Dietary advice for inflammatory bowel disease

We have a lot of patients who understandably want advice on managing their IBD with diet.

Obviously I am happy to provide the best advice that I can, but it is a complex question and I need to outline the following background facts:

1) most patients with IBD, if not all patients with any medical conditions, will almost certainly benefit from seeing a dietitian. A dietitian is at minimum, a graduate of a 4-year science-based University degree program, they have high professional and ethical standards, and they are often very different from "nutritionists". Many dietitians have Masters' degrees, and most dietitians have a wealth of clinical experience. A dietitian will address the scientific effectiveness of any dietary measure, the tolerability and practicality, and the nutritional safety and any potential longterm consequences.

2) the evidence that diet can treat IBD on its own, without any medications, is very weak. My philosophy is to treat IBD with the appropriate medications, assuming they are safe, well-tolerated, and cost-effective, to allow the patient to eat a healthy diet without significant restrictions.

3) Of course diet is important for general health as well as IBD, and fortunately a "healthy diet" can help both conditions.

4) it is important, or at least ideal, for an IBD patient not to end up with a long list of foods that they must avoid. If the patient feels that a certain food makes them ill, then this needs to be confirmed at least once or twice, before choosing to avoid that food in the future. It is even more complex, and potentially dangerous, if the patient feels that a certain food group makes them ill. The inability to eat certain foods might indicate disease activity and inflammation that should be treated, or scar tissue and obstruction, that could be cured. A fear of eating, that can relate to an increasing list of foods, can even evolve into a psychiatric or psychological condition (see orthorexia, and ARFID (avoidant-restrictive food intake disorder)).

I have inherited several patients who were told that they would be fine if they continue to avoid fruit, vegetables, and roughage, and I completely disagree with this advice. The intolerance to roughage can be a sign of a significant narrowing or stricture, which needs to be fixed, but sometimes it is more of an "irritable bowel" symptom, that needs to be managed differently.

5) there are several papers on the website, under the IBD section, of the "health information", and these papers are long and complicated. More recently, there was an important randomized trial comparing the SCD diet with the Mediterranean diet, and found no significant differences in the outcome, suggesting that the Mediterranean diet was helpful, and is significantly less restrictive. (The GAPS diet is even more restrictive and was claimed to have benefits for diseases outside the GI tract).

Related to the SCD diet (popularized by Elaine Gottschall, with her book in 1996 called Breaking the Vicious Cycle – I cannot recommend this diet or book), gastroenterologists in general, and myself included, have resisted the severe restrictions involved, especially related to wheat and gluten, and the topic of wheat and/or gluten avoidance is actually a separate topic that does not need to be routinely

addressed in most IBD patients - of course there is celiac disease in some patients with IBD, and nonceliac gluten sensitivity remains a controversial diagnosis, both in non-IBD and IBD patients.

Having said that, celiac disease is slightly more common in patients with Crohn's and or ulcerative colitis, compared to the general population. Celiac disease should be accurately diagnosed, or ruled out, before a patient embarks on a longstanding gluten-free diet which is inconvenient, expensive, and can be somewhat unhealthy.

6) diet is very complex to understand and research for several reasons:

i) much of the dietary research has been based on " dietary diaries", ie retrospective, and based on recall/memory.

ii) a significant amount of the dietary research, (in my opinion significantly more than a lot of drug-based research) is biased, and there are overt or hidden conflicts of interest. Please refer to "food politics.com" to get a feeling for how complicated dietary research and science can be. Dr. Marion Nestle is a world-renown expert in this area.

iii) similar to all medical research, studies need to be replicated in different populations and at different times, for the conclusions to be validated. In addition, there are critical differences between epidemiological dietary studies suggesting risk factors for developing IBD, and interventional studies suggesting mechanisms for treating IBD.

iv) diet ties in very much to other scientific issues that might influence IBD, including the gut microbiome, the health of the lining of the intestine, and the immune system. None of these areas is simple to understand, and the interactions are even more complex.

v) diet clearly influences symptoms, but the link between symptoms and disease activity, and long-term outcome, has been very difficult to study. Modern IBD therapies need to address much more than symptoms. Objective outcomes (strongly recommended for clinical trials) include endoscopy, scoring systems, blood work, stool tests (e.g. fecal calprotectin) and long-term outcome. This (difference between symptoms and objective findings) would be particularly relevant to overlapping symptoms of IBS (irritable bowel syndrome), and IBD, and could apply especially to the use of the low FODMAPs diet in IBD.

vi) similar to the problem affecting pharmacological based trials in IBD, patients are obviously individuals, their diseases are obviously different, and there is concern that even the diagnosis of "Crohn's disease" might include several different types of disease. Each patient could have a different and even unique response to various components of the diet, obviously overlapping with dietary intolerances, and dietary allergies. These issues are common, in patients who do not have IBD as well as those who do have IBD.

vii) many dietary trials are flawed by having very small numbers - an example would be the study of the "autoimmune protocol" diet in 15 patients, in 2017, and never repeated, or a 2014 study of 11 patients on the IBD-AID diet (see the new document described below as Food as Medicine).

viii) dietary trials in the pediatric age group may not be generalizable to the adult patients for 2 reasons, what can be done to children in terms of treatment may be quite different from that that can be offered to adults, and secondly the disease might be biologically different (or at least significantly earlier in

clinical course). This is particularly important because tube feeding and especially elemental feeding (theoretically much easier to digest, but not palatable and requiring a nasogastric tube) has been an effective treatment for children with Crohn's disease, equally as effective as steroids, but it is completely impractical to suggest this type of treatment for adults with Crohn's disease.

7) A recent document entitled “Food as Medicine: How Food and Diet Impact the Treatment of Disease and Disease Management” (which is referenced on Dr Nestle’s website, April 15th, 2022) is comprehensive, scientific, and well-referenced, and contains a section on IBD which I found useful, and I have copied that section directly here (in italics, re-formatted, and references removed – they are available in the original document). After reviewing this section in detail, I would make the following comments. It is not a peer-reviewed scientific article but was written by committee including many experts. I find the focus on FODMAPs to be a little misleading, and surprising, as the direction, in clinical gastroenterology, in 2022, is that FODMAPs play an important role in IBS, but not so much in IBD. Secondly, a low FODMAPs diet may adversely affect fecal diversity, and there may be other side effects from restricting FODMAPs, in the long run, that require much more caution than is currently exercised. Addressing the FODMAPs content of the diet should ideally involve a long-term relationship with a dietitian. Finally, under the section on supplements, they "dabble" in the probiotic literature which is very complex, rapidly changing. Beyond probiotics, a more scientific approach to IBD will be the ongoing research into fecal microbiota transplant (stool transplant). The following italicised section is taken from the document:

Inflammatory Bowel Diseases

More than 1.8 million people in the United States have an inflammatory bowel disease (IBD), which refers to a group of chronic autoimmune inflammatory diseases of the gastrointestinal (GI) tract.

Clinical symptoms of IBDs include constipation, diarrhea, abdominal cramps, blood and mucus in the stool, and bowel obstruction.

Ulcerative colitis (UC), a chronic disease in which abnormal reactions of the immune system cause inflammation and ulcers on the inner lining of the large intestine, and Crohn’s disease (CD), a chronic disease that causes inflammation and irritation of the digestive tract, are the most common IBDs.

Individuals with IBD go through periods of active disease that, if left untreated, can progress to the point of requiring hospitalization and surgery.

Half of CD patients require surgical intervention in the ten years following their diagnosis and over a third need more than one procedure.

Long term, persistent inflammatory responses, including IBD, pose significant risk factors for chronic inflammatory conditions, cancer, and infectious disease.

According to the National Institutes of Health National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), the exact cause of IBDs such as UC and CD is still unclear.

However, much research has been conducted investigating the potential role individual diet plays in the development of IBDs.

Several studies conducted between 2005 and 2011 determined that the omega-6 polyunsaturated fats found in red meat, cooking oils, and margarine increased the risk of developing IBD.

Furthermore, a 26-year longitudinal study of more than 100,000 female nurses, appearing in the journal Gut in 2014, concluded that "high intake of trans-unsaturated fats may be associated with an increased risk of UC." Additional research has suggested that IBD may be tied to the ratio of omega-3 versus omega-6 fatty acids an individual consumes rather than overall intake. A 2019 review published in International Journal of Molecular Science found omega-3 fats "may regulate and attenuate the inflammatory processes and lead to remission of IBD and, thus, could be considered as a new complementary approach to the treatment of these inflammatory conditions." Some research has explored potential connections between the consumption of animal products (including dairy and animal proteins) and the development of IBD. In a 2010 study of more than 60,000 middle-aged French women, published in The American Journal of Gastroenterology, researchers found "high protein intake was associated with an increased risk of IBD". The positive association between high protein intake and IBD risk was restricted to animal protein intake. Among animal protein sources, both fish and meat were associated with risk, whereas egg and dairy products were not, potentially because of insufficient power. However, more research is required before a connection between protein or dairy intake and the development of IBD can be established. Consumption of animal products (processed meat and red meat in particular) has also been studied for its potential effect on IBD symptoms. One 2020 randomized controlled trial appearing in the journal Gastroenterology showed that a diet low in red and processed meats did not reduce the rate of CD flare ups. However, the authors note that reducing red meat intake might be beneficial for other health conditions. To manage the symptoms of IBDs, patients may try a variety of different diets and food treatments, because not all individuals have the same dietary triggers. Patients managing IBDs therefore often follow diet regimens that are highly individualized to their specific needs. For example, IBD patients might try a variety of dietary changes to reduce symptoms, including avoiding highfiber foods (such as vegetable skins and nuts), eating a high-calorie diet, eliminating lactose from the diet, or reducing salt intake. Furthermore, according to a 2020 survey appearing in Frontline Gastroenterology, "Dietary advice [from healthcare providers to patients] in IBD is inconsistent reflecting uncertainty among healthcare professionals… With a striking lack of consistent dietary advice, it is not surprising that people with IBD frequently follow their own dietary rules." Advice from the National Institute of Diabetes and Digestive and Kidney Diseases is unspecific; patients with CD are suggested to keep a food journal to track their food triggers, and patients with UC are recommended to eat a "healthy diet."

"Guidelines for dietary recommendations and nutritional therapy for patients with inflammatory bowel disease (IBD) are lacking, and patients are moving toward popular defined diets for relief of symptoms and inflammation," wrote researchers in Gastroenterology & Hepatology in 2019. Many of these popular defined diets and food treatments have been studied for their effects on symptoms of IBD, such as a low-FODMAP diet, an anti-inflammatory diet, probiotic supplementation, and the Mediterranean diet. Most of the research into the efficacy of these dietary interventions, however, remains observational, and additional, randomized controlled studies are recommended.

Dietary Interventions for IBD

Among food-based interventions for IBD, low-FODMAP diets are the most studied, and a plethora of evidence supports their use. The acronym FODMAP refers to fermentable oligosaccharides,

disaccharides, monosaccharides, and polyols, which are short-chain carbohydrates (sugars) that the small intestine absorbs poorly. Patients on a low-FODMAP diet refrain from consuming foods that contain these types of carbohydrates, including many fruits, vegetables, artificial sweeteners, dairy products, starches, and plant-based proteins, for six to eight weeks. Much published research, including observational studies and literature reviews, points to the efficacy of the low-FODMAP diet as part of a treatment plan for IBD, but researchers agree that more clinical studies, including randomized controlled trials, need to be conducted. Research has suggested that the Mediterranean diet may be a useful therapeutic tool for IBD due to its potential role in modulating gut inflammation. A 2020 study of more than 100 adults with either UC or CD appearing in the journal Inflammatory Bowel Diseases showed "improvement of disease activity and inflammatory markers" after adoption of the Mediterranean diet. However, according to a 2021 study appearing in Nutrition & Dietetics, the typical diets of many IBD patients align poorly with Mediterranean diet characteristics, suggesting that "dietary interventions focusing on improving the diet of individuals with inflammatory bowel disease to align with Mediterranean diet characteristics are warranted." Another diet that is recommended to IBD patients is the Autoimmune Protocol (AIP) diet, which requires the elimination of grains, dairy, refined sugars, legumes, eggs, nuts, seeds, nightshades (e.g., tomatoes, potatoes, and eggplant), and food additives and increases the consumption of fermented foods. One 2017 prospective uncontrolled study appearing in Inflammatory Bowel Diseases of 15 adult patients found that the AIP diet improved symptoms in patients with UC and CD and 73 percent achieved clinical remission within six weeks of starting the diet. Another diet that is recommended for patients with IBD is the Specific Carbohydrate Diet (SCD), which removes grains, refined sugars, processed and packaged foods, some legumes and dairy, and starchy vegetables from one's diet. A 2016 comparative analysis of the SCD published in Nutrition showed improvement in pediatric CD patients, as assessed by the Pediatric Crohn's Disease Activity Index, a validated instrument for measuring disease activity in children and adolescents.

However, other retrospective surveys in both children and adults with CD and UC have shown mixed results, with only a subset of patients experiencing small improvements in disease outcomes. Derived from the SCD is the Inflammatory Bowel Disease Anti-Inflammatory Diet (IBDAID), which was developed by researchers at the University of Massachusetts Chan Medical School. According to the developers of the diet writing in Nutrition Journal in 2014, the IBD-AID consists of lean meats, poultry, fish, omega-3 eggs, particular sources of carbohydrate, select fruits and vegetables, nut and legume flours, limited aged cheeses (made with active cultures and enzymes), fresh cultured yogurt, kefir, miso and other cultured products (rich with certain probiotics), and honey. The IBD-AID has three phases based on the level of symptoms a patient is experiencing, each phase building upon the dietary allowances of the previous phase. In a 2014 case series report published in the Nutrition journal, 100 percent of patients (n=11) placed on the IBD-AID reported a decrease in bowel frequency and were able to discontinue at least one of their prior IBD medications. The authors conclude, "The study of the IBD-AID would benefit from the rigorous analysis provided by a randomized clinical trial, with evaluation of mucosal healing and assessment of change in gut flora to examine the exact mechanism(s) of benefit." A 2021 review published in Intestinal Research summarized available data from studies that aimed to evaluate the effectiveness of the AID and concluded, "Lack of consistent data to support a practical recommendation of AID in managing IBD patients was noted due to various limitations present in previous research. It is necessary for clinicians advising IBD patients to have in-depth knowledge about the strengths and limitations of the IBD-AID nutritional regime to ensure its effectiveness as a therapeutic strategy."

Dietary Supplements and IBD

Some IBD patients have turned to dietary supplements as part of their treatment plans, and consume supplements such as curcumin. Curcumin has been shown to inhibit the activation of transcription factors that lead to inflammation. A subsequent double-blind, placebo-controlled trial published in Current Pharmaceutical Design in 2009 reported that patients given curcumin were less likely than controls to have a recurrence in UC symptoms in the six months after treatment. Larger studies analyzing higher doses of the supplement are recommended to better understand its effect on IBD.

Another supplement that has been studied as a potential diet intervention for IBD is fiber, derived from a variety of plant sources. A randomized controlled trial appearing in Crohn's & Colitis in 2020 reported the prevention of gastrointestinal symptoms among UC patients treated with 60 grams of oat bran a day, but additional studies are required to determine the long-term benefits of oat bran supplementation. According to a 2017 review in the journal Nutrients, two open-label trials (trials in which information is not withheld from participants) have found that 90 grams of germinated barley foodstuff a day reduced abdominal cramping and prolonged remission in UC patients. Germinated barley appears to be a safe maintenance therapy for adults with UC. Several clinical trials have investigated the use of various species and strains of E. coli and Lactobacillus bacteria as treatments for IBD. The results do not appear as efficacious for patients with CD as they are for those suffering from UC. Three metaanalyses, conducted between 2009 and 2015, reported that some strains, including E. coli Nissle 1917 and Lactobacillus GG, were just as effective as mesalazine, a common medication for IBD, at preventing a relapse of UC symptoms. Two additional meta-analyses aimed at understanding the impact of probiotics on CD, however, concluded that supplementation with Lactobacillus GG and Lactobacillus johnsonii LA1 did not decrease the risk of relapse in CD patients. Further study of the varying impacts of different strains and dosages on both UC and CD are needed to determine the patient populations that could benefit from probiotic treatment.

Finally, I recently reviewed a number of other papers, including an important paper on food additives (Inflammatory Bowel Diseases and Food Additives: To Add Fuel on the Flames!
R. Marion-Letellier et al, Nutrients 2019, vol 11, p. 1111) which specifically addresses salt, sugar, emulsifiers (such as carrageenan), aluminum, titanium, and pesticides. All of these areas are lacking in definitive research or answers. This paper also addressed gluten, fructans, and exclusion diets.

For general health, and therefore likely also for IBD health, we should eat "healthy".

What that means for my patients in 2022 is to avoid ultraprocessed foods, follow Michael Pollan's most famous (and world's shortest) advice "Eat food. Not too much. Mostly plants".
By "food" he means the food that would be recognized by your grandmother as food and does not come in a box with multiple ingredients and additives, and would ideally be prepared from scratch. "Not too much" suggests moderation, and a significant reduction in calories, whether it is fat, carbohydrate, or even protein, compared to what we are currently experiencing and exposed to. "Mostly plants" suggests moving towards "plant-based", perhaps also called flexitarian. There is extensive literature on the absence of evidence to adhere to a vegan or vegetarian diet, unless one is motivated by ethical concerns (and perhaps climate change concerns), which can be very important and valid.

This concludes a whirlwind review of dietary concepts regarding IBD, in 2022.