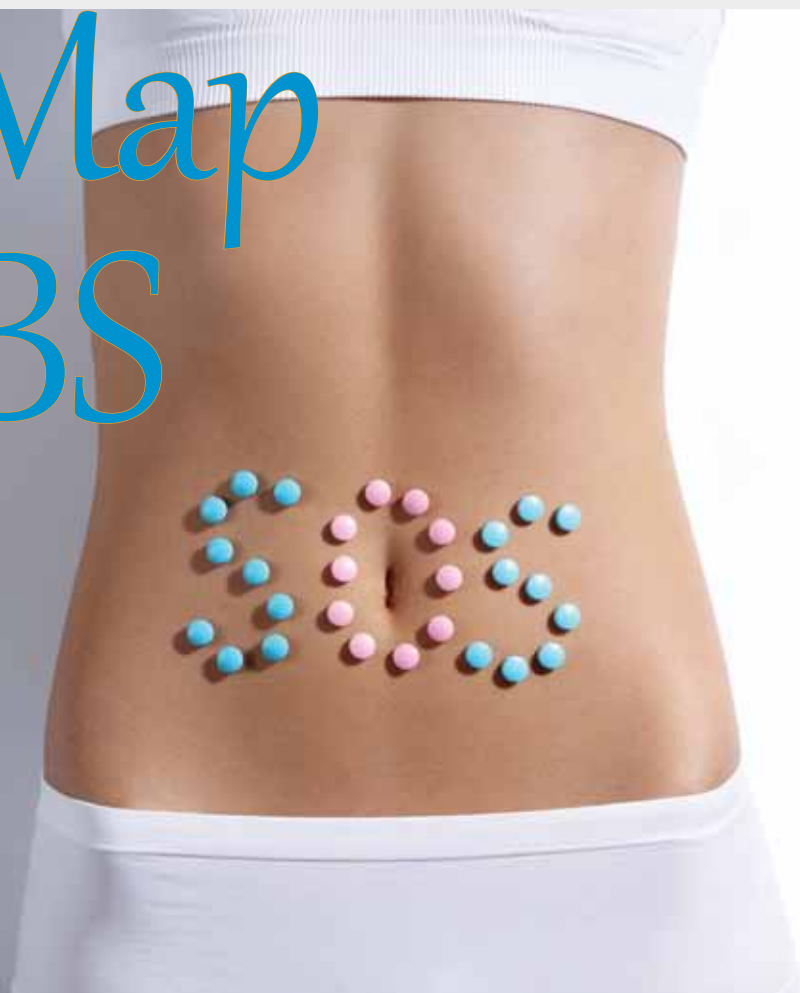


FODMAP: Road Map for IBS

This new dietary approach can tame your touchy stomach



Irritable Bowel Syndrome interferes with life. People who have it narrate a frustrating journey of countless tests and recurring symptoms that wax and wane but are rarely relieved for long.

The physical pain is often crippling and the psychological and social stresses are a constant burden. The story of going to a wedding, concert or movie and always sitting in the back or at the end of an aisle in order to quickly get to a bathroom is echoed throughout the IBS community. People describe the embarrassment at having to hide cramps, gas, bloating and diarrhea (the usual symptoms of the illness) from family and friends, from colleagues at work, from acquaintances at social events. Life with IBS is a constant challenge.

IBS provokes anxiety—people don't know when symptoms

will strike or where they will be. This condition colors and narrows their world. It cramps the psyche, as well as the gut.

"I get very anxious about going on a trip. I've had several attacks on airplanes." —Nancy

"Occasionally you feel great but then you think—when is the shoe going to fall?" —Barbara

What is Irritable Bowel Syndrome?

IBS is a functional bowel disorder: the gastrointestinal tract looks normal but does not work properly. It is one of the most common disorders diagnosed by doctors, affecting about one in five Americans and, according to the National Digestive

Diseases Information Clearinghouse, it occurs more often in women. While each case is slightly different, everyone with IBS agrees on one thing: it truly disrupts your life.

The diagnosis usually comes after other conditions with similar symptoms have been ruled out. These include inflammatory bowel disease (e.g., colitis, Crohn's disease), celiac disease, ulcers, food allergies and intolerances, pancreatic insufficiency, microscopic colitis, gastrointestinal infection and parasites. Often patients will consult multiple doctors and undergo numerous endoscopies, colonoscopies, x-rays, scans, blood tests and biopsies. Thus, it is a diagnosis of exclusion.

The actual diagnosis, made according to the "Rome III Criteria," requires that a patient have abdominal pain or discomfort for at least 3 months out of the previous 12 months associated with:

- changes in bowel habits that affect the frequency (more than three per day or fewer than three per week), consistency of the stool (lumpy/hard or loose/watery) and improved with passage of stool, and
- abdominal bloating or distention.

"My stomach rumbles all the time and I'm in the bathroom all the time. Sometimes it feels like I've had a colonoscopy prep—it just keeps coming." —Barbara

People with IBS also report fatigue and a 'noisy' abdomen (borborygmi). Complicating matters, IBS can and does exist along with other conditions. Thirty percent of those diagnosed with celiac disease first received a diagnosis of IBS.

While IBS symptoms are distinct, the causes of this condition are more elusive and not fully understood. They appear to be a complex construction of:

- genes (People often say that "bad stomachs run in the family."),
- infections and/or with concurrent antibiotic therapy that alter the normal flora of the intestines,
- stress or psychosocial factors ("Usually when I'm in a stressful situation, I get diarrhea."),
- uncharacteristic balances of gut bacteria from that of healthy individuals,
- altered gastrointestinal motility (how the gastrointestinal tract deals with and eliminates its contents),
- disruption or dysregulation in the brain-gut nervous system,
- a highly sensitive gut ("visceral sensitivity"),
- food intolerances.

IBS has been particularly difficult to treat and its symptoms challenging to manage. Patients and doctors recognize that the onset of symptoms is often related to the ingestion of certain foods. Many physicians recommend removing caffeine and fat from the diet and increasing fiber. Probiotics are being studied as a management tool. Different medications, including laxatives or anti-diarrheals, antispasmodics, bulking agents and antidepressants, are used in addition to dietary and lifestyle changes.

Unfortunately, most medications and dietary changes are unsatisfactory solutions for the majority of IBS sufferers. They live in frustrated resignation, finding different coping techniques.

"I took medicine to poop and got diarrhea. So I took medicine to stop." —Lola

"I load up with Lomotil ahead of a social event. I eat them like M&M's. It's the

only way I can get through an evening." —Nancy

But now, a scientifically based dietary approach has been developed in Australia that offers a new and exciting opportunity to change the IBS landscape and brings hope to the millions suffering from IBS symptoms.

Symptom Solution

Most of the food we eat is broken down and absorbed in the small intestine. When foods are not broken down easily, such as some sugars and insoluble fiber, they arrive in the large intestine mostly undigested. There, a large population of different bacteria happily dine on the unused fiber and sugars in our diet (a process called fermentation), producing a great deal of gas. The center

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Fermentable—rapidly broken down by bacteria in the bowel

Oligosaccharides—fructans and galacto-oligosaccharides

Disaccharides—lactose

Monosaccharides—fructose

And

Polyols—sorbitol, mannitol, xylitol and maltitol

of the intestine swells up with liquid, solids and gas, creating the pain and bloating that's characteristic of IBS. This also leads to changes in gut movement, prompting the intestines to empty too quickly (diarrhea) or too slowly (constipation).

"How much liquid is retained in the bowel and how much gas is produced depend largely on what food is eaten," explains Australian Sue Shepherd, PhD, a leading dietitian specializing in celiac disease and IBS. "Since our diet typically contains sugars that are poorly absorbed by the small intestine, the arrival of these foods in the large intestine sets off a chain of events that results in an increase in liquids and gas."

Shepherd, a senior researcher in the Department of Gastroenterology at the Alfred and Box Hill Hospitals in Melbourne, Australia, was diagnosed with celiac disease at the age of 20 while attending college.

"At that time, celiac disease was considered rare and few dietitians had any interest in it—but I did," Shepherd says. "So I started a private practice in it and got a name as someone interested in 'bowel health.'" She saw many people with gut issues. Although not all of them had celiac disease, she noticed that wheat made many of them sick.

"I realized that there had to be something else besides celiac that was causing their symptoms," she says.

She began to piece together the information that was known about different carbohydrates, such as lactose, sugar alcohols, beans and unknown fructose and fructans. Then she explored their relation to the development of gas and their poor absorption in the small intestine. As she started to eliminate some of these carbohydrates from her patients' diets, she recalls, "Doctors called me into the hospital to ask: 'What is this diet you're recommending that's causing these patients not to come back to see us?'"

Working closely with Peter Gibson, a professor of medicine at Monash University, Shepherd identified the 'problem' sugars that ferment in the large intestine. She then created an effective new diet for the treatment of IBS symptoms based on avoiding

these particular sugars. She gave the diet an unusual name—FODMAP—based on an acronym.



I see patients where gum-chewing in and of itself can be the major thing they're doing that causes a problem."

The FODMAP diet essentially cuts off the food supply for the bacteria in the large intestine that create the liquid, gas and bloating of IBS.

FODMAPs Explained

FODMAPs are indigestible sugars that leave the small intestine mostly unabsorbed and move into the large intestine. There they become 'fast food' for the bacteria that inhabit the colon. Studies confirm that this bacterial feast draws in excess fluid to the bowel. Breath tests show that it also increases gas production, which causes stomach bloating and distention.

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Oligosaccharides include fructans, such as products made from wheat and some vegetables, notably onions and garlic. Galacto-oligosaccharides are the complex sugars present in legumes, such as baked beans, lentils and chickpeas. All these foods should be avoided, especially in large amounts.

The only disaccharide that's considered

a FODMAP in food is lactose, the sugar in milk products. Reducing lactose consumption may not minimize IBS symptoms unless you are lactose intolerant because of a genetic lack of lactase (the enzyme that digests lactose) or have a disease or condition that damages, inflames or destroys the brush border of the small intestine where lactase is produced. (Destruction of the brush border, located on the tip of intestinal villi, is common in celiac disease.) Importantly, a lactose-free diet is not a dairy-free diet. There are a number of cheeses that are lactose-free; many people can handle small amounts without experiencing any symptoms.

The main culprit of the monosaccharides for those with IBS is fructose. Fructose is a single sugar that is found in all fruits, added to many foods and soft drinks in the form of high-fructose corn syrup and also present in some vegetables and grains. It is easily absorbed in the small intestine when it binds to glucose, which acts as a 'porter' to carry it across the intestinal cells into the body. This transportation system slows or breaks down when there is too much fructose—an increasing problem in the typical U.S. diet. This results in fructose malabsorption. The low FODMAP diet directs people to select fruits that contain equal amounts of glucose and fructose and to limit the amount of these fruits eaten in one sitting. Thus, it's important to be aware of both dose and concentration.

P stands for polyols or 'sugar alcohols,' such as sorbitol, mannitol, maltitol and xylitol. These are often the sweeteners used in "sugar-free" products. Occurring naturally in some fruits and vegetables, they're most often a problem when found in gums, mints and candy.

"I see patients where gum-chewing in and of itself can be the major thing they're doing that causes a problem. It's not reported like food items," says nutritional and celiac specialist Christine Dougherty, ND. Inulin, a substance derived from root vegetables, is another polyol that's often added to yogurts, snack bars and kefir.

Dietary Cure

Shepherd's research and clinical experience in Australia has proven that the FODMAP diet is effective for three out of four IBS patients. (One out of four patients have IBS caused by stress, an underlying medical condition, such as bacterial overgrowth, an enzyme deficiency—especially pancreatic or lactase—or other triggers.) The diet has been shown to improve diarrhea and constipation, as well as lowering fatigue.

Relatively new in the United States, the FODMAP diet is now gaining buzz—and credibility—in American medical circles. The diet's effectiveness is confirmed by celiac dietitian Melinda Dennis, MS, RD, LDN, nutrition coordinator and research investigator at the Celiac Center at Beth Israel Deaconess Medical Center in Boston, Massachusetts. Dennis says that many of her patients with celiac disease have concurrent fructose malabsorption and benefit from the FODMAP approach.

Several other dietitians at major medical centers in the United States have started implementing the FODMAP diet for select groups of patients and have had similar successful results.

"It's life-changing for these people. In my 25 years as a dietician, it's the most rewarding thing I've done," says Kate Scarlata, RD, LDN, a licensed dietician with a private practice in Massachusetts. Many of her patients who had longstanding IBS symptoms now "feel like a new person" on the diet, she says.

Where to Start

"I finally went to this remarkable gastrointestinal specialist who said that given my symptoms, I should try this FODMAP diet. So I met with a dietician who asked what I usually eat and it turns out I naturally avoid a lot of foods that don't sit right with me—except for onions, garlic and gluten. That's where I should have started! —Allison

On the FODMAP diet, "onions are public enemy number one," says Sue Shepherd. She recommends starting the diet by eliminating all high FODMAP foods for at least two months, preferably under the guidance of a registered dietician. This two-month

period is "meant to be a temporary trial," she says. It's followed by a re-challenge phase where the person introduces one FODMAP group at a time back into his or her diet, tapering up slowly and looking for a tolerance level.

Because of the restrictive nature of the diet, some nutritionists recommend a shorter trial period (two weeks) before the substantial reintroduction of FODMAP foods. But the longer trial and more gradual reintroduction of sugars provide more healing time, Shepherd explains, which is beneficial for anyone whose gut is very inflamed from years of poor absorption. It also helps identify specific dietary triggers, which vary from person to person.

"You want to achieve *and* maintain symptom relief," says Shepherd.

Some people undergo breath tests to determine if they have intolerance to fructose or lactose. If tests come back negative, they can continue to eat these food groups while on the diet.

Should you tackle the FODMAP diet on your own? Probably not, says Dennis, who

recommends working closely with a knowledgeable dietitian, particularly when first starting the diet.

"Nutritional deficiencies can crop up," she says, such as lack of fiber or too little calcium and vitamin D when lactose-containing foods are eliminated. "You are limiting many vitamin A- and C-rich foods and need to compensate for this loss, especially in those people with celiac disease."

"The FODMAP diet is not difficult to follow in the right hands. Many people who initially try it on their own and find that it doesn't work are actually not doing it properly," Scarlata says. "Giving up an apple is not as challenging as giving up onions or garlic, which are present in so many processed foods, like salad dressings, broths, marinades, crackers."

When adding foods back after the trial period, it is important to:

- Keep a detailed food diary. It should include foods ingested, amounts, when they're eaten and any symptoms that occur.
- Test one FODMAP food category at a time.

FODMAP Foods

The FODMAP diet is based on eliminating specific dietary offenders and then adding back those foods you can tolerate, thereby determining your individual threshold. Here's a partial list of generally friendly and problem foods. A complete list of foods that have been tested for different FODMAPs can be found in *Food Intolerance Management Plan*, a book by Sue Shepherd and Peter Gibson.

Avoid These (high FODMAPs)

Fruits Apples, nectarines, cherries, watermelon, mango, pear, canned fruit in natural juice, dried fruit.

Vegetables Artichokes, asparagus, beetroot, Brussels sprouts, cabbage, fennel, garlic, leeks, onions, peas.

Grains Wheat-based products—bread, pasta, crackers, rye-based products, barley.

Milk Products* Cow's milk, custard, cottage cheese, ricotta.

Other Legumes (such as chickpeas, lentils, beans), pistachio nuts, sugar-free gum, mints, desserts containing polyol additives (ending in -ol), honey, high fructose corn syrup, fruit juice concentrate.

Enjoy These (low or no FODMAPs)

Fruits Bananas, blueberries, grapefruit,

grapes, honeydew melon, kiwi fruit, lemons, limes, oranges, raspberries, strawberries, tomatoes.

Vegetables Bean shoots, bok choy, broccoli, carrot, celery, corn, cucumber, eggplant, green beans, lettuce, potato, pumpkin, spinach, green part of spring onion, sweet potato, turnip.

Grains Gluten-free bread and cereal products, buckwheat, corn, oats, polenta, quinoa, rice, sorghum.

Milk Products Lactose-free milk, rice milk, cheddar cheese, feta, Parmesan, Brie, camembert, butter, margarine.

Other Sugar (sucrose), glucose, artificial sweeteners not ending in -ol, molasses, maple syrup, oils infused with garlic or onion.

*Those who are lactose intolerant should avoid these items.

- Test with foods that don't contain more than one FODMAP, if possible. For example, a mango contains only fructose; cow's milk contains lactose; wheat bread contains fructans. In contrast, pears contain a number of different FODMAPs and reintroduction can confuse a trial.

- Eat small portions of any test foods and increase times per week eaten until symptoms appear.

- Allow a "washout" period between food trials. If you're sensitive to a particular FODMAP food, it takes your gastrointestinal tract a period of time to normalize after eating it. In addition, waiting a week or so between trials helps you clearly identify which new food is a problem.

Those who follow the diet soon become experts at determining which FODMAP categories apply to them, which specific foods make them sick and what their tolerance is for any one food. Eating FODMAP foods has a cumulative effect. Most people find that they have a tolerance threshold for many of these items and that it's not always necessary to eliminate any food or food group entirely.

Feeling Better

The experts agree that silencing the frustrating, miserable symptoms of IBS is a strong incentive to start—and maintain—the FODMAP diet. Once symptoms are tamed, people eventually take charge of their own individual diet plan, geared



to their specific needs and food tolerances. Here are helpful suggestions to get you started.

Consult a registered dietician who is knowledgeable about the FODMAP diet. A nutrition expert can guide you through both the elimination and reintroduction phases of the diet and can help you with menu planning, as well as vitamin and mineral supplements, if necessary.

Focus on what you *can* eat. There are many delicious foods to enjoy that won't cause uncomfortable symptoms.

Learn to read ingredient labels so you know what to avoid. Processed foods, salad

Tell Me More

For additional information about the FODMAP diet, check out these books.

Food Intolerance Management Plan (Viking, Australia 2011), by Dr. Sue Shepherd and Dr. Peter Gibson.

IBS Free At Last! Change Your Carbs, Change Your Life with the FODMAP Elimination Diet (Pond Cove Press 2012), by Patsy Catsos, MS, RD, LD.

Real Life with Celiac Disease, by Melinda Dennis, MS, RD, LDN, and Daniel Leffler, MD, MS. A chapter is devoted to the FODMAP diet.

The Complete Idiot's Guide to Eating Well with IBS (The Penguin Group 2010), by Kate Scarlata, RD, LDN

dressings, marinades, cereals, snacks and commercial broths often contain FODMAPs.

Check your medications. Many medicines, especially those sweetened for children, contain FODMAPs.

Understand that gluten-free doesn't necessarily mean FODMAP friendly. Many gluten-free foods contain honey, onions, garlic and other problem additives or sugar offenders.

Plan ahead. Create menus and find tasty low-FODMAP substitutes for ingredients like onions and garlic.

The FODMAP diet is an exciting approach to a condition that affects so many people. It is not a cure for IBS. It manages and relieves IBS symptoms but it does not correct the underlying causes of the disease, which are complex and not fully understood.

There is every scientific indication that the FODMAP diet is an effective—and often immediate—way to control IBS symptoms. It offers physical as well as psychological freedom from the nearest “facilities.” **LW**

Science contributor Rory Jones is co-author of Celiac Disease, A Hidden Epidemic (William Morrow, 2010). She was diagnosed with celiac disease and dermatitis herpetiformis in 1998.

Breath Tests

Breath tests are used to assess specific problems in the small intestine, such as lactose intolerance, bacterial overgrowth, fructose intolerance and intestinal transit time.

The tests measure the hydrogen or methane gas released from the lungs, which is a normal by-product of digestion. Patients are given drinks containing different sugars (galactose, glucose, lactulose, fructose) and their breath is measured every half hour (or sometimes every 15 minutes). The basis of the test is whether sugar is absorbed in the small intestine or metabolized by bacteria in the

colon where it gives off either hydrogen or methane gas. Since these gases are quickly absorbed and expired through the lungs, the more gas produced, the less absorption has occurred. An increase in hydrogen indicates specific intestinal problems.

While these tests are an easy tool to measure specific alterations that may underlie symptoms, they do have limitations. They are subject to false negatives due to carbohydrate malabsorption in chronic pancreatitis and celiac disease or delayed gastric emptying, and false positives due to rapid transit or not following dietary guidelines before the test.