MIGHTY MICROBIOME

Helping your child build a strong immune system

UNIVERSITY OF CALGARY

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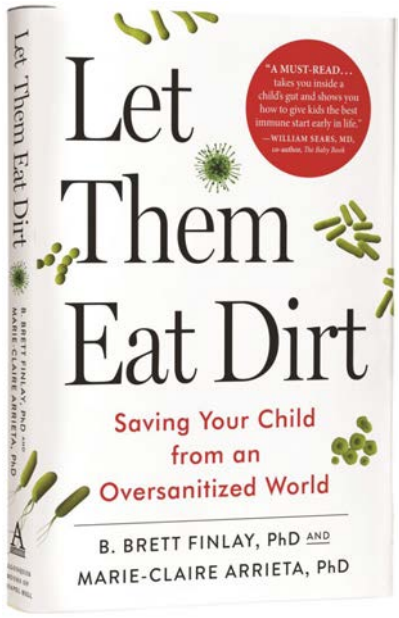
How to help your child get a mighty microbiome

Researchers are discovering that immune and metabolic diseases are associated with early-life microbiome — the trillions of bacteria, viruses, parasites and fungi that live in and around every one of us, and are key to programming our immune systems from birth on. Increased rates of asthma and allergies may be related to children being deprived of microbes that help the immune system develop. We're also learning that diet may change how our guts process food and expose children more to allergens.

Marie-Claire Arrieta, assistant professor in the departments of Physiology and Pharmacology and Pediatrics at the Cumming School of Medicine at the University of Calgary, studies interactions between the developing microbiome, the immune system and early life metabolism. The co-author of Let Them Eat Dirt: Saving your Child from an Oversanitized World offers these suggestions to help your child develop a healthy microbiome.



Aim for a vaginal birth and breastfeeding

You don’t always get to choose these things, but if you’re able to have a vaginal birth and breastfeed your baby, you’re really setting them up with a good, strong microbiome, because the mother can pass on microbiota through the vaginal canal and breast milk. Caesarean sections and formula feeding are detrimental to the developing microbiome. Until we come up with ways to help the microbiome recover from these factors, we should aim for a vaginal birth and breastfeeding as much as possible.

Watch and wait before giving antibiotics

Antibiotics are one of the greatest discoveries in modern medicine. These wonder drugs are able to treat most infections that would likely have killed you just 100 years ago.

But antibiotics are like a grenade in the gut. Instead of just killing the bacteria that make you sick, they kill both the bad and the good. Antibiotics can be especially harmful in the first few years of a child's life because they can wipe out the good microbes in charge of training the immune system and other aspects of metabolism. We know that taking antibiotics during infancy is associated with an increase of asthma, allergies and obesity.

Antibiotics are often used inappropriately. They should only be used to fight a bacterial infection, yet they're often prescribed when a child has a viral infection such as a cold, because it can be hard to distinguish between a bacterial

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and a viral infection. There is a need for new lab tests to help prescribe antibiotics in a more targeted way.

In the meantime, pediatric societies suggest using the "watchful waiting approach" for antibiotics, especially if the child is six months and older, is otherwise healthy and has mild symptoms. Help the child ride it out with painkillers and wait 48-72 hours before giving them antibiotics. The child's developing immune system might take care of the infection all on its own.

We also advise giving your child fermented foods, such as yogurt and kefir, that are full of probiotics and good bacteria, and using pediatric probiotics during and after the antibiotic treatment. Ask your health practitioner about which probiotics to use. Some have been tested with humans, but many have not.

The other big danger with antibiotics is that bacteria become resistant to them. This is a huge concern as more and more antibiotic-resistant bacteria develop into "superbugs" that appear in hospitals around the world. Antibiotics can wipe out our good bacteria and make the bad bacteria harder to treat. If we can't design better antibiotics, we could return to the days where infections are a common cause of death.

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Understand probiotics

Probiotics are live bacteria that are good for you. You can eat them in fermented foods like yogurt and kefir, or take them in probiotic pills or supplements. But they're not regulated by the Food and Drug Administration (FDA) in the United States. This makes their use confusing for users and doctors alike.

Canada offers this guide to probiotics. Here is a clinical guide that shows which probiotics have been tested in randomized and clinical trials, providing information by age and disease.

Feed your children lots of fibre

A great way to influence your child's healthy microbiome is to feed them a healthy diet, rich in vegetables and fibre. As soon as your baby starts eating solid food, start giving them vegetables, fibre and fermented foods full of probiotics.

Your child may have been exposed to many good sources of microbes, but the organisms have to be fed the right foods to flourish in the gut. When a child eats mainly refined carbohydrates (white flours and sugar) and high fats, they're absorbed by the upper part of the digestive tract only. But the trillions of microbes in the large intestine further down the digestive tract need lots of fibre and food or else they will starve.

Think about getting a dog or playing with one

Studies suggest that children raised on farms are exposed to multitudes of microbes and that this is good for decreasing the incidence of asthma and allergies and other diseases. Having a pet is one way of increasing your child's exposure to microbes.

Don’t wash your hands too much

Hand-washing is one of the best ways to stay healthy. But children do not need to wash their hands all day long. It’s fine for children to play outside barefoot and get dirty without cleaning up. Here are a few suggestions about when children do and do not need to wash their hands.

DO wash your hands:

- before eating
- after using the toilet
- after being in contact with someone sick
- after playing in the sandbox
- if you’re sick
- after touching garbage or decomposing food
- after touching animal waste
- after being in crowded places like subways or malls

DON’T wash your hands:

- after playing outside (unless you’re about to eat)
- every time you walk into the house
- after playing with other children (unless they are sick with an infection)

Go easy on the anti-bacterial products

Marie-Claire Arrieta strongly discourages the use of antibacterial soap and antibacterial gel sanitizers, saying they really don’t have any place in everyday use. In fact, a U.S. FDA committee found that using antibacterial soaps provide no benefits over regular soap and water. And gel sanitizers should only be used if there no way to wash your hands with soap and water.

The ‘five-second rule’ is fine

Generally, putting something in your mouth that has fallen on the ground is OK. But not all floors are equal. If a toy falls on the subway or mall bathroom floor, rinse it with soap and water but it if falls on your living room floor or while outside hiking, remove the visible dirt (and hair) and give it back to your child. In fact, a small study in Sweden suggests the best way to clean a pacifier is to put it in your mouth. The study found babies whose parents cleaned their pacifiers by mouth had a significantly lower risk of developing allergies at two and three years. It seems when you share your mouth microbes with a child, you’re strengthening their immune system and preventing allergies.

We don’t advocate children actually eat dirt, but we do want people to rethink the quest for cleanliness. Little children need to be exposed to abundant microbes to develop normally. Without it, they have an increased risk

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for allergies, asthma, inflammatory bowel disease, obesity, diabetes, and other disease. So you don't need to feed your kid dirt, but if they happen to eat some, don't worry about it too much either.

What about sandboxes?

The sandbox undoubtedly has a higher concentration of microbes than other parts of the playground so your child has a higher risk of contracting an infection in the sandbox than on the slide. But the risk of disease is still quite low. One possible risk is from cats mistaking the sandbox for a litter box. Cat feces has parasites that can infect humans. Take a look at the sandbox and scoop out any cat (or dog) waste, along with the sand surrounding it.

If it looks as if every pet in the neighbourhood has done their business in the sandbox, steer your child to the swings instead and call the local authorities to replace the sand. If the sandbox is in your backyard, cover it when you're not using it. And get your children to wash their hands after playing in any sandbox.

Don’t over-sanitize kids’ toys

You only need to wash your children’s toys when they look dirty or after a sick child has played with them. You just need soap and water. You don’t need to use harsh chemicals like bleach or disinfectants.