PILLARS OF GI HEALTH

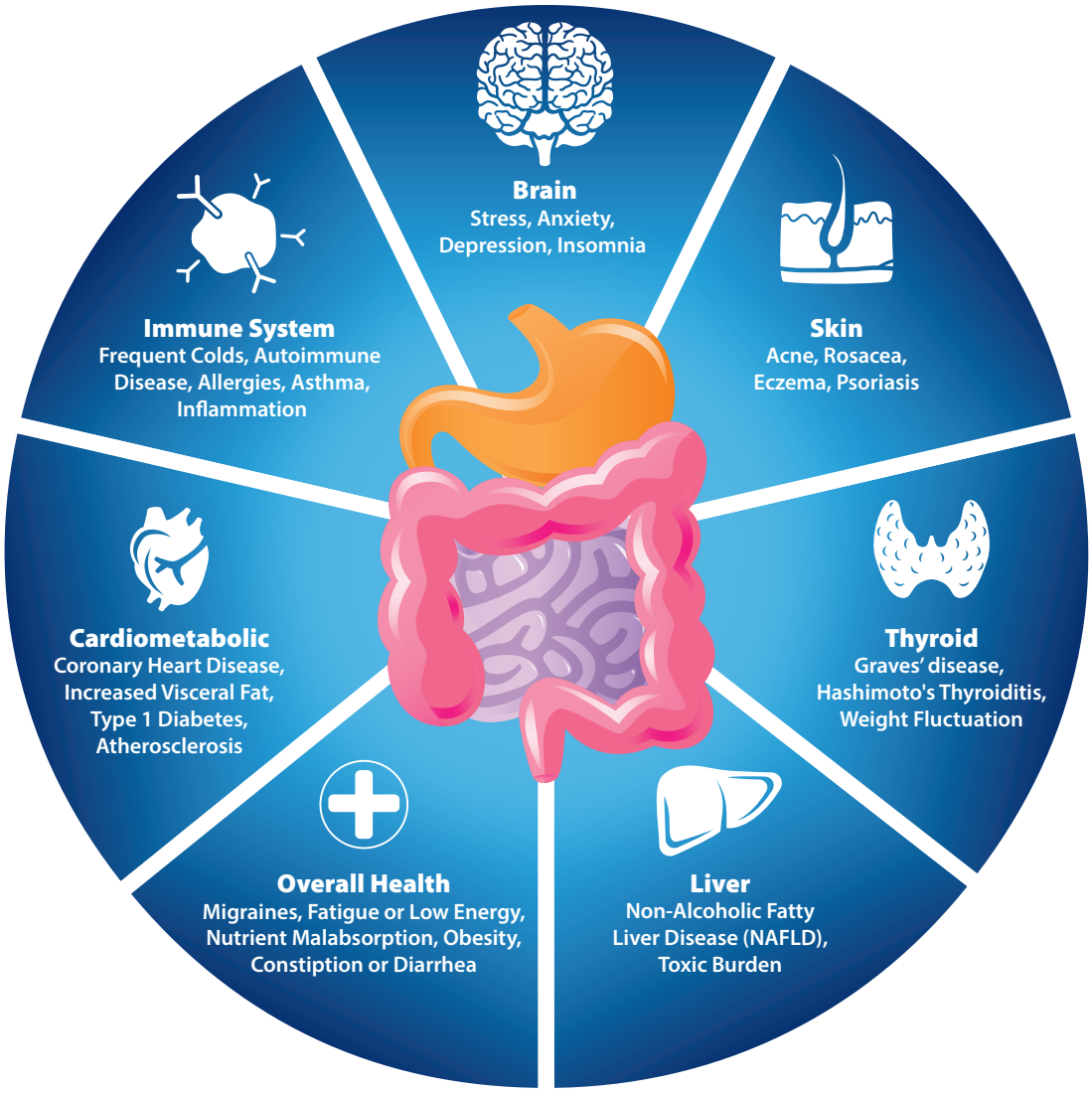
In-Practice Guide

Follow the QR Codes Throughout the Pillars of GI Health In-Practice Guide for Additional Video Content

VIDEO:
PILLARS OF
GI HEALTH PROGRAM

Introduction to the Gastrointestinal System

The role of the gastrointestinal system and its contribution to health and disease has gained much momentum over the years and has become a key area of focus for clinicians all over the world. In our lifetimes, we will consume between 30 to 50 tons of food and host more microbial cells in our gut than human cells in the rest of our bodies. The GI tract is tasked with the responsibilities of extracting the appropriate nutrients we need to thrive, maintaining an appropriate balance of helpful and harmful microbes, and acting as a conduit for waste removal. At the same time, the healthy GI tract prevents the entrance of harmful substances into the body. Because of the association between the GI system and the rest of the body, dysfunction in the gastrointestinal system can lead to many, seemingly unrelated, chronic conditions that may be best addressed after (or along with) known gastrointestinal dysfunctions.



One of the most common phrases used within naturopathic, functional and related integrative medical communities is "heal the gut first." This reminds clinicians of the frontline role the gastrointestinal system plays in nearly every facet of health. While reading this guide, it is necessary to recognize that restoring and maintaining bodily homeostasis begins and ends with proper gastrointestinal function.

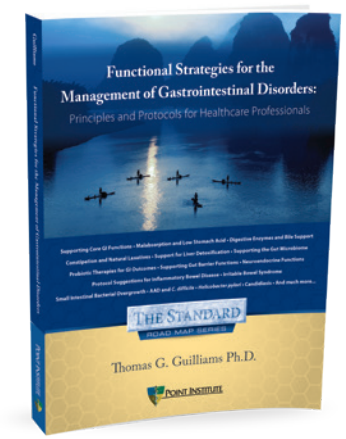
The Pillars of GI Health

The GI tract is responsible for extracting the nutrients needed to thrive and maintain an appropriate balance of helpful and harmful microbes, while at the same time working with the immune system to prevent the entrance of harmful substances into the bloodstream. The GI tract has core functions, which we call the Pillars of GI Health. The health of the entire gastrointestinal system is built upon these pillars and their interrelationship.

When all pillars are working properly and in harmony with one another, few symptoms are likely to occur. However, when one area is compromised, it places strain upon the other components. It can be difficult to determine which area triggered the downfall, since the relationship between each of these functions is interdependent. Understanding the role each pillar plays in gastrointestinal health will help you determine the root cause of dysfunction and make appropriate recommendations for your patients.

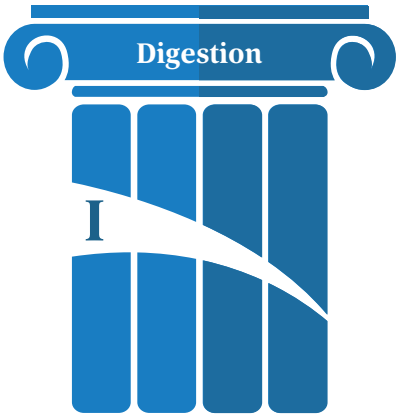
The Pillars of GI Health Program provides clinical tools and a framework to help you weave through the many complex chronic gastrointestinal complaints seen today. It takes a patient-centered lifestyle and functional medicine approach that offers unique tools to guide your assessment, as well as valuable resources to help you educate and reinforce important lifestyle and functional medicine concepts with patients.

This In-Practice Guide acts as a reference to help you find the underlying factors affecting these patients, providing clinical case studies and protocols for some of the most challenging cases, small intestine bacterial overgrowth (SIBO), IBS, IBD, GERD and more. The clinical case studies in this guide include patient overviews, first office visits and subsequent follow-ups, sample lab tests, treatment protocols and therapeutic lifestyle intervention strategies.



ADDITIONAL EDUCATIONAL RESOURCES

The Pillars of GI Health In-Practice Guide provides an overview of gastrointestinal dysfunction, clinical case studies and protocols. The Standard Road Map, *Functional Strategies for the Management of Gastrointestinal Disorders*, provides a comprehensive review of core functions of the GI system and the latest research on this topic. It serves as an excellent companion to this guide and references to it are found throughout.


Digestion
I


Elimination
II


Microbial Balance
III

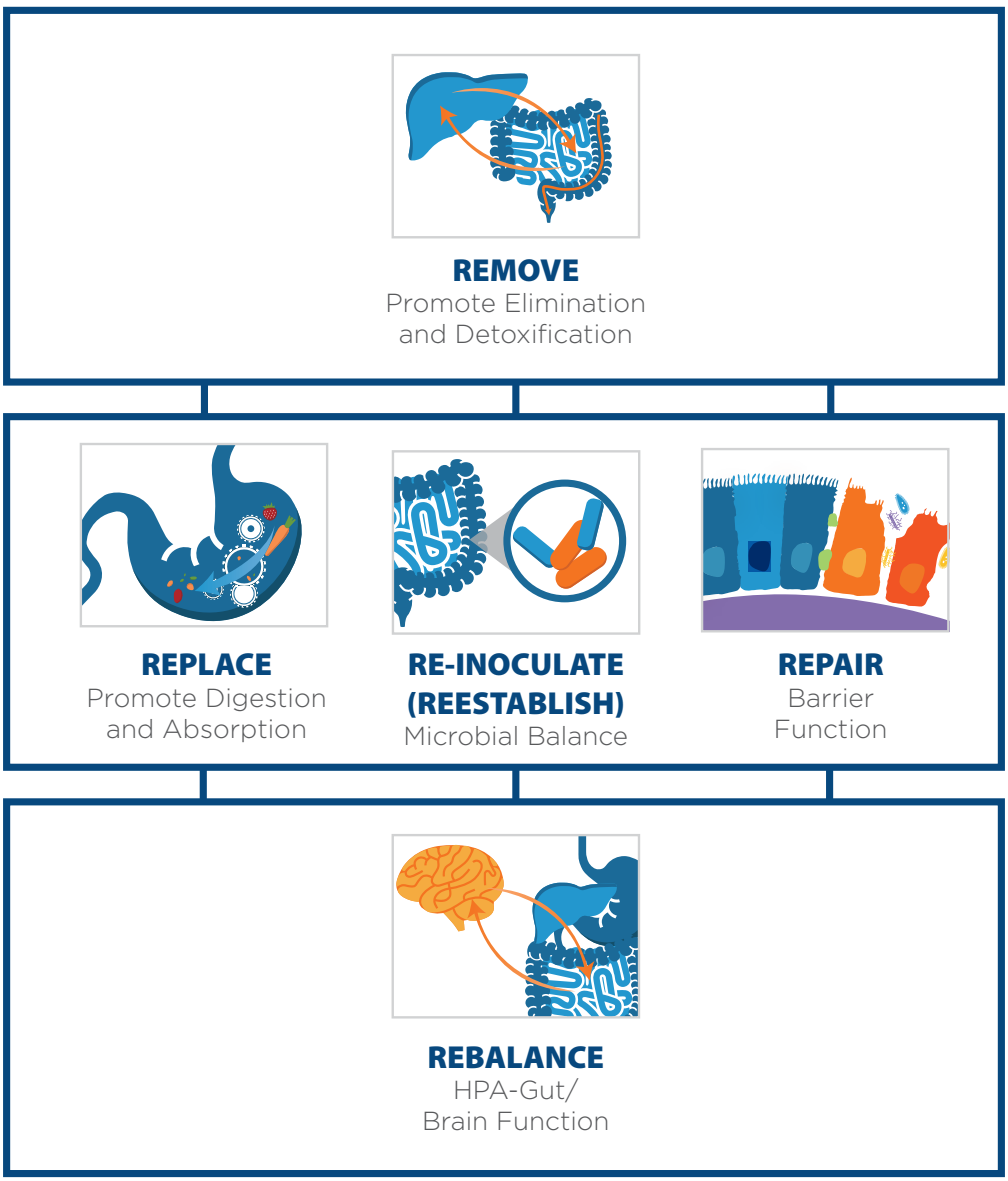

Barrier Function
IV


Gut-Brain Connection
V

The 5R Approach

The complexities of the gastrointestinal system and the interactions with the neuro/endocrine/immune systems may take some time to understand and are continually being explored in the scientific literature. However, since many of these interactions flow through the basic pillars of GI health, many of the treatment modalities are straightforward. It is astounding how simple imbalances are often overlooked in chronically suffering patients by specialists looking for a disease diagnosis.

Over the past decade, the 4R approach has been the model of GI health restoration for the functional medicine community (championed by the Institute for Functional Medicine). In recent years, a fifth R, "Rebalance" has been added, representing the importance of addressing the HPA-Gut/Brain connection. Essentially, the 5R approach is a step-wise process to rebuilding the pillars of GI health. The five steps include **Remove**, **Replace**, **Re-inoculate (Reestablish)**, **Repair**, and **Rebalance**.



How to Successfully Implement the Pillars of GI Health Program in Your Practice

FIRST APPOINTMENT

Before you meet in the exam room:

- During the first appointment, the patient completes the **Pillars of GI Health Questionnaire**.
- While the patient is waiting to see you, they can watch the **Pillars of GI Health Patient Education Video** as an introduction to how lifestyle impacts gastrointestinal health.

In the exam room:

- Review the questionnaire and determine which pillar(s) is the priority.
- Using the **Pillars of GI Health Inventory Sheet**, discuss the role of the gastrointestinal tract in the health of the entire body, the most problematic pillar(s), and the importance of diet when working to improve gastrointestinal health.
- Utilize one of the eight patient **Presentation Pads** to discuss the root of dysfunction in depth.
- Begin the patient on a dietary change to address the gastrointestinal dysfunction.
- The patient receives the **Pillars of GI Health Patient Handbook**. Instruct the patient to read the first 11 pages and the chapter corresponding to their pillar(s) of dysfunction. The patient should implement the applicable lifestyle and nutritional recommendations and bring questions to the next appointment.

At checkout:

- The patient goes home with a stool test kit to assess GI function and/or other GI test to confirm GI dysfunction.
- Schedule follow-up visit to increase compliance.

FIRST FOLLOW-UP VISIT (3-4 WEEKS)

In the exam room:

- Review steps the patient has taken to improve nutrition and implement lifestyle change along with any questions the patient has on integrating these steps based on information read in the Patient Handbook.
- Review test results along with patient history to identify the patient's specific dietary needs and supplement protocols.
- Although the nutritional supplementation protocol will likely improve patient symptomology, it is important to set patient expectations by reinforcing that if no lifestyle change is implemented, improvement in gastrointestinal dysfunction will be hindered.

At checkout:

- Provide clear recommendations on length of each therapy.
- Schedule follow-up based on the patient's need for coaching and accountability.

SUBSEQUENT FOLLOW-UP VISITS

Within four to six months of implementing the initial protocol, the patient should be offered retesting, provided there has been some symptom change, as well as lifestyle change. During that time, schedule a group medical appointment to follow up on 10 to 16 patients in a 90-minute block. Prescribe this as a required follow-up. Reinforcing the proper changes is crucial to improvement upon retesting. Consider waiting to retest until these steps have been properly implemented by the patient.

Initial In-Office Visit

STEP 1

Patient completes the Pillars of GI Health Questionnaire

STEP 2

Clinician uses the Pillars of GI Health Inventory Sheet to discuss the basics of gut health with the patient and begins pinpointing areas of concern

STEP 3

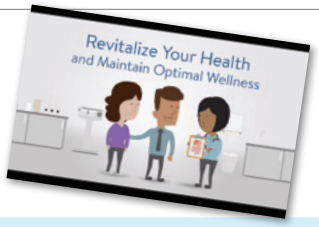
A. Clinician and patient identify the area(s) of dysfunction

B. Clinician uses Digestion and Absorption, Elimination and Detoxification, Microbial Balance, Intestinal Permeability, SIBO, GERD, IBD or Dysbiosis Presentation Pads to illustrate factors affecting gastrointestinal and overall health.

C. Patient begins initial GI health supplements to address dysfunction

D. Patient watches the Pillars of GI Health Patient Education Video

The Pillars of GI Health patient education video can be used as an outreach tool for both new and existing patients. This video can be utilized to introduce key concepts to new patients or as a follow-up to the first visit to review important discussion points.



STEP 4

A. Patient receives Pillars of GI Health Patient Handbook

It is recommended that every patient reviews the Diet & Gastrointestinal Health section of the handbook and the chapter correlating with their area(s) of dysfunction.

Chapter 1: Digestion and Absorption
Chapter 2: Elimination and Detoxification
Chapter 3: Microbial Balance
Chapter 4: Barrier Function
Chapter 5: Gut-Brain Connection

B. Patient goes home with a stool test kit or other GI testing kit to assess GI function

Follow-Up Visit (2-3 weeks)

STEP 5

Clinician and patient review pertinent test results and diagnosis. Clinician initiates targeted therapies based on results. For example, if stool analysis reveals dysbiosis and symptoms are suggestive of leaky gut, clinician initiates microbial balancing and gut healing protocol with an elimination or other therapeutic diet.

STEP 6

At this time, enroll patients in the GI Foundations: Heal Your Gut, Heal Your Body Group Visit.

GVT GROUP VISIT TOOLKIT
BUILDING HEALTHIER PRACTICES +

Follow-Up Visit (12+ Weeks)

STEP 7

In three to four months, clinician assesses the patient to track progress and adjust treatment plan as necessary. Treatment focus may transition to another foundational area of gastrointestinal health at this time.

Testing Considerations for the Pillars of GI Health

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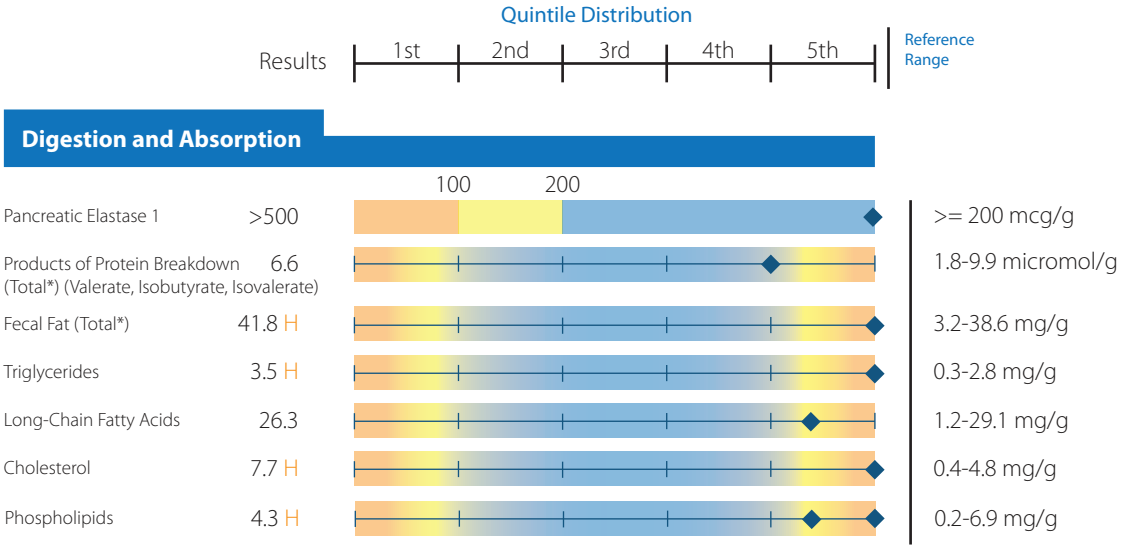
VIDEO:
TESTING
CONSIDERATIONS

When looking at complicated cases, it can be difficult to discern where the underlying cause of issues in the system is stemming from. Using a GI test can help the physician understand what is occurring in the GI system and can act as a guide to develop an optimized treatment protocol for the patient. Because there are many areas where GI dysfunction can occur, testing can detect the specific areas that require focus. Below is a breakdown of some of the most common tests used in the field today, which include biomarkers and parameters to identify specific areas that need to be addressed.

Quintile reporting is used to analyze the below sample test results. Quintile distribution is based on a reference population that is divided into five equal groups, each group representing 20% of the total count of individual results in the reference population, and is ranked lowest to highest.

DIGESTION AND ABSORPTION

Testing for digestion and absorption is a necessity when evaluating GI health. Digestion encompasses the functional activities of: mastication, gastric acid production, pancreatic activity, bile production, and brush border maintenance. Absorption depends on all these actions, as well as a healthy gut mucosal barrier. Many times, markers involved in digestion and absorption provide an idea of whether the patient is producing enough endogenous digestive enzymes to properly break down food and absorb nutrients in food.



GERD

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VIDEO:
GERD

PATIENT SYMPTOMS

A 70-year-old male patient presents with acid reflux, 20-pound weight loss over the last year, and loss of appetite. For the last 18 months, he has been dependent on Protonix 40 mg once daily to control his symptoms, and tried going off the medication about two weeks prior to our first appointment. He was taking Tagamet 200 mg BID, but it was not strong enough to control his symptoms, so he had to go back on the Protonix. He feels like a prisoner to the PPIs now.

He has suffered from IBS and an upset stomach for as long as he can remember. For 35 to 40 years, his job involved traveling all over the US. He was on a plane going somewhere at least four to five days per week. As a result, he got sick often, and suffered from constant digestive difficulties. His job was very high stress, and he finally decided to step away in 2008. At the time, he was living in Denver, but two years prior to this appointment he decided to move to New York City to be closer to his daughter and his new grandchildren.

Upon further questioning, he admitted to having a constant sense of unease with a constant hum of underlying anxiety. He wasn't depressed all the time, but definitely seemed to drop into depression from time to time. This had been going on for a couple years, and he wasn't sure where it was coming from, but he stated that "perhaps it is related to not working." As much as he knew he did not want to go back to his old life living out of a suitcase, he felt a sense of emptiness that mostly made his mind race, and would occasionally wake up feeling depressed.

His past medical history was significant for hypothyroidism, diagnosed in 2008, for which he was first treated with Synthroid, then switched to WP Thyroid in 2015. He also had high cholesterol and an enlarged prostate. He went through a divorce when he was 32 years old, but remains good friends with his ex-wife.

He worked with another integrative physician in New York City who diagnosed him with "adrenal burnout." Prior to that, he worked with a functional medicine practitioner in Denver. His supplement cocktail read like polypharmacy. There were too many of them for him to stick with a plan, so he did not take any consistently. From the usual suspects, like 5-MTHF and chewable vitamin B12 to L-glutamine, trimethylglycine, Krill oil, and prostate support, he was on plethora of supplements he had picked up from several holistic practitioners. Most recently, he was working on his prostate and hormone health due to an enlarged prostate and lack of libido.

He was referred to us by his integrative cardiologist and a naturopath, specializing in men's health, to have a captain that could steer this runaway ship. His primary goal was to feel better and resolve his stomach woes. He was making a concerted effort with a gluten-free, dairy-free diet, but with inconsistent results.

FIRST OFFICE VISIT

On his first visit, it is noted the patient looks thin with loss of lean muscle mass. On exam, the most significant finding his a very thick, brown coat on his tongue, suggesting severe dysbiosis.

The first goal with this patient is to put him on a consistent plan. We review the connection between his PPI intake, low stomach acid, anxiety, depression, stress and indigestion. He is instructed to read the Pillars of GI Health Patient Handbook, and he is educated on the problem of low stomach acid as the cause for acid reflux, contrary to common notions about the etiology of GERD in Western medicine. The patient is placed on an anti-reflux diet with an emphasis on slowing down, chewing his food, and eating at least three hours before bedtime.

His supplement list is simplified to what is believed to be essential. The patient is instructed to complete a Comprehensive Stool Analysis, which will be reviewed at his next appointment. He is started on a gut-healing regimen, which included slippery elm bark powder, DGL, betaine-HCl (with strict instructions to only take with high-protein meals), zinc carnosine, and aloe juice.

Since he had trouble weaning off of the PPIs, the plan will be a slow taper, beginning with alternating day dosing of Protonix 40 mg/20 mg until his second visit in one month.

Toxic Burden (Sjogren's, RA and ANA+)

VIDEO:
TOXIC BURDEN

PATIENT SYMPTOMS

A 31-year-old female patient reports that one year after the birth of her son in India, she developed red spots on her legs after a long car ride. The symptoms resolved on their own. Two years later, when she was re-evaluated, her erythrocyte sedimentation rate (ESR) was elevated. The work-up at that time revealed positive Sjogren's auto-antibodies. She was having occasional joint pains, and although the doctor wanted to treat her with steroids, she refused them because she was fearful of the side effects. She was only having occasional joint pains at the time, and her ESR peaked at 75 mm/hr.

At the time of her first office visit, she was experiencing more frequent bouts of joint pains in her arms, wrists, knees and toes. The pain usually occurred in one joint at a time, almost in a migratory nature. She also experienced a pulling sensation down her legs. Her energy was waxing and waning, alternating between good days and others when she was quite tired. She was getting seven to eight hours of sleep per night. She noticed increased hair loss over the last couple of years. She grew up in India, and moved to New York City just two months ago. She takes care of a four-year-old boy, but does not find that to be too stressful.

- She had been to the dentist recently, because she was getting tooth pain and more cavities, which were filled using non-mercury amalgams.
- She denied any GI complaints, and described normal daily BMs with no constipation, diarrhea, gas or bloating.
- She did report frequent vaginal pruritis, which resolved each time with clotrimazole cream.
- However, a new symptom had come up in the recent months—hives. She was randomly breaking out in hives, and could not figure out a food trigger.

FIRST OFFICE VISIT

One month prior to her first visit, she had read about anti-inflammatory diets for autoimmune disease and hives, and decided to go gluten-free and dairy-free. The only animal meats she was consuming were fish and chicken; her diet mostly consisted of lentils, nuts, vegetables and fruit. The patient was placed on the Autoimmune Paleo Protocol, modifying it for her primarily plant-based diet with vegetarian-sourced proteins, like lentils and beans soaked to reduce the phytic acid content. We recommended adzuki beans for their lower anti-nutrient content, while expanding the other aspects of the Autoimmune Paleo Protocol to exclude foods like nuts. Suspecting leaky gut syndrome due to the hives and joint pains, despite of the lack of GI symptoms, the patient is placed on a gut-healing protocol to encourage microbial diversity, repair tight junctions, and reduce inflammation. This includes a broad-spectrum 100 billion CFU probiotic, omega-3 fatty acids, L-glutamine and proteolytic enzymes.

She is given a Comprehensive Stool Analysis to complete at home, which will be reviewed at her follow-up visit in a couple weeks. Additional lab work is ordered to look for other underlying root causes and follow up on autoimmune and inflammatory markers.

IBD/Ulcerative Colitis

VIDEO:
IBD/UC

PATIENT SYMPTOMS

A 26-year-old male patient presents with ulcerative colitis since the age of eight. He has five to six loose stools daily. His energy is all over the map. Usually he feels fine in the morning before he eats, but then gets tired and lethargic after a meal. He has suffered from joint aches on and off throughout his life. His back has been problematic for the last couple of months. His research led him to a standard, broad-based elimination diet, which he followed precisely. Once he started reintroducing foods, like gluten, he monitored his weight for day-to-day fluctuations. He is 95% sure he has a gluten intolerance, especially to beer. He also eliminated dairy, then added it back in, and has noticed he feels better without dairy and that his stools are firmer without it. However, in the past six months, he has started allowing whole milk back into his diet.

As a child, he was in and out of the hospital for several years. He initially presented with severe joint aches in his knees and shoulders. The doctors considered a diagnosis of rheumatoid arthritis. His gastrointestinal symptoms were primarily 15 watery stools daily with lots of blood. His energy was quite low. They tried to hold off on medication, but finally prescribed 6-mercaptopurine (6-MP). After that, he ended up with pancreatitis two years in a row at nine and 10 years old. Most recently, he was treated with Humira. Within one month of starting it, all the swelling went down, his bowel movements improved, and joints felt amazing. However, he decided to stop it one year prior to this visit and go on a quest to find a non-pharmaceutical solution to his symptoms.

The patient used to smoke cigarettes recreationally, but quit one year ago as part of his efforts to lead a healthier life. He started practicing yoga and meditation, and has been trying to incorporate more relaxation into his daily routine. He also keeps a gratitude journal, arising from his awareness of the role mindset plays in overall well-being.

In terms of diet, he loosely follows a modified version of the elimination diet, but is not consistent with avoiding gluten and dairy. During and immediately post-college, his diet consisted of a lot of pizza. Alcohol intake was usually five to six nights per week, which he has now cut out. He is also working on cutting back on sugar (both in the form of sweeteners and refined carbohydrates) as much as he can. For breakfast, he was making a protein smoothie with whey protein or a whey-pea protein combination. He noticed the pure whey protein made him very gassy, and it led to some episodes of bowel incontinence, so he stopped it. He is not sure if the current protein combo is right for him, either. He says, "It doesn't feel quite right after I drink it."

He has been searching for an integrative, functional medicine doctor to work with and help make sense out of all this.. His primary goal is to feel better and master his symptoms through diet and supplements, without having to go back on medication.

FIRST OFFICE VISIT

On his first visit, it is noted the patient looks puffy, like he is retaining water. His biometrics reveal: Waist = 29 inches; Height = 6'; Weight = 157 lbs with a BMI = 21.29. Prior to changing his diet, he weighed 190 lbs (BMI = 25.8). On exam, his tongue is scalloped with tooth marks, suggesting food sensitivities or thyroid dysfunction, and the base has a thick, white coat, indicative of dysbiosis. His joints are normal without effusions. His reflexes are diminished, most notably his Achilles tendon reflex, which demonstrates a slowed relaxation phase.

The first goal with this patient is to solidify a diet plan he can manage. Knowing he is 26 years old, we can take into account the fact he has friends that don't have to live with dietary restrictions and may unconsciously pose temptations to break the elimination diet through peer pressure. We review the awareness he gained around certain foods during his experience on the elimination diet, followed by the reintroduction of foods that were problematic. We discuss his reactions to gluten and dairy. We also review dairy in all its forms, including casein and whey protein supplements. Knowledge is power, and helping the patient arrive at these important conclusions is an important part of lifestyle

SIBO

VIDEO:
SIBO

PATIENT SYMPTOMS

A 41-year-old female presents with inability to lose weight since undergoing radioactive iodine thyroid ablation in 2013. On symptom review, she was suffering from severe fatigue, in spite of having titrated her thyroid medication with an endocrinologist, who had switched her to Cytomel 25 mcg once daily, after she did not respond to either Synthroid or Armour Thyroid. She was still having a really hard time getting out of bed in the morning, and no amount of sleep fixed her ongoing fatigue.

She scored a 58 on the Medical Symptom Questionnaire, which indicated moderate toxicity. Her other symptoms included: water retention, inability to concentrate, mental fog, poor memory, severe bloating, mostly constipation, with occasional diarrhea, muscular weakness, and high levels of anxiety. On further questioning, she admitted her energy improves around 6:30 - 7:00 p.m., at which time she gets a "second wind," but then she doesn't go to bed until 1:00 - 2:00 a.m. She wakes up around 9:30 - 10:00 a.m. feeling groggy.

She had been diagnosed with SIBO three years prior to her first visit, at which point she had been treated with Rifamixin with only a brief improvement. Her symptoms returned within a few weeks of completing the antibiotic course. The bloating was so severe that at times she felt sick to her stomach. She was at a loss as to what to eat to reduce her symptoms, and had honestly lost faith in the medical establishment.

Her diet was vegetarian, but not vegan. She starts her day with a cup of coffee with a splash of whole milk. Her protein shake breakfast is consumed on-the-go as she commutes to work. She tends to skip lunch, because she is usually bloated and not very hungry; instead, only having a raw green juice. She doesn't snack between meals. Dinner is usually a quinoa or brown rice bowl with vegetables stir-fried in coconut oil. On occasion, she eats tacos with chickpeas. Before she became vegetarian, she was eating a lot of chicken and turkey. She tends to avoid wheat and gluten, but will cheat with an occasional pasta dish.

In spite of her fatigue, she works out with ferocity. She sees a personal trainer three to four times per week; other days she tries to get in some cardio. Rarely, she will make it to a yoga class. Her motivation is losing weight at all cost. Besides the protein powder, she takes a probiotic, turmeric, and digestive enzymes when she remembers.

She works a high-stress job, which she doesn't like. Aside from feeling frustrated and concerned about her unresolved health issues, her job is the source of the majority of her anxiety. Just the thought of having to go into the office and deal with her boss gives her a knot in her stomach. Luckily, it affords her the freedom to work from home or remotely with clients. She has been wanting to quit, but this well-paid position affords her and her husband the lifestyle they enjoy.

Her true passion is dancing, but because of her severe fatigue, she has not been going to dance classes. As a result, she feels like she is dying inside. She is no longer the person she once knew herself to be. She is irritable, angry, short-tempered, frustrated, and at her wit's end.

FIRST OFFICE VISIT

On her first visit, it is noted the patient looks puffy and restless. She is 5'4" and weighs 143 lbs.; BMI = 24.5. She reports her "comfortable" weight, historically, was 120 to 125 lbs. On exam, the most significant findings are a veil of fatigue over her eyes, a thin white coating at the base of her tongue, suggestive of dysbiosis and possible candidiasis, hyperreflexia, leukoplakia in three fingernails, and tympany on abdominal percussion.

This patient is a stress mess. Not only does she present with the high possibility of ongoing SIBO, the extended disturbance in her gut microbiome balance could very well be contributing to her fatigue, inability to lose weight, and severe anxiety. Since she has had recurrent SIBO, we need to address the underlying psychological factors, which ultimately affect gut motility, increasing the risk of bacterial overgrowth due to vagal nerve malfunction.

IBS-A

VIDEO:
IBS-A

PATIENT SYMPTOMS

A 36-year-old patient presents with severe stomach pains and new-onset eczema. She had been to a music festival in California where she drank a lot of alcohol. During the festival, there were not that many food options. She reported that during the trip she would wake up in the middle of the night with stomach pains. Her bowel movements were irregular—alternating between constipation and occasional loose stools bordering on diarrhea.

She had been having a "greens and fruit" smoothie for breakfast prior to this, and when she returned home she continued making this daily smoothie. It was a mixture of spinach, kale, collard greens, celery, cucumber, pear and/or berries. Usually, she would have a cup of black coffee about 30 minutes after this. However, it wasn't sitting quite right. She started to develop a lot of gas, and had been to see a nurse practitioner who told her to take Gas-X. This wasn't helping, so she decided to try cutting out the smoothie to see if it was the culprit.

Her stomach now was always gurgling and sometimes burning. She was waking up with nausea, and occasionally would vomit in the morning. The alternating constipation with loose stools persisted. She then started breaking out in eczema or hives for the first time in her life. She couldn't find a pattern to it, but when she ate certain foods she would suffer from severe indigestion and burning in her stomach. At this point, she cut out both the smoothie and the morning coffee. After this, she no longer vomited, but she was still waking up feeling nauseous and her stools quality was still irregular from too hard to soft.

She decided to see an Ayurvedic doctor after two months of trying on her own. He put her on an elimination diet: cutting out fermented foods, alcohol, cheese (but not dairy), frozen foods, and dried fruit. He gave her a list of vegetables and fruit that were ok to eat, and started her on a daily probiotic. She slowly started to reintroduce the raw smoothies again in the morning. She was pretty good about following the plan, staying away from alcohol and the foods he recommended avoiding; however, she had slip-ups indulging in sugar a couple of times.

Following this plan, the eczema started to fade away. However, prior to her first visit, she had alcohol for the first time in over two months (two mimosas at brunch on Sunday, and one cosmopolitan later on), and she developed eczema across her chest. She was still having occasional indigestion, burning and gas.

FIRST OFFICE VISIT

When she came in for her first office visit, the eczema was still triggered randomly with foods, and definitely when she had alcohol. Her bowel movements were still unpredictable. When asked, she admits to being very sensitive to antibiotics, often getting a yeast infection that would require a prescription antifungal. Her sugar intake had been much higher than what she initially described, as she definitely had a "sweet tooth."

On exam, it is noted the patient looks well-nourished in no acute distress. On exam, the tongue has a moderate white coating at the base, suggesting a dysbiosis and the possibility of *Candida*. Her skin reveals faint areas of erythematous eczema on her chest and inner-folds of her elbows.

The first goal with this patient is to put her on a consistent plan that addresses the underlying root causes, while testing her for food IgE-mediated allergies. We review the connection between sugar, alcohol, the eczema outbreaks, dysbiosis and her irritable bowel symptoms. She is instructed to read the Pillars of GI Health Patient Handbook, and she is educated on the problem of high sugar intake and yeast overgrowth. We talk about the possibility of SIBO (small intestine bacterial overgrowth); however, her symptoms are not consistent with that. She is given a home test kit for SIBO.

Appendix C: *H. pylori*

Helicobacter pylori (H. pylori) is a gram-negative, spiral-shaped bacterium that takes up residence in various parts of the stomach and duodenum. It is one of the most common infections found in humans worldwide. The organism is uniquely capable of surviving in the acidic environment of the stomach where it causes a chronic, low-level inflammation in both the stomach and duodenum. *H. pylori* is strongly linked to the development of duodenal ulcers, gastric ulcers and gastric carcinoma. The relative risk for the development of these complications depends on the genetic and nutritional differences of the patient.

Most people who have been diagnosed with *H. pylori* become infected in childhood. After being ingested, the bacteria burrow through the stomach mucosa and attach to deeper layers of the stomach, where they can reside for years without causing symptoms. The majority of patients with the infection (80%) are asymptomatic; however, individuals who are not asymptomatic usually develop gastritis and ulcers. Signs and symptoms of these illnesses usually include upper abdominal pain, nausea and vomiting, loss of appetite and hemorrhage (if severe enough).

The most reliable method for detecting *H. pylori* infection is through endoscopy with biopsy along with a rapid urea breath test. Noninvasive tests include a stool antigen test, blood antibody test, and the carbon urea breath test (the patient consumes carbon-labeled urea, which the bacterium metabolizes, producing labeled carbon dioxide that can be detected in the breath).

CAUSES

- Risk increases if there is a family history of gastric carcinoma
- Hypochlorhydria
- Antacid use
- Lifestyle factors (such as smoking, alcohol, drinking coffee, diets high in sugar and trans fats, and stress can all increase risk for the development of an ulcer from *H. pylori*)
- Low antioxidant nutrient status (low levels of vitamin C and E promote growth)
- Suboptimal functioning of the immune system

CONVENTIONAL TREATMENT

Once *H. pylori* is detected in patients with a peptic ulcer, the protocol involves eradication of the organism while allowing the ulcer to heal. Standard-of-care therapy usually involves a one week "triple therapy" consisting of a proton pump inhibitor and the antibiotics clarithromycin and amoxicillin. Patients who are allergic to penicillin can replace amoxicillin with metronidazole. An increasing number of infected individuals are found to have antibiotic-resistant bacteria. This results in the "triple therapy" regimen to be ineffective and usually requires the patient to undergo additional rounds of antibiotic therapy (or add a bismuth colloid to triple therapy). Unfortunately, frequent (or prolonged) antibiotic therapy has the side effect of causing dysbiosis in the gut by eliminating beneficial bacteria. Anytime the balance of organisms within the gut is disrupted, harmful organisms have an advantage, which can lead to systemic consequences (such as dysregulation of the immune system). This can usually be prevented by use of probiotics during antibiotic treatment or the use of more natural therapies in place of (or with) antibiotics.

Appendix D: Hypochlorhydria/Achlorhydria

An inadequate level of stomach acid (regardless of the root cause) is likely to result in a number of nutritional and digestive issues. A reduction in gastric acid secretion prevents adequate denaturing of folded proteins, limiting access to certain proteases, thereby resulting in poor protein digestion and increased food allergenicity. Reduced absorption of key micronutrients including calcium, iron, folic acid, vitamins B6 and B12 can be seen in a low-acid environment. Gastric acid helps to eliminate harmful ingested microorganisms and hinders bacterial overgrowth in the stomach and small bowel, protecting against the development of SIBO.

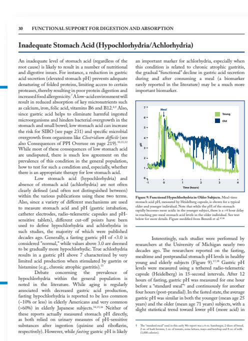
Low stomach acid (hypochlorhydria) and absence of stomach acid (achlorhydria) can be indisputably correlated with the overuse of proton pump inhibitors (PPIs) in society. The widespread use of PPIs is a major concern to many clinicians, as PPIs dysregulate the signaling mechanisms behind HCl production. Generally, a fasting gastric pH of <3.0 is considered "normal" while any levels which are higher, are considered hypochlorhydric. Gastric pH above 7 can be classified as achlorhydria, and is characterized by very limited acid production when stimulated by gastrin or histamine (e.g., chronic atrophic gastritis).

The most common treatments for acid-reflux related symptoms are PPIs and H2 blockers, which reduce the production of gastric acid. The use of these medications increases the frequency of mealtime hypochlorhydria and is commonly seen in older adults. The debate about the utility of supplementing acid is related to the debate about the relationship between endogenous stomach acid production and gastrointestinal outcomes. It is common within the functional and integrative medicine community to recommend supplementing agents that directly or indirectly increase stomach acid during a meal.

- Bitters: Improve gastric and salivary secretions
- Apple cider vinegar: 1 Tbsp in a glass of water before meals
- Betaine HCl: Readily releases H+ ions to decrease pH

The most common recommendations for the use of betaine HCl supplements is combined with the empirical test for low stomach acid where betaine HCl capsules or tablets are increasingly given during meals until such time as an uncomfortable sensation is noticed by the patient.

For an in-depth review of hypochlorhydria/achlorhydria, reference pages 30-33 in *Functional Strategies for the Management of Gastrointestinal Disorders*, available at LifestyleMatrix.com.


30 FUNCTIONAL SUPPORT FOR DIGESTION AND ABSORPTION

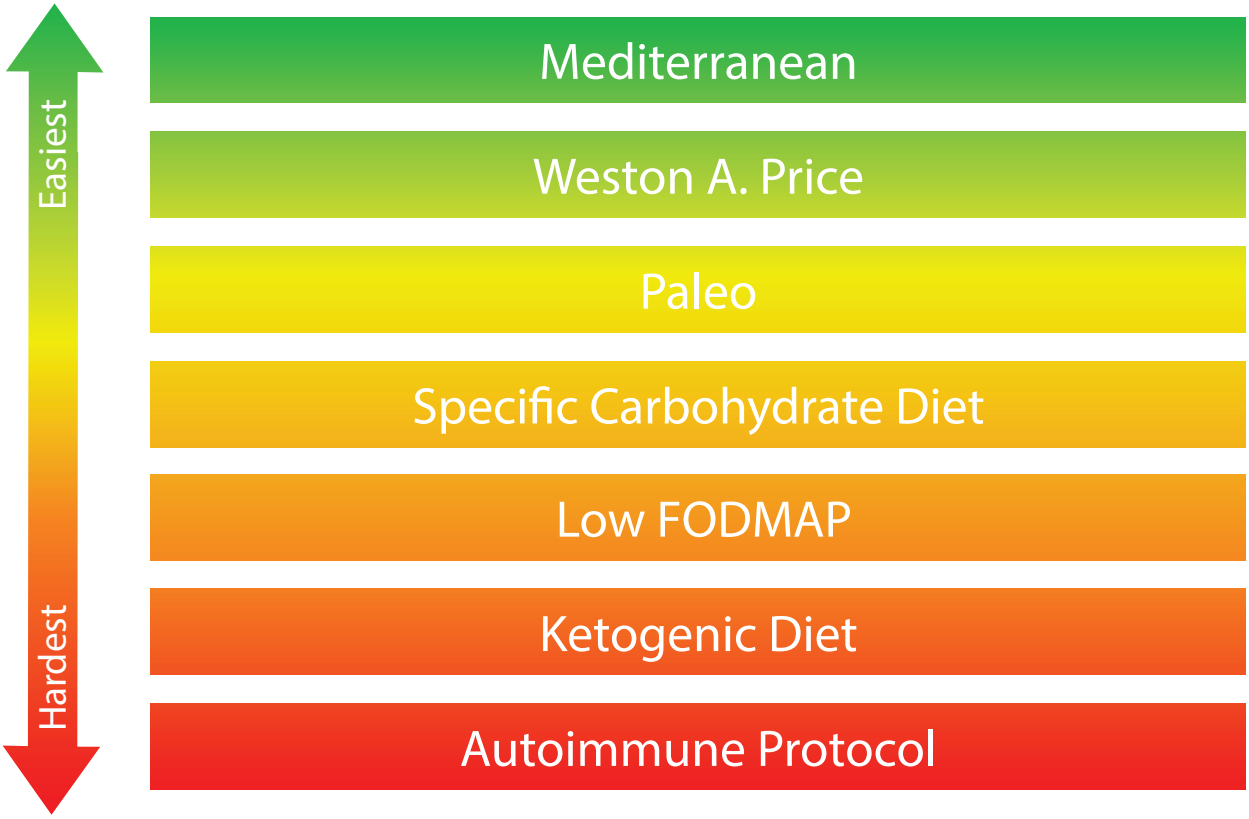
Inadequate Stomach Acid (Hypochlorhydria/Achlorhydria)

Functional Strategies for the Management of Gastrointestinal Disorders Point Institute

Appendix K: Diet and Gastrointestinal Health

The entire digestive process is meant to help you digest and absorb nutrients from your food to keep the GI system functioning optimally and allow for the rest of the system to perform at its best. The best way to accomplish this is to provide the body with foods that it can properly digest to be able to absorb these beneficial nutrients. Throughout time, the development of fixed dietary plans has aided individuals in the proper removal of food allergens and triggers that cause GI upset as well as illicit an immune response.

In practice, you will find each patient has his/her own set of lifestyle constraints. When choosing the dietary protocol for a patient, first consider which dietary pattern best fits their needs, and then factor in their ability to adhere. The image below shows a gradient of "easiest to implement" with the Mediterranean diet, to the "most difficult to implement" with the Autoimmune Protocol. If the diet best suiting your patient needs within the chart is Autoimmune Protocol, but your patient's lifestyle will accommodate the successful implementation of Paleo more seamlessly, then you may choose to try Paleo first. Patients often get great results with multiple different variations on the elimination of foods, and finding the one that works with their life best can be more beneficial for the longevity of compliance.



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