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Protocol Guidelines

GI Pathogen Screens

Applies to BH #401, #401H, #410, #412, #414, #415, #416, #417, #418

IMPORTANT: Read this entire document before using protocols with the information provided in the suggestions below. The protocol suggestions form a general foundation for treatment and do not replace a thorough clinical diagnosis of the patient.

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Gastrointestinal (GI) tract infections are increasingly common and widespread; they can be either clinical (symptomatic) or sub-clinical (without symptoms). Some patients have active GI symptoms while others present with general complaints: fatigue, depression, insomnia, frequent headaches, cognitive problems, light headedness, brain fog and/or general malaise. With BioHealth's microbiology examinations, the most common offending organisms can be identified and treated. Identifying pathogenic organisms in the gut is an important part of diagnosing health problems at their source.

Important Note about Protocols

No two patients are exactly alike. There is nothing 'black-and-white' about treating patients with gastrointestinal problems. The guidance in this document is as specific as can be without violating these basic laws of health care. It is the responsibility of the clinician to assess the patient's past health, hereditary factors, age, sex, current complaints, and additional diagnostic data to appropriately work up a treatment program.

To receive advice for addressing the lab data and unique correlating patient cases, call one of the numbers below and visit http://www.biohealthlab.com/clinical-training-learn-functional-medicine/ for more support options. When in doubt, especially with complex cases, refer to medical specialists for additional consultation.

Note: Prescription drugs are the standard of care for virtually all GI pathogens; however, BioMatrix makes recommendations for treatment protocols using natural products known to help resolve many GI infections. In the absence of formal research studies, clinician and patient experiences with these protocols - evaluating symptoms and post-treatment lab data - support these recommendations. When in doubt, refer a patient with positive findings to an integrative medical doctor, or otherwise qualified-to-prescribe physician.

Common Infections of the GI Tract

While BioHealth Lab's microbiologists can identify hundreds of organisms, there are several that are by far the most commonly found. Two of the most prevalent infections are Helicobacter pylori - a bacterium that primarily inhabits the stomach, esophagus and upper duodenum - and Cryptosporidium parvum, a parasite that primarily inhabits the small intestine and regularly cycles from intracellular to extracellular. Other commonly encountered parasites include Entamoeba histolytica, Giardia lamblia, and Blastocystis hominis.

Helicobacter pylori infections are often the cause of stomach ulcers, acid reflux, burping and belching and general upper GI distress as well as stomach cancer. While acute infections are often highly symptomatic, the body has an amazing capability to adapt to infections that become long-term/chronic

in nature, and patients often have either very mild symptoms or no symptoms at all. For example, few patients infected with Helicobacter pylori show symptoms - even for years. Infections with Helicobacter pylori, especially deep seated infections, are often difficult to eradicate as the bacterium can develop resistance to commonly used antibiotics. It has also been reported that Helicobacter pylori can produce a toxin that disables the body's immune response against it.

Cryptosporidium parvum is a very aggressive parasite that damages the topography of the small intestine by invading the intestinal epithelial cells. While in some acute cases it can cause high fever, severe diarrhea, and even death, C. parvum infections have been found in many patients exhibiting either very mild or no GI symptoms. C. parvum damages the microvilli of the small intestine, inhibiting absorption and assimilation of nutrients and compromising intestinal mucosal barrier defenses (refer to BH #304 – Intestinal Barrier Test), further weakening the body's defense against other opportunistic infectious agents.

Conventional medical doctors steer their treatment decisions with information released in peer-reviewed journals and studies. Sadly, these resources often fail to consider the subtleties of the subjects they engage. C. parvum is a classic example. Most medical doctors will tell you that it does not require treatment. They say it is self-limiting; the body's immune system will kill it. They recommend treatments if the patient's immune system is compromised—often citing cases of elderly patients and patients infected with HIV. However, one doesn't need to be elderly or stricken with a severe disease to have an immune system incapable of dealing with pathogenic organisms.

Entamoeba histolytica is one of the most aggressive and invasive parasites on our planet. Five to seven weeks after exposure, it invades nerve and muscle tissue in the large intestine, damaging both and potentially causing inflammatory bowel disease. It can ingest red blood cells, penetrate tissues by boring through their walls, and if it invades the liver, go systemic and travel throughout the body, typically causing dysentery. E. histolytica can form amebic abscesses in the liver if not treated in a timely manner. If surgery is performed to remove the abscesses, toxins are released into the bloodstream, overwhelming the body's immune and detoxification capabilities.

E. histolytica can travel virtually anywhere in the body. It can migrate to the liver, lungs, and even the brain. One theory postulates that many appendicitis attacks are caused by E. histo infections. Stool testing can reliably detect E. histolytica infections using the antigen method. Treatment often necessitates the use of antibiotics and other drugs, as aggressive therapy is required to eradicate this resistant pathogen. You must prepare the body not only for the toxic effects of the medications, but also the toxic load and increase in symptoms created as the parasites die off (also known as a Herxheimer reaction).

The liver will be under increased demands from processing the circulating toxins, and healthy bacteria naturally existing in the GI tract will need to be replaced as they are killed off by the antibiotics. The gut will also require nutritional support to help repair and rebuild the blistering and scarring that can occur when a parasite burrows into its lining. And, because the intestinal wall is likely to be damaged from the

infection, nutritional supplementation should be employed to aid in mucosal barrier restoration. (See the "Post Infection Treatment Support" guidelines below.)

Giardia lamblia is best known as the organism responsible for “Beaver Fever” or “Backpacker’s Diarrhea” because of its proliferation in streams and rivers, Giardia lamblia can completely destroy the surface of the mucosal barrier. The destruction of the small intestine’s barrier causes inflammation, reduction of surface area for nutrient absorption, lactose and sucrose intolerance, and inability to digest fats and oils. It can also result in the formation of deep pockets, in which mucus plugs form, creating an environment that harbors and protects infectious organisms.

Another effect of Giardia infection is hypermotility (or colonic dumping), in which food moves through the small intestine too quickly and therefore isn’t completely digested. The undigested food dumps directly into the large bowel, which creates protein putrefaction and a fertile environment in which yeast, fungus, and other unwanted microorganisms proliferate.

Giardia also produces neurotoxins—toxins that harm the nervous system. These toxins can cause depression, sleep disorders, and an inability to concentrate, among other symptoms. Giardia is linked to autoimmune disease, particularly with neurological autoimmune processes such as multiple sclerosis, ALS (Lou Gehrig’s disease), and Parkinson’s disease.

If Giardia is present in cyst form, the patient may have no symptoms. For those with healthy mucosal barrier defenses the cyst is likely to be encapsulated and flushed out through the GI tract before it can hatch and replicate. However, in cases of compromised mucosal immunity, the body will unlikely be able to eradicate the cyst before it hatches. Within weeks, this cyst can produce millions of Giardia organisms.

Given the destructive nature of Giardia, it would seem to cause obvious symptoms in the infected host. This isn’t always the case. During the acute phase of an infection, symptoms are apparent, but you might not associate them with a parasitic infection. You might believe that the short-lived diarrhea and fever were caused by flu or bacteria from contaminated food. This point emphasizes the need for routine lab testing to rule out the presence of parasites.

Blastocystis hominis is a unique, recently discovered microorganism. It was first classified as harmless yeast in 1912 and later as a protozoan (single-celled organism with a nucleus). As recently as 1998, it was reclassified into its own class, Blastocystea. With this confusion arises the controversy of whether or not "Blasto" is harmful enough to warrant treatment. Even recent studies validating its damaging effects on the intestinal lining and ability to cause cell death are viewed as inconclusive by many in the medical establishment because of a lack of "corroborating evidence."

The percentage of patients testing positive for Blastocystis hominis skyrocket over the past 15 years. We are in the early phases of awareness about this organism, not to mention the early phases of its epidemic development. Review the gathered research and ongoing developments of the Blastocystis

Research Foundation based in Oregon (www.bhomcenter.org). It is anticipated that exciting information from this group that will motivate the healthcare community to take the bug more seriously.

Dysbiosis - Imbalanced Gut Flora

The numerous bacteria and yeast that inhabit human digestive systems are known collectively as gut flora. These microorganisms help in the digestive process, provide additional nutrients that our bodies would otherwise not obtain, and they act with and as part of the immune system, helping to resist infections.

Under healthy conditions there is a balance between good microorganisms and bad microorganisms in the digestive system (each keeping the other in check). However, bad diets and unhealthy lifestyles, chronic stress, antibiotic use, and more, all contribute to a compromised gut environment. The term that describes this imbalance is dysbiosis. Dysbiosis, while sabotaging healthy gut function in general, also produces dangerous by-products such as ammonia, which can hinder brain function and cause cognitive symptoms.

The predominant yeast **Candida** thrives in a state of dysbiosis. This organism in particular needs to be controlled through diet and supplementation while investigating underlying causes and removing them. Candida overgrowth causes fatigue, headaches, mood swings, sinus congestion, depression, and many more common symptoms. Beyond symptoms, the excessive yeast often penetrates the intestinal wall, activating the immune system and causing hypersensitivities not just to Candida itself, but to common foods and other substances that penetrate.

Testing Recommendations

If you have not already run the BH #205 on this patient, do so at this time. The link between adrenal/hormone problems and gut issues is strong and must be considered. The #401H and #101 should follow.

- **Diagnosing**
  - Consider BioHealth tests #101, #205, and #304 to evaluate impact of positive parasite/bacterium findings.
- **Follow-Up**
  - At the end of the follow-up probiotic therapy, re-test using #401H or other 400-series panel.

Treatment Protocols - Considerations

- Duration**:** Unless otherwise indicated, and in the absence of negative reactions to treatment, these protocols are intended to be administered for 6 weeks.

- Prior or concurrent adrenal/hormone support is suggested in cases of Stage 2 and Stage 3 Adrenal Exhaustion (see BH #201 or BH #205 protocol).
- It is strongly advised that the patient be gluten and dairy free for up to 3 months prior to beginning the protocol, and during.
- Botanical/natural treatment options can be used for patients that do not tolerate medications well.
- For some patients, antibiotics are the most effective treatment; especially for patients with chronic infections that have been difficult to eradicate with alternative methods.
- When tolerated by the patient, increase the dosages of products aimed at eradicating pathogens.
- Whether using antibiotics or natural treatments, the patient's adherence to a healthy diet will help with the success of the treatment.
- Consider putting the patient on a gluten-free (or grain-free) diet for up to 60 days before starting treatment. With this approach, intestinal barrier damage caused by gluten intolerance or grain sensitivity will heal and hidden infections will be more easily exposed to the treatment formulas/drugs.
- See "Post Infection Treatment Support" below to help with recovery from the treatment(s). Support of detoxification channels, the mucosal barriers, and gut flora, are mandatory efforts with all infection treatments.
- Use caution when administering acidophilus as the acid can create pain or discomfort in a sensitive gut.
- **Prescription drugs** are the standard of care for virtually all GI pathogens; however, BioMatrix makes recommendations for treatment protocols using natural products known to help resolve many GI infections. In the absence of formal research studies, clinician and patient experiences with these protocols - evaluating symptoms and post-treatment lab data - support these recommendations. When in doubt, refer a patient with positive findings to an integrative medical doctor, or otherwise qualified-to-prescribe physician.

IMPORTANT NOTES

- Prescription drugs are the standard of care for virtually all GI pathogens; however, BioMatrix makes recommendations for treatment protocols using natural products for patients sensitive or opposed to antibiotics.
- In the absence of formal research studies, clinician and patient experiences with these protocols - evaluating symptoms and post-treatment lab data - support these recommendations. When in doubt, refer a patient with positive findings to an integrative medical doctor, or otherwise qualified-to-prescribe physician.
- These protocols are a generic framework for addressing common lab results and intended to be used under the advisement of a health professional. Every patient has a unique health situation and these protocols serve as one of many options available to the clinician.

Pathogen Treatment Protocols - 6 week duration unless otherwise specified.

⇒ NOTE: For treatment advice on organisms not detailed here, call 800-570-2000 or 307-426-5060 to inquire; or, refer to the current Physician's Desk Reference and National Institute for Health for medical recommendations.

Organism(s)	Products and Dosing	Notes (Also see recommendations above.)
Helicobacter pylori	• **Interfase Plus** - 2 capsules 2 times per day between meals • **Allimax** - 1 capsule 3 times per day after meals • **Pyloricil** - 1 capsule before breakfast, lunch, and dinner • **DGL** - 2 capsules before breakfast • **Support Digestion** - 1 capsule with breakfast, lunch, and dinner • **Support Liver** - 3 capsules with breakfast	• Patient should maintain a diet rich with alkalizing foods and avoid the following (not intended to be an exhaustive list): spicy foods, high fat foods, tomato, vinegar (except apple cider), sugar, coffee, chocolate, alcohol, hydrogenated oils. Consider a yeast-free, anti-Candida diet dense in green vegetables. • Interfase Plus breaks down biofilm, a matrix of microorganisms that creates a protective barrier around pathogenic bacteria. • Pyloricil - Contains bacteria-suppressing botanicals, including Mastica. • This DGL (Deglycyrrhized licorice) formula also contains additional ingredients known to inhibit the growth of H. pylori.

		• Allimax is a pure stabilized allicin extract from garlic capable of eliminating a wide range of bacterial infections.
Cryptosporidium parvum, Entamoeba histolytica, Giardia lamblia, Blastocystis hominis, Dientamoeba fragilis (and other gastrointestinal parasites)	• **Allimax** - 1 capsule 3 times per day after meals • **Paracid Forte** - 3 capsules before breakfast, lunch, and dinner • **AP Mag** - 1 capsule after breakfast, lunch, and dinner • **Support Digestion** - 1 capsule with breakfast, lunch, and dinner • **Support Liver** - 3 capsules with breakfast	• Allimax is a pure stabilized extract of allicin from garlic capable of eliminating a wide range of bacterial infections. • Paracid Forte is a botanical blend for helping to eradicate a broad array of parasitic infections. Contains such known anti-parasitic components as Artemisia, black walnut hull, and berberine sulfate. • AP Mag is a unique Ayurvedic formula that supports healing with 7 different botanicals and supportive co-factors.
Other Bacterial Pathogens	• **Allimax** - 1 capsule 3 times per day after meals • **Intestin-ol** - 1 capsule 3 times per day after meals • **OrthoBiotic (Probiotic formula)** - 1 capsule before breakfast and lunch • **Support Digestion** - 2 capsules w/ each meal	• Allimax is a pure stabilized extract of allicin from garlic capable of eliminating a wide range of bacterial infections. • Intestin-ol is an anti-bacterial concentration of oils derived from thyme, clove, and oregano.
Culture Final Report Positive for Candida species	• **Candicid Forte** - 2 capsules 2 times per day before meals • **OrthoBiotic (Probiotic formula)** - 1 capsule before breakfast and lunch • **Support Digestion** - 2 capsules with each meal	• Duration: **3 weeks** • Patient should follow anti-Candida diet for 3 weeks or more. • Run BH #304.
Culture Final Report Indicated	• **OrthoBiotic (Probiotic formula)** - 1 capsule	• Duration: **3 weeks**

Dysbiosis (Report does not read "Normal Flora")	before breakfast and lunch • **Support Digestion** - 2 capsules with each meal	• Patient should follow anti-Candida diet for 2-3 weeks. • Run BH #304.

Post Infection-Treatment Support

Upon completion of 6-week protocol, provide 3 weeks of restorative support to the patient's GI tract with clean diet and these recommended supplements.

Products and Dosing	Notes
• **Support Digestion** - 1 capsule with breakfast, lunch, and dinner • **Support Liver** - 3 capsules with breakfast • **OrthoBiotic (Probiotic formula)** - 1 capsule before breakfast and lunch • **Support Mucosa** - 2 capsules before breakfast and lunch	• For post-antibiotic therapy, double the dosages of Support Liver, OrthoBiotic, Support Mucosa, and extend duration to at least 4 weeks.