

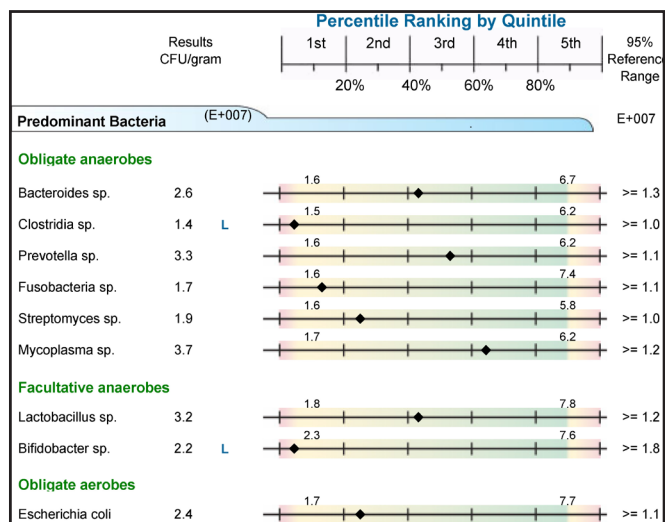
Gastrointestinal Function Profile in Patient Suffering Multiple Food Intolerances, Gastro-Oesophageal Reflux Disease (GORD), Chronic Rhinitis & Arthralgia

When a Patient Presents With Multiple Conditions; Identifying the Cause(s) and Choosing a Simple Treatment Plan Can Be Challenging. The Following Case Highlights the Importance of Choosing the Right Test to Identify the Cause and Simplify a Potentially Overwhelming List of Treatment Options.

Clinical Background

A 63 year old female presented to her practitioner in 2004 with hypertension, muscle cramping, high ferritin, gastro-oesophageal reflux disease (GORD), fibromyalgia and chronic rhinitis. The clinician ruled out haematomachrosis and prescribed anti-hypertensive medication. In addition an IgG4 food antibodies panel revealed multiple food intolerances. Removal of the offending foods resulted in significant improvements in all her symptoms including a reduction in ferritin levels, however severe night leg cramps persisted that were non responsive to magnesium or calcium therapy. Repeat IgG4 food antibody testing each 6 month period for 5 years showed persistent intolerances resulting in further dietary restriction and a recurrence of all the patients' original symptoms. Late in 2009 the patient consulted another practitioner who ordered a **Gastrointestinal Function Profile (GIFx)**.

Initial GIFx



As seen on the preceding page, the initial **GIFx** identified significant disparity in the predominant bacteria suggestive of gastrointestinal dysbiosis. Of note is the low *Bifidobacter sp.*, an important beneficial facultative anaerobe.

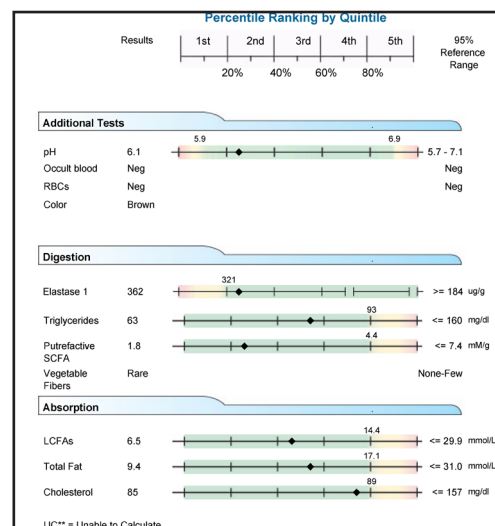
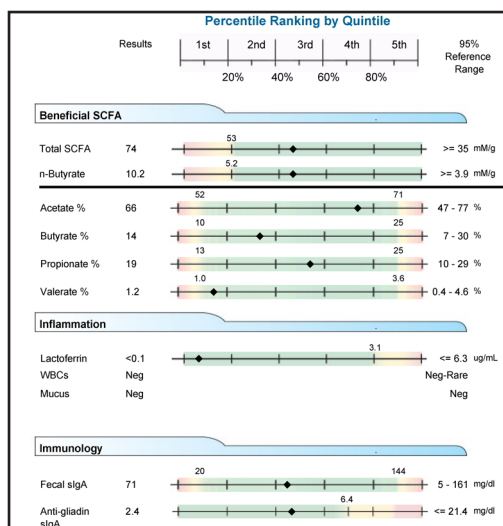
The detection of *Helicobacter pylori* in the stool of this patient may be associated with colonisation of the upper gastrointestinal tract, and given GORD is one of the presentations in this patient, a serum antibody and hydrogen breath test are warranted. It should also be noted that the patient is of Malaysian-Chinese decent and migrated to from Malaysia to Australia at the age of 17. People in south-east asian countries such as Malaysia, are known to have a higher incidence of *H. pylori*.¹

Pathogenic Bacteria		95% Reference Range
Helicobacter pylori	1.6E+006 H	<=1.0E+005
Campylobacter sp.	<0.01	<=1.0E+005
Clostridium difficile	<0.01	<=1.0E+005
E.H.E. coli	<0.01	<=1.0E+005

Other important pathogens are shown below. They include a +3 level for yeast, a positive genus-level probe for *Strongyloides*, a positive species-level probe for *Endolimax nana* and a positive kingdom-level probe for parasites. Presence of drug resistance genes, *aacA*, *aphD* and *mecA* confirms resistance to the aminoglycoside and methicillin classes of antibiotics respectively. The patient has taken both such types of antibiotics previously.

Yeast/Fungi		95% Reference Range
Yeast/Fungi; taxonomy unavailable. +3 => 10000 pg DNA/g specimen		Neg
A taxonomy unavailable finding may indicate ingested mold. The higher the number, the greater the indication for treatment, particularly when accompanied by clinical symptoms.		
Parasites		95% Reference Range
Endolimax nana	Positive	Neg
Strongyloides sp.	Positive	Neg
Parasite present; taxonomy unavailable.	Positive	Neg
A taxonomy unavailable finding likely indicates an ingested protozoan and not a human parasite. It does not indicate treatment unless patient symptoms and other inflammatory markers are consistent with parasite infection.		
Adiposity Index		95% Reference Range
Firmicutes	63	<= 80
Bacteroidetes	37	>= 20
Drug Resistance Genes		95% Reference Range
<i>aacA</i> , <i>aphD</i>	Pos	<i>gyrB</i> , <i>ParE</i> Neg
<i>mecA</i>	Pos	<i>PBP1a</i> , <i>2B</i> Neg
<i>vanA</i> , <i>B</i> , and <i>C</i>	Neg	

Further results of the **GIFx** were largely unremarkable, but are shown below for review.



Treatment

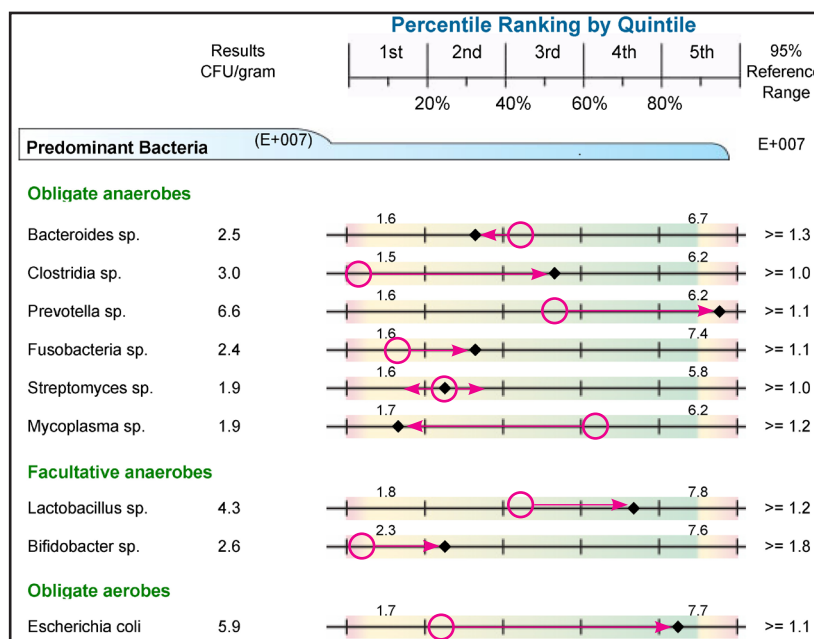
Due to a number of factors the practitioner and patient decided a competitive inhibition approach to treatment was warranted. The patient was prescribed a high-potency, multi-strain probiotic, containing a reported 450 billion organisms per serve. The composition of the product is shown below. While the exact amounts of each strain are covered by intellectual property, one study has published the respective total amounts of each type of bacteria,² namely, *Streptococcus salivarius* subsp. *thermophilus*, *Bifidobacterium* and *Lactobacillus*. These are shown below.

- *Streptococcus thermophilus* (approx. 300 billion per serve)
- *Bifidobacterium breve*
- *Bifidobacterium longum* (approx. 140 billion per serve)
- *Bifidobacterium infantis*
- *Lactobacillus acidophilus*
- *Lactobacillus plantarum* (approx. 4 billion per serve)
- *Lactobacillus paracasei*
- *Lactobacillus delbrueckii* subsp. *bulgaricus*

The patient initially started supplementing with 1 serve per day for 2 weeks and then increased to 2 serves per day. It is interesting to note the relative levels of *Bifidobacterium* and *Lactobacillus*. Most probiotics consist only of *Lactobacillus* species, whereas products combining *Lactobacillus* and *Bifidobacterium* usually include greater amounts of *Lactobacillus*. By contrast, this probiotic is heavily weighted towards *Bifidobacterium*.

Follow Up GIFx

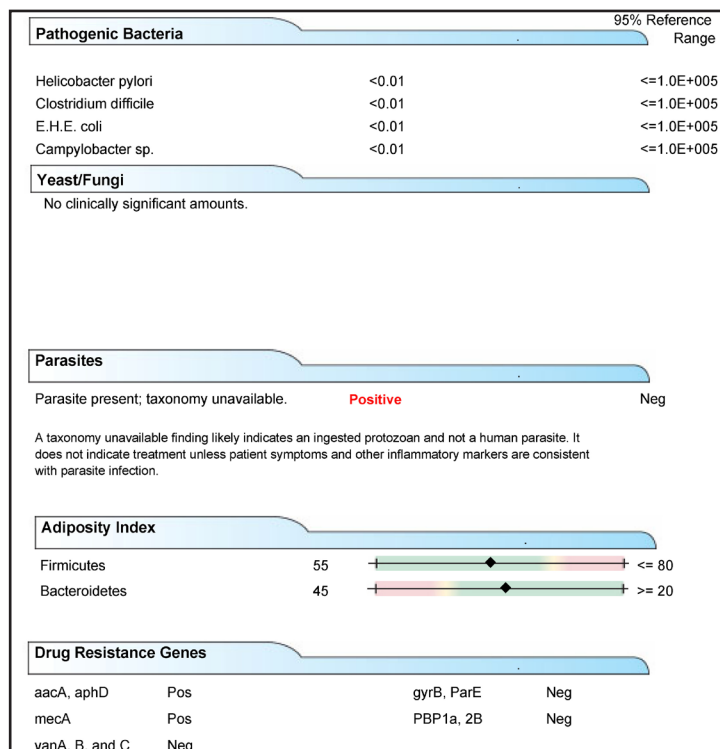
A follow up **GIFx** was ordered 7 months after starting treatment, the results of which are shown below.



Above one can see an overall improvement in the level of predominant bacteria. The pink arrows depict the change in levels from the first test. *Clostridia*, *Prevotella*, and *E. coli* are the three genera that have increased the most from the first test to the second test. Interestingly, none of these bacteria are in the probiotic taken by the patient. This confirms that *Lactobacillus* and *Bifidobacter* likely exert their beneficial effects in part by modulating multiple other genera of predominant bacteria. Indeed, a recent DNA-based study exploring the effect of *Lactobacillus casei* subsp. *Rhamnosus* (LGG) supplementation alone found it to have a significant effect on multiple genera in the gut of infants.

Elimination of Pathogens On Follow Up Testing

Below is the second page of the follow up **GIFx**. One can see that all pathogenic bacteria, yeast and parasites have been eradicated.



This is a quite a dramatic result from a single treatment intervention. Decisions as to how to treat different intestinal pathogens and the sequence of treatment are some of the most challenges choices face by users of function stool testing. This case would seem to suggest that a high-potency, multi-strain probiotic has good potential for treatment of certain intestinal pathogens.

Review of Patient Treatment Outcome

In keeping with the result of the **GIFx**, the patient reported a complete resolve in arthralgia, muscle cramping, GORD, chronic rhinitis and improved tolerance to the previously restricted food groups. The improvements were noted within a fortnight of commencing the high-potency, multi-strain probiotic. It is important to note that the numbers of CFUs in this product is comparatively very high to most multi-strain probiotics available. The patient is yet to have her ferritin levels reassessed.

Case summary

It is important to note that this patient had suffered multiple decades with chronic symptoms, most of which were unresponsive to traditional western medicine treatments. However, following a simple intervention with a high-potency, multi-strain probiotic, essentially all of the patients chronic symptoms resolved. This was equally reflected by a complete eradication of all pathogenic intestinal organisms. This simple case study highlights the potential power of targeted probiotic therapy as a stand-alone treatment for gut related health conditions.

References

1. Sasidharan S, Uyub AM. Prevalence of *Helicobacter pylori* infection among asymptomatic healthy blood donors in Northern Peninsular Malaysia. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 2009;103:395–398.
2. Brigidi P, et al. PCR detection of *Bifidobacterium* strains and *Streptococcus thermophilus* in feces of human subjects after oral bacteriotherapy and yogurt consumption. *International Journal of Food Microbiology*. 2003;81:203– 209.