers. Research has tracked inherited defects in the microbiome from generations not being breastfed. This has a very drastic effect on the healthy prokaryotes. And completing the terrible triad are the birth-control pills they’ve taken before they decide to have a family. All three of these have a terrible, dramatic pattern of interference on their normal microbiome, leading to bowel dysbiosis and vaginosis—a.k.a. ‘bad bacteria in the birth canal.

The capacity for having good bacteria can also be passed from generation to generation. For all who are interested in the role of the gut and its influence on the immune and nervous systems, I recommend Dr. Natasha McBride’s book, *Gut and Psychology Syndrome*. Dr. McBride covers the gamut of what is occurring in the bowel and how it can influence cognitive development of children, resulting in dyspraxia, autism, attention issues, dyslexia, depression, schizophrenia and more. Psychology syndromes are linked to the gut, and these can be inherited by virtue of a dysbiotic bowel. Dr. McBride found that 100 percent of the moms of autistic children who have abnormal gut flora have abnormal gut flora themselves, and abnormal health problems relating to it. Dysbiosis is an epidemic in our society today. The understanding of the significance of an abnormal microbiome has increased since the turn of the century and the development of the science of epigenetics.

Epigenetic Expression

With epigenetics, we’ve moved from an understanding of our bodies being totally dominated by our inherited genes to recognizing that the environment, especially our microbiome, is the major player in our biology. The Human Genome Project found that only 10 to 30 percent of who we are right now is based on our genetics. The other 80 percent is based on how we interact with our environment, our epigenetics. We’re beginning to understand that these bacteria have an epigenetic effect on our genes, resulting in different gene expressions.

There is more bacterial DNA in our bodies than actual human DNA, that says a lot about the role of bacteria in generating and evolving our systems, especially the immune system. It becomes more significant for me as an immunologist, because 80 to 90 percent of our immune system is actually located in our bowels. If the bowel is not established properly, especially in terms of the right bacteria, your immune system won’t work properly. With that said, what I’m recommending to women—especially pregnant women—and to chiropractors and holistic health practitioners, is to focus on the whole realm of preconception, prenatal and neonatal care. We are learning the things that we can do while pregnant that are essential to developing a healthy optimum immune system in a child.

Research has shown that during each of the three trimesters of one’s pregnancy, the colonies and the types of bacteria that reside in a woman’s GI tract, and more importantly in her birth canal, change dramatically. We are not entirely sure what causes these changes. Do the bacteria cause hormonal changes in the woman, or do the woman’s hormonal changes alter the bacterial population? It’s probably a synergistic effect, but as the woman progresses from her first to the third trimester, the bacteria colonies get fewer and less diverse, and there are temporarily more bad bacteria present. In the third trimester there are bacteria which help prepare Mom for birthing and are responsible for the metabolic syndrome: increased cholesterol, increased resistance to insulin, and increased inflammation.

It is vitally important that women recognize what is going on in their birth canal even before they get pregnant, and check their birth canal flora throughout, especially in that third trimester. If Mom’s birth canal is unbalanced, it can trigger premature delivery, unhealthy babies, or spontaneous abortion.

Recent studies have linked bowel flora with development and balance of the baby’s acquired immunity. It is also urgent that women opt for a natural birth because the most important way of getting good bacteria into the GI tract of their baby is having that baby pick up the good bacteria in Mom’s birth canal. The good bacteria actually line the GI tract of the baby, forming a sugary slime slick of bacteria in the baby’s bowels that protects against toxins, viruses and bad bacteria. It helps the baby neutralize any environmental toxins and optimizes the digestion of any foods that come into the GI tract from Mom.

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Birth Canal Flora

Mother Nature realizes how important it is to get a healthy microbiome in that baby's GI tract as soon as possible. I recommend that all prenatal and birth practitioners acquire a vaginal flora assessment. There are a number of labs that send out kits for prospective moms that make it simple for them to sample their vaginal fluid and check for vaginosis. Once vaginosis is determined, women can do what is necessary to remove undesirable microbes from their birth canal, as well as their GI tract, and then repopulate with the good bacteria. Early birth canal assessments also provide an excellent opportunity to find out if there is any strep bacteria or yeast in their birth canal. Strep, if eliminated early in pregnancy, will not require invasive antibiotic treatment to the baby during birth. Yeast is a nasty consequence of indiscriminant use of antibiotics, as well as prolonged use of birth-control medication. Birth-control pills generate an imbalance to the immune system. We have to rethink the process of tricking the body into thinking it's pregnant for 5 to 10 years, an obviously unnatural state.

Getting the birth canal populated appropriately before pregnancy is huge. Many holistic practitioners involved in pregnancy are urging moms to have their birth canal checked as soon as they are pondering getting pregnant, so they can avert problems even before conception. One of the newer recommendations is to not only check Mom but also Dad for a dysbiotic bowel

and health issues related to bad bacteria and yeast, as he can contaminate the birth canal. I've read that some moms who did not drink alcohol during pregnancy still had babies showing symptoms of fetal alcohol syndrome. When moms are overpopulated with yeast in their birth canal and GI tract, the yeast will ferment carbohydrates and generate alcohol, which can pass from Mom to her fetus.

In a healthy birth canal, the baby picks up all this good bacteria. But if the mom undergoes a c-section, that baby will be missing an important first meal—the birth canal flora. If Mom worked hard in getting that birth canal flora established, and winds up having a c-section, a swab of the birth canal floral could be put on the baby's lips or even applied to the areola of Mom's breasts, so when the baby goes to take the first milk, it's also getting a first meal from the birth canal. If the birth canal is not healthy, and a c-section is necessary, then liquid probiotics can suffice. It's essential that these babies get the naturally healthy balance of bacteria at birth. Once the GI tract gets out of balance from birth, it is very difficult to reestablish balance.

Breastfeeding Issues

What issues should be addressed regarding breastfeeding? Evaluate the pregnant mom's history, microbiomewise. Was she often on antibiotics as a teenager? Was she breastfed? Did she use birth-control medication for a long period of time? Was her diet such that it promoted dysbiosis? That will dictate how proactive and reactive that practitioner needs to be in terms of getting that pregnant mom ready for a healthy baby.

The colostrum also plays a huge role in laying down the foundation for a healthy immune system, establishing a healthy gut flora but also providing the neonate with the interleukins, immunoglobulins, lactoferrins, T-cell help, etc., bringing its immune system to a healthy balance. The neonate emerges from Mom with an immune system that's a bit immature, but just being exposed to that normal bacteria in the colostrum helps kick-start the immune system.

The colostrum, and thereafter the breast milk, have prebiotics and probiotics. Prebiotics are oligosaccharides, carbohydrates that the good bacteria in that baby's GI tract want to eat. So Mom will selectively feed the good bacteria, and selectively eliminate the bad bowel bacteria.

She provides the probiotics and prebiotics (a.k.a. synbiotics) her baby needs. Human milk prebiotics are also referred to as the HMOs (human milk oligosaccharides). One fucosyllactose is a specific HMO which binds to bad bacteria and allows that bad bacteria to go right out of the baby. In fact, they've isolated and synthesized that oligosaccharide from mothers milk and use it for the military. One of the bad bacteria that servicemen and -women are exposed to is campylobacter, which can cause pretty bad diarrhea issues in barracks. When GIs are given this oligosaccharide— as when babies are breastfed—the campylobacter go right out of their system.

Another important protein found in breast milk, lactoferrin, possesses very potent bacteriostatic and bacteriocidal properties conducive to keeping bad bacteria from growing. Lactoferrin is produced during pregnancy, as well, and serves different functions. It helps Mom with any iron needs, and plays a role in correcting vaginosis. It naturally gets rid of dysbiosis in Mom's birth canal without her even knowing it. A maternal infant group in Catania, Italy, is actually giving pregnant women recombinant lactoferrin: 100 to 200mg, twice a day before meals. They're following the changes in the bacterial population in birth canals, and see improvements to the birth canal microbiome. Lactoferrin even affects cervical length by funneling the birth canal, thereby preparing for the birth process.

Chemical Communication

During the neonatal period, moms are pretty tuned in to what their babies need. There's a feedback mechanism in which cytokines in the baby's saliva communicate to Mom what that baby needs, including in his or her GI tract. Additional feedback comes through Mom's senses as well. For example, every time Mom changes her baby's diaper, her sense of smell can detect the presence of abnormal bowel activity, which triggers Mom to provide synbiotics in her breast milk. Obviously, it's important for Mom to be on a diet that provides what she needs for her breast milk, and to maintain continued contact with the infant.

In six months or so, if a baby can tolerate cow's milk, get organic, grass-fed, raw milk and convert it to yogurt. Some people shy away from raw milk, but statistics show that there have been maybe 100 cases or so of raw milk toxicities or problems in the United States per year, as compared to 4 or 5 times that amount of problems in pasteurized milk. Pathways issue 28 has a great article addressing raw milk in pregnancy. If the baby cannot tolerate cow's milk, goat's milk is an option, or even vegetable hydrolates that can be converted to yogurt from the added cultures. To get the baby's healthy GI tract microbiome reinforced begins obviously with the

breast milk, then progressing to yogurt, then to kefir. Pregnant women are also urged to eat fermented foods daily to maintain their healthy microbiome.

Where do vaccines fit in to all of this? Certainly if a baby's GI tract is dysbiotic—and it seems we have an epidemic of that—the neonate's immune system will also be out of balance. You certainly don't want to vaccinate an individual who has a messed up bowel and immune system. A compromised immune system is a contraindication to vaccination. The combination of a dysbiotic bowel, an imbalanced immune system and vaccination contributes to the plethora of immune system–based health issues we face today. Dr. Natasha McBride evaluated her autistic patients and discovered 100 percent of them possessed a messed-up bowel. She believes that vaccinating children with dysbiosis explains the phenomenal rise in the autism rates in the past 20 to 30 years, as well as the dramatic increase in other psychological problems.

Neuroscience, Genova, Metametrix, and U.S. Biotek provide holistic practitioners with user-friendly kits that assess the gut and birth canal microbiome, the balance and function of the major T-cell subsets, and their interleukins, food sensitivity panels, heavy metal levels, and neuroadrenal chemicals. These assessments provide practitioners with baseline levels in which to evaluate imbalances and monitor the rebalancing outcomes. A dysbiotic bowel and the vaccination process together are very dangerous. We must focus on acquiring and maintaining healthy bowels, healthy birth canals, breastfeeding, and avoiding the indiscriminant use of antibiotics and vaccines. Providing parents with these informed choices can have an amazing effect on the future health and well-being of humans.

This article is from *Pathways to Family Wellness* magazine, Issue #40.