

# **TEN STEP PROGRAM FOR IMPROVING DIGESTIVE HEALTH AND PREVENTING DIGESTIVE ILLNESS**

**STEP ONE: Understanding the digestive tract as a compilation of multiple ecosystems.** To understand digestive illnesses requires a basic understanding of its composition and functions. The digestive tract is composed of multiple ecosystems. They exist in the oral cavity, esophagus, stomach, small intestine, and colon. Each ecosystem has a unique composition. Each contains a stable alliance of three components, the lining cells (epithelial barrier), the immune system, and the resident microorganisms. A stable alliance results in homeostasis, i.e., the optimal functioning of the ecosystem. Any breach of the alliance can result in digestive disease. Table 1 contains a list of factors that can alter digestive ecosystems. The remaining steps are offered to help maintain or reestablish homeostasis.

**STEP TWO: Follow scientifically recommended fiber guidelines.** Dietary fiber is the diet of choice for microorganisms that exist in the large intestine. It sustains and nourishes them allowing them to provide benefits for their human host. Without dietary fiber, microbes may turn to digesting the protein and sugar rich protective mucous layer of the intestinal tract causing increased permeability of the gut lining and allowing translocation of microbes to other areas of the body, commonly referred to as “leaky gut.”

Try to attain the daily recommended levels of fiber. The Adequate Intake (AI) recommendation for total daily fiber for men is 38 g/day and 25 g/day for women.

The book *Fiber Fueled* by Dr. Will Bulsiewicz, M.D. explains the role of fiber in maintaining intestinal ecosystems. The book is referenced at the end of this monograph. A list of 113 foods that are high in dietary fiber can be found at the website, [kramermedicalclinic.com](http://kramermedicalclinic.com).

**STEP THREE: Understand the dangers of dental plaque formation.** The digestive tract begins in the mouth. The oral cavity ecosystem contains billions of microorganisms. Unfettered proliferation of these life forms can lead to dental decay, gum inflammation (gingivitis) and can threaten the root structure of the teeth (periodontitis). Microbes that reach the supporting tissues can migrate to other organs and to implanted medical devices.

Microbes construct a “safe harbor” known as plaque that shields them from the destructive forces of brushing, flossing, water rinsing, and antimicrobial mouth washes. Plaque allows them to multiply, doubling their numbers every 20 minutes.

Frequent visits to the dental hygienist for cleanings and adherence to a rigorous home mouth hygiene program are essential.

**STEP FOUR: Be aware of drug interactions.** Taking 5 or more medications is classified as polypharmacy which includes over-the-counter, non-prescription substances. Taking more than 10 is hyperpolypharmacy. Hyperpolypharmacy has been shown to

be associated with an increased risk of both hospitalizations and serious adverse reactions.

Mixing medications runs the risk of drug toxicity. For example, the over-the-counter supplement Ginkgo Biloba may result in toxic interactions with Alprazolam (Xanax), certain anticoagulants and anti-platelet medications, anticonvulsants, antidepressants, diabetes drugs and ibuprofen.

Periodically, have your health care providers and/or your pharmacist review all your pharmaceuticals and over-the-counter supplements for potential side effects and toxic interactions that could upset the digestive ecosystems.

**STEP FIVE: Safeguard secretions.** The body produces secretions that are needed to maintain functions throughout the digestive tract. These include saliva, nasal-facial sinus and middle ear secretions, mucus, bile, pancreatic digestive enzymes, tears, stomach acid, hormones, and neurotransmitters. Alterations or elimination of one or more of these secretions can foster chronic inflammation and alteration of the intestinal ecosystems.

Medications including antihistamines, antacids, and antimicrobials, although sometimes medically required, all carry potential side effects including the alteration of body secretions leading to digestive illnesses.

**STEP SIX: Reduce exposure to environmental toxins.** Reduce contact with environmental toxins including air pollutants, tobacco smoke, recreational drugs, alcohol, and water contaminants.

**AIR:** Purify your ambient air with an air filtration unit containing a HEPA filter. There are new scientific findings that describe the multitudes of microorganisms that live in the air and the importance of ventilation in preventing illness.

**WATER:** For those who have water supplied to their residence from a deep well, a sample of their water should be analyzed annually by their county health department for bacterial contamination.

**STEP SEVEN: Maximize hydration.** Maintain hydration, preferably with distilled water. Distilled water goes through a purification process that differs from all other types of water. Distilled water is the product of steam collected from boiling water that is allowed to cool back to its liquid state. It is the purest form of water that is commercially available.

All other forms of water (purified, artesian, carbonated, spring, or filtered water) may contain traces of minerals, bacteria, pesticides, or other contaminants. Distilled water will eliminate 99.9% of them. Even distilled water may contain bacterial spores and archaea that could remain in the final product. Most manufacturers of distilled water treat the water after distillation with ozone (ozonation) and carbon filtration to further improve its purity.

The U.S. National Academies of Sciences, Engineering, and Medicine has determined that an adequate daily fluid intake for men should be about 3.7 liters of fluids per day and about 2.7 liters of fluids a day for women. The amounts can vary based

on activity, ambient temperature, and underlying health conditions.

**STEP EIGHT: Increase exercise.** Studies involving both experimental animals and humans confirm that exercise has a positive effect on intestinal microorganisms and improves the integrity of intestinal lining cells, one of the three critical components of the ecosystem. Many exercise physiologists suggest getting 150 minutes of moderate exercise spread out over 4-5 days per week.

**STEP NINE: Get adequate amounts of sleep.** Sleep is a physiologic state that is linked to the immune system and digestive disorders. In addition, short sleep duration and poor sleep quality have been associated with impaired cognitive and neurobehavioral performance. Sleep studies suggest that seven or more hours of sleep are necessary for adults.

**STEP TEN: Invest in an ounce of prevention.** The following tests and examinations should be done annually, or more often, if recommended by your health care providers.

- Complete blood count (CBC)—a test which identifies the type and number of cells in your bloodstream including white blood cells, red blood cells, and platelets.
- Liver function testing (usually included in a comprehensive metabolic profile)
- Stool analysis for microscopic evidence of blood (occult blood)
- Blood iron levels (for females during their reproductive years)
- Vitamin D and vitamin B12 levels

Individuals at “average risk” for colorectal cancer should have a colo-rectal cancer screening examination beginning at age 45 and at recommended intervals thereafter as directed by their health care providers.

#### **THE WILD CARD—GENETICS AND EPIGENETICS:**

Functioning of the digestive tract is dependent on genetics. Genes are the inherited DNA code that all humans receive from their parents defining how the body makes proteins. The digestive processes are dependent not only on the presence of those genes, but also on the state of their expression--some are “turned on” while others are “turned off”— the science of epigenetics.

Our microbes, likewise, contain genes. They, in fact, have as many as 10,000 times more genes than the number in the human genome. Alessio Fasano in his book “Gut Feelings” makes the statement “it is reasonable to assume that we are the products of these two interacting genomes. Studying one—namely the human genome-- without analyzing the other—namely the microbiome--will not provide the answers to why we develop diseases.”

#### **SUMMARY:**

- Eat “clean food”— minimally processed with reduced additives.
- Breathe “clean air”—filtered and ventilated.
- Drink “clean water”—preferably distilled, in generous amounts.

- **Cautiously allow unregulated and untested products into the body that are advertised to have medicinal value. Avoid, when possible, hyperpolypharmacy.**
- **Prevent the unfettered growth of pathogenic microorganisms in the foregut--oral cavity, esophagus, stomach, and small bowel-- with emphasis on oral hygiene and avoid substances that diminish or destroy the body's protective secretions.**
- **Nourish the proliferation of beneficial microbes in the hindgut, last portion of the small bowel and colon, with emphasis on ingesting dietary fiber.**
- **Make lifestyle modifications such as increasing sleep, increasing exercise, and decreasing stress.**
- **Avoid using recreational substances like alcohol, tobacco, recreational mind-altering products, and other harmful xenobiotics.**
- **Have preventative health testing studies done yearly and routine colorectal cancer screening exams.**
- **Use selected minerals and vitamins primarily for deficiencies.**

**Following all the above 10 steps, gives you an opportunity to improve your digestive health and prevent illness. The program is not, however, a guarantee that all your specific digestive issues will resolve. A change in symptoms should always be called to the attention of your health care providers.**

**READING REFERENCES:**

Blaser, Martin J., M. D. *Missing Microbes: How the Overuse of Antibiotics Is Fueling Our Modern Plagues*. First edition, Henry Holt and Company, LLC, 2014.

Bulsiewicz, Will, M.D.: *Fiber Fueled*, First edition, Penguin Random House, 2020.

Dettmer, Philip. *Immune: A Journey into The Mysterious System That Keeps You Alive*, First edition, Random House, 2021.

Fasano, Alessio /Flaherty, Susie: *Gut Feelings: The Microbiota and Our Health*, First edition, MIT Press, 2012.

Yong, Ed. *I Contain Multitudes: The Microbes Within Us and A Grand View of Life*. First US edition, Bodley Head, 2016.

**Table 1. FACTORS THAT MAY IMPACT DIGESTIVE ECOSYSTEMS**

Genetics	Nutrients
Antibiotics	Non-nutrients--xenobiotics
Pharmaceuticals	Oxygen concentrations
Hydration	Temperature
Acidity	Motility
Biofilm formation	Radiation
Vitamins	Minerals
Air pollutants	Water pollutants
Travel	Stress
Recreational Drugs	Sleep
Abdominal surgery	Hormones

<b>Circadian rhythms</b>	<b>Food additives</b>
<b>Food preservatives</b>	<b>Immunizations</b>
<b>Activity--exercise level</b>	<b>Chemotherapy</b>
<b>Gases</b>	<b>Enzymes</b>
<b>Microorganisms-types, numbers, and location</b>	<b>Infections and inflammation with emphasis on oral cavity</b>
<b>Inborn errors of metabolism</b>	<b>Toxins</b>
<b>Ischemia</b>	<b>Malignancy</b>
<b>Body hygiene</b>	

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