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- » Visualizing your digestive system and how the parts work together
- » Recognizing approaches to managing your gut health

Chapter 1

No Healthy Gut, No Health Glory

If your body is a temple, your gut is its grand, elaborate foyer. The gut serves as a point of entry for food, medicines, and other substances — and that's where the action begins, but not everything makes it past this entrance hall. Some substances get sent out another door promptly, and others discard layers or become transformed before gaining access to other parts of the body through the gut barrier. The digestive system is your body's primary interface with the outside environment, so it's an area that's not outside you, and not fully inside you either.

Just as managing visitors through the foyer helps keep order in the rest of the building, keeping your gut in good working order is essential for your body's overall health. This chapter dives into what gut health is, then gives an overview of what the digestive tract looks like and how it functions. Finally, this chapter covers the essentials of managing your gut health if you have symptoms or if you want to optimize an already healthy gut.

Defining Gut Health

Decades ago, the term “gut health” didn't even exist. And 10 years ago when I was starting to write about this field, people I interviewed told me the first thing that came to mind when they heard the word “gut” was a protruding belly (as in the

phrase “beer gut”). But starting around 2014 I began to hear about gut health more and more, and now, gut health is a term people use all the time — in blogs, in the media, in ads, and elsewhere.

Gut health, however, is often used without necessarily having a clear definition. This section clarifies what gut health is so you can use this definition as you navigate this book.

Discovering the meaning of gut health

So far, scientists haven’t agreed on a definition of gut health. Some proposals for the meaning of this term are as follows:

- » Absence of a diagnosed digestive disease
- » Lack of any digestive symptoms
- » Optimal gut structure and function (including the configuration of the gut microbes)

None of these proposals, however, seem to capture the connotations of gut health today and why it’s such a popular topic. Clearly many people (myself included, at one time) who are free of diagnosed digestive disease still don’t have a healthy gut. And as for using digestive symptoms as the gold standard: Some signs of an unhealthy gut, such as gut barrier permeability or mild inflammation, may not result in symptoms but are nonetheless undesired and linked with health problems later on. Even optimal gut structure and function isn’t a definition of gut health that adequately accounts for why the concept is suddenly resonating with millions around the world.



REMEMBER

Because of the general public’s growing awareness of the latest science on the gut microbiome and how digestive health relates to other body systems, gut health has come to mean something more like a state of well-being, both mental and physical, that’s enabled by what happens in the gut. Whereas the term “digestive health” narrowly refers to the digestive tract and how it functions, *gut health* extends to general wellness from the inside out. Because the gut is the body’s crossroads of digestion, immunity, and metabolic health, overall health and well-being can’t be achieved without a healthy gut. In other words, without gut health there’s no (overall) health glory.

Dietary intake is an important concept intertwined with gut health. The popular conceptualization of gut health appears to signal a new awareness about how people’s diets lead to measurable and direct consequences for physical and mental health. Diet, exercise, and other lifestyle factors were previously seen as having

vague and long-term health benefits. But now scientists have found that these factors have almost immediate effects on your gut microbes, which are part of the mechanisms for broader health effects throughout the body. Clearly eating a single donut isn't going to shorten a person's lifespan, but donuts (with their high fat and sugar content) pressure the gut microbes in a certain way so that a habit of eating donuts maintains undesirable changes in the gut, which may take years to become visible through the rest of the body and have negative health consequences.

The current meaning of gut health, then, encompasses the optimal structure and function of the gut — with the acknowledgement that it may have the capacity to promote wellness or prevent illness, especially through what you eat.

Identifying components of gut health

Unfortunately, no hard and fast measures exist to confirm you have a healthy gut — and in fact the medical community is much more skilled at defining an unhealthy gut than a healthy gut. However, a healthy gut is generally associated with some specific outcomes:

- » Having fewer sick days
- » Not requiring a restrictive diet
- » Not needing medications for digestive health or other conditions



REMEMBER

As for assessing gut health more precisely, five parameters may be relevant:

- » **Digestive function:** Whether nutrients are broken down and absorbed properly
- » **Digestive tract structure:** Whether the parts of the digestive tract are structurally intact, with no observable damage from inflammation or other injury
- » **Motility:** If materials are moving through the digestive tract appropriately and at the right speed
- » **Gut microbiota characteristics:** Whether the gut microbial composition and function is appropriate (even though a normal gut microbiota hasn't yet been defined)
- » **Gut-brain axis function:** Whether the communication channels between the gut and the brain support both gut and brain health

Scientists may one day come up with a precise list of how to measure each of these parameters to set a standard for a healthy gut, but until then, gut health is more of a judgment call. It includes conscious efforts to maintain health by using knowledge about what affects the digestive tract and its resident microorganisms, as discussed in Chapter 4 as well as Part 5.

Why gut health matters more than ever

Chronic (also called *noncommunicable*) diseases such as heart disease, cancer, respiratory disease, and diabetes, have become a global health emergency. The World Health Organization (WHO) says chronic diseases are responsible for 74 percent of deaths each year. A recent analysis estimated that, in U.S. adults older than 50, the number with a chronic disease will nearly double between 2020 and 2050 — and healthcare systems are poorly prepared to handle the increasing burden of these diseases.

But an opportunity exists to prove these predictions wrong and reverse the chronic disease trend. Importantly, the following preventable factors contribute to the risk of dying from a chronic disease:

- » Smoking
- » Physical inactivity
- » Harmful use of alcohol
- » Unbalanced diets
- » Air pollution

At least three of these factors — inactivity, alcohol, and dietary intake — are now known to have direct connections to health through the gut. Not to mention, scientists are uncovering connections between gut health and chronic diseases themselves as I explain in Chapter 5. Gut health can provide powerful day-to-day motivation to improve habits that have a direct effect on how likely you are to die from a chronic disease — and can perhaps even prevent chronic disease from occurring in the first place. Thus, gut health is at the center of a prevention revolution, empowering people to take charge of their health through diet and other aspects of their lifestyle.



REMEMBER

From this perspective, gut health is one the keys to unlocking better health and longer, healthier lives. The current popularity of gut health is a positive sign that chronic diseases in your families and communities don't have to match up with the latest bleak projections.

Picturing Your Gut

The digestive system includes all the organs and processes in your body that transform your food into energy and eliminate solid waste. A prerequisite for understanding gut health is knowing what the parts of your digestive system look like and how they function; these sections give you a preview.

Understanding how your gut works

The digestive tract is made up of the parts your food moves through — the mouth, esophagus, stomach, small intestine, large intestine, and anus — along with the accessory organs (liver, pancreas, and gallbladder) that produce the substances required to successfully digest your food.



REMEMBER

The digestive system's jobs are to break down food using different mechanical, chemical, and microbial processes, to absorb nutrients, and to send off the waste for elimination. Chapter 2 gives details on how these complex processes work.

Meeting the microbes

The 38 trillion microorganisms you harbor are critical to your body's healthy functioning — and most of them reside in your digestive tract. Chapter 3 introduces you to these microorganisms: bacteria, archaea, fungi, and viruses. Scientists have techniques for not only identifying the composition of these microorganisms in your gut, but also figuring out their functions, or what their genes allow them to do.

Working from home in the gut, the microorganisms have incredibly important jobs that affect distant parts of the body. They strengthen your gut barrier, keep your immune system in check, make vitamins, transform and break down food and medicines, help control metabolism, and even guide your development from a young age.

One of the most exciting areas of science in the past 20 years (in my admittedly biased opinion) has been the study of gut microbes and their effects on overall health. So far the best-known way to get your microbial community to support your health is to keep it diverse and resilient in the face of perturbations.



REMEMBER

Several main things are shown to influence your gut microbes and overall gut health as Chapter 4 details:

» Medications you take

- » What you eat
- » Other aspects of your lifestyle

Your gut microbiome is particularly sensitive to your everyday choices and habits, which may impact your gut health and perhaps trigger digestive symptoms.

Linking gut health to how you feel

A lot happens in the dark depths of your gut, so you may wonder how much it affects how you feel, physically and mentally. Chapter 5 goes over the known connections between the gut and other organ systems in the body: the skin, respiratory system, liver, kidney, and central nervous system. By studying these communication channels, scientists are linking many specific diseases to gut health — and especially to alterations in the complex ecosystem of intestinal microbes.

In the industrialized world, many aspects of lifestyle have the inadvertent effect of destroying gut microbes, leading some scientists to wonder if missing microbes in people's guts are responsible for the current epidemic of chronic diseases. On the bright side, evidence increasingly suggests that nurturing your gut health and keeping the microbial community diverse may have a positive impact on health, empowering you to prevent chronic disease to the extent it's possible, rather than passively waiting for it to happen.

Managing Your Gut Health

Regardless of the state of your gut health at present, strategies exist for actively managing it. If you experience regular gut symptoms, the first step is accurately describing them to a medical professional who can determine whether or not they fit the pattern of a digestive disease. Then you can take further steps, either through medical management or lifestyle changes, that can help you gain more control over your overall health and wellness as I discuss in these sections.

Identifying symptoms

Everyone experiences unwanted gut health symptoms at some time. Chapter 6 gets to the bottom of your gut symptoms and helps you know how to describe them accurately, including which symptoms are your cue to seek medical advice.

Recognizing possible diagnoses

Some gut-related symptoms signal the presence of digestive disease. Chapter 7 goes through what to expect if you're exploring a digestive disease diagnosis, including what crucial information to tell your doctor and some of the medical tests that may be necessary. That chapter also goes over some of the most common digestive diseases that doctors diagnose and the first steps to take post-diagnosis to make sure you have the most reliable information for your decision-making. I also outline the main categories of treatments for digestive diseases, the details of which should be guided by your healthcare practitioner.

Making dietary and other lifestyle changes

If you have gut symptoms without a digestive disease diagnosis, you can still follow a path of scientific evidence to lead you to appropriate *interventions* (actions you take with the intention to modify your health) that may bring you relief. Chapter 8 focuses on what to do if you don't have an official digestive diagnosis and helps you know how to progress toward better health while navigating the safety and effectiveness of different gut health products and services.

Chapter 9 delves right into the practicalities of managing gut health symptoms in different places, including at home, in public, when visiting others, at work, and while travelling. The chapter is packed with pro tips on lessening the impact of symptoms on your life, including how to leverage apps and other technology, and how to seek social supports.



REMEMBER

Diet is the controllable factor with the biggest impact on your gut health. Chapter 10 starts with the basics of nutrition and the dietary patterns that lead to better health through the actions of the gut microbes, and then covers the surprisingly simple science-backed principles for a diet that supports your gut health:

- » Every week, consume 30 or more varied plant sources of fiber.
- » Consume fermented foods every day.
- » Consume high quantities of live microorganisms — one billion or more — every day.
- » Consume low amounts of omega-6 fats and higher amounts of olive oil and other monounsaturated fats.
- » Avoid emulsifiers and noncaloric sweeteners in your diet.

For delicious inspiration on how to achieve gut-friendly dietary habits, Chapters 13–16 feature a wide array of recipes that support your gut microbes and

gut health. Chapter 20 features ten gut-friendly foods to include in your diet each week.

Look to Chapter 10 to give you the lowdown on the biotics — that is, probiotics, prebiotics, synbiotics, and postbiotics — as well as on fermented foods. There I explain how to interpret these products' marketing messages and sort out fact from fiction.



REMEMBER

Diet isn't the only way to adjust your lifestyle for better gut health with the aim of optimizing overall health. Additional powerful factors (see Chapter 11) include the following:

- » Sleep habits
- » Exercise
- » Stress management
- » Outdoor time

Small steps forward in these areas can have compounding effects on your overall health over time.

Staying proactive about gut health throughout life

Certain times of life are especially important for protecting gut health:

- » **Pregnancy:** During this time, even though the fetus is sealed off from direct contact with gut microbes, the microbes of the mother-to-be may have indirect influences. Her microbes may be influenced by a range of factors, including:
 - Dietary choices
 - Probiotics
 - Stress
 - Antibiotics
 - Infections during pregnancy
- » **Birth and the first three months of life:** Birth is the first exposure of the baby to the vast microbial world, with vaginal birth setting up the infant with a different collection of microbes than Caesarean section birth. Antibiotics and gestational age at birth strongly influence the baby's first microbial

collection, too. Subsequently in the first three months of life, diet (whether breastmilk or formula) has the biggest impact on the gut health of the infant. Various biotics may be added to formula to approximate important components of breastmilk.

- » **The first year of life:** Throughout the first year of a child's life, the factors that specially influence gut health are the transition to solid foods, antibiotics, and exposure to diverse (outdoor) microbes. The farm effect, whereby children who grow up on farms are protected from some chronic diseases later in life, is especially apparent during year one.
- » **Childhood:** From the ages of 1 to 12 years, gut health is primarily supported by the following:
 - Good dietary habits
 - Outdoor microbe exposure
 - Reduction of stress or adverse childhood experiences
- » **Adolescence:** By the time a person reaches adolescence, the gut is less dynamic and potentially less sensitive to external factors. However, a balanced diet and outdoor microbe exposure during adolescence can go a long way to supporting overall health from the gut outward.
- » **Older age:** A gut health transition happens in older age — partly because of the normal process of aging and partly because of age-related diseases as well as lifestyle changes. Diet and biotics, as well as medication management, are the primary ways to support gut health to extend health span in older age.

Science progresses over time, so you'll inevitably encounter new options for improving your gut health in the years to come — not to mention new sources of information that you'll need to evaluate. Chapter 12 empowers you to think critically about gut health products and find out which ones have been scientifically tested and shown to work. You'll be extra savvy about the science if you check out the top ten myths about gut health in Chapter 21.

