Facts about IBS

Irritable Bowel Syndrome (IBS)

affects between 15 – 20% of Americans at an annual cost of greater than \$2,000,000,0000



IBS patients undergo more diagnostic studies, make up to 43% more claims,



and receive 180% more prescriptions, than unaffected controls



The Future of Gastrointestinal Diagnostics

Determining the Best First-Line Approach to IBS Current Approach to IBS



25% of all endoscopies are performed to rule out IBS

Diagnosis of Exclusion

BD B'

>50< Calprotectin

The evaluation of patients presenting with symptoms suggestive of irritable bowel syndrome (IBS) has traditionally been done by first excluding more ominous diagnoses, such as inflammatory bowel disease (IBD) or gastrointestinal malignancies (the "diagnosis of exclusion" approach).

Such an approach often involves invasive and potentially expensive diagnostic techniques, though recent literature suggests that they produce a diagnosis in only a small fraction of cases. Further, exclusion of worrisome diagnoses rarely leads to identification of an alternative, treatable condition. This situation frustrates patients and providers alike.

Utilizing Fecal Biomarker Testing

IBS as an Umbrella Diagnosis

It has become increasingly clear that IBS symptoms may be produced by distinct, readily-treatable conditions. For this reason, IBS has been referred to as an "umbrella diagnosis" that may impact detection of such alternative diagnoses.

Treatable conditions capable of producing symptoms compatible with a Rome III diagnosis of IBS include:

- Exocrine pancreatic insufficiency (EPI)
- Inflammatory bowel disease (IBD)
- Food allergies or sensitivities
- Bile acid malabsorption
- Dysbiosis and/or small intestinal bacterial overgrowth (SIBO)

50 mcg/g along with positive Rome criteria suggest a low likelihood of an IBD diagnosis





50% of all IBS patients undergo a colonoscopy

95% of all related GI-specific procedures show normal results

Endoscopy in IBS: Debatable Utility?

The following are important considerations to make when contemplating the use of invasive diagnostic procedures:

- Invasive procedures carry risks for certain patients (i.e., anesthesia complications, infection, and bleeding)
- Costs associated with invasive procedures can be high. In a recent cost-related study of patients with IBS symptoms, medical costs were significantly higher in patients who underwent gastrointestinal procedures compared to those who used fecal biomarker testing
- Invasive procedures are best suited for discovering more serious gastrointestinal conditions that are far less common than IBS, such as IBD, colorectal cancer, infections, and malabsorption syndromes
- Invasive procedures can affect patient adherence and care-seeking behaviors, particularly if pain may be involved

Non-Invasive Assessment: Utility of Fecal Biomarker Testing

Conditions under the "IBS Umbrella" are treatable, but must first be discovered in order for therapy to be properly directed. Individual fecal biomarkers exist for most, if not all, such diagnoses, and may help in directing therapeutic decision-making. In a proof-of-concept study of a panel of 8 specific fecal biomarkers, 82.8% of patients with putative IBS were found to have at least one abnormal value.

The following fecal biomarkers can be used to exclude inflammatory conditions such as IBS, and to suggest alternative conditions for which ready treatment exists:

- Fecal Calprotectin, a marker of intestinal neutrophil activation, has been shown to exclude inflammatory conditions with high sensitivity and specificity
- Pancreatic Elastase-1(PE1) is a durable pancreatic enzyme, which when found in lower-than-normal concentration in stool is suggestive of exocrine pancreatic insufficiency
- Eosinophil Protein X (EPX) is a marker of intestinal eosinophil activation, which when present in greater-thannormal fecal concentrations may be suggestive of IgE-mediated food allergy or parasitic infection
- Identification of Commensal Bacteria provides insight into diversity of the individual microbiome; disruptions of a healthy microbiome are increasingly associated with IBS as well as a host of autoimmune and cardiometabolic disorders





Positive results only occur at a - 2 % prevalence

Current IBS Treatment: A "Trial and Error" Approach

Since the current approach to IBS diagnostics rarely produces a definitive diagnosis, patients and physicians are left with an approach that closely resembles trial and error, producing some undesirable effects:

- Lifestyle and dietary changes may alleviate symptoms only if they are well-suited to the true underlying condition
- Treatments that work for one patient are often not reproducible in others
- Patients frustrated by persistent symptoms are likely to engage in self-experimentation to achieve relief, without useful guidance from physicians
- Patients may engage in "doctor shopping" in their search for relief, which erodes trust in healthcare providers and may add to costs of healthcare

Targeted Testing, Treatable Diagnoses

The ability to uncover the root cause of functional GI symptoms, such as IBS, is likely to increase both patient and provider satisfaction.

- Studies suggest that patients with positive Rome criteria and a normal Calprotectin (< 50 μ g/g) have little chance of having IBD. Values > 120 mcg/g suggest significant levels of inflammation, and further evaluation is warranted
- PE1 values between 100 μ /g to 200 μ /g reflect moderate-to-mild exocrine pancreatic insufficiency (EPI); and values <100 µ/g reflect severe exocrine pancreatic insufficiency. Patients may benefit from PERT while the underlying cause of the EPI is established
- Eosinophil Protein X (EPX) levels greater than 7.0 mcg/g are noted in studies to be associated with IgE food allergies, parasitic (worm) infection, and IBD. Further investigation to determine the source of inflammation is likely warranted
- IBS has been associated with lower fecal commensal (bacterial) diversity. Therapeutic interventions such as dietary manipulation, prebiotics, or probiotics have been suggested

