Dietary approaches to irritable bowel syndrome

SUSAN J. SHEPHERD BAppSci(Health Promotion), MNutDiet, PhD

The low FODMAP diet, which restricts fermentable short-chain carbohydrates, is recommended for the first-line dietary management of the symptoms of irritable bowel syndrome.

MedicineToday 2013; 14(9): 80-83

REMEMBER

- Irritable bowel syndrome (IBS) is very common, affecting about 15% of the population.
- IBS is characterised by altered bowel habits and abdominal pain in the absence of an identifiable disease; other symptoms include abdominal bloating, distension and excessive wind.
- The perception of food intolerances is twice as common in patients with IBS than in the general population.[1] Food and food components are commonly blamed as triggers for IBS symptoms, including gluten, wheat, dairy, caffeine, fat and alcohol.

TYPES OF FODMAPS AND FOOD SOURCES

Oligosaccharides

Fructans: wheat, barley, rye, onion, garlic, leek, shallots, spring onion (white part), legumes, lentils, chickpeas

Galacto-oligosaccharides: legumes, lentils, chickpeas

Disaccharide

Lactose: milk, custard, ice cream, yoghurt

Monosaccharide

Fructose (in excess of glucose):* honey, apples, pears, mangoes, watermelon, asparagus

Polyols

Sorbitol: apples, apricots, cherries, nectarines, peaches, pears, plums, and chewing gums, 'low carb' bars and confectionery sweetened with polyols

Mannitol: watermelon, cauliflower, mushrooms, snow peas

* Fructose is present in higher concentrations than glucose.

Dr Shepherd is Senior Lecturer in the Department of Dietetics and Human Nutrition at La Trobe University, Melbourne, Vic.

Series Editor: Associate Professor Simone Strasser, MD, FRACP, Clinical Associate Professor, Central Clinical School (Medicine), University of Sydney; and Senior Staff Specialist, AW Morrow Gastroenterology and Liver Centre, Royal Prince Alfred Hospital, Sydney, NSW.

The views published in this Series are those of the author and not necessarily indicative of those held by all members of the Digestive Health Foundation or GESA.

AN APPROACH TO THE DIETARY MANAGEMENT OF IRRITABLE BOWEL SYNDROME

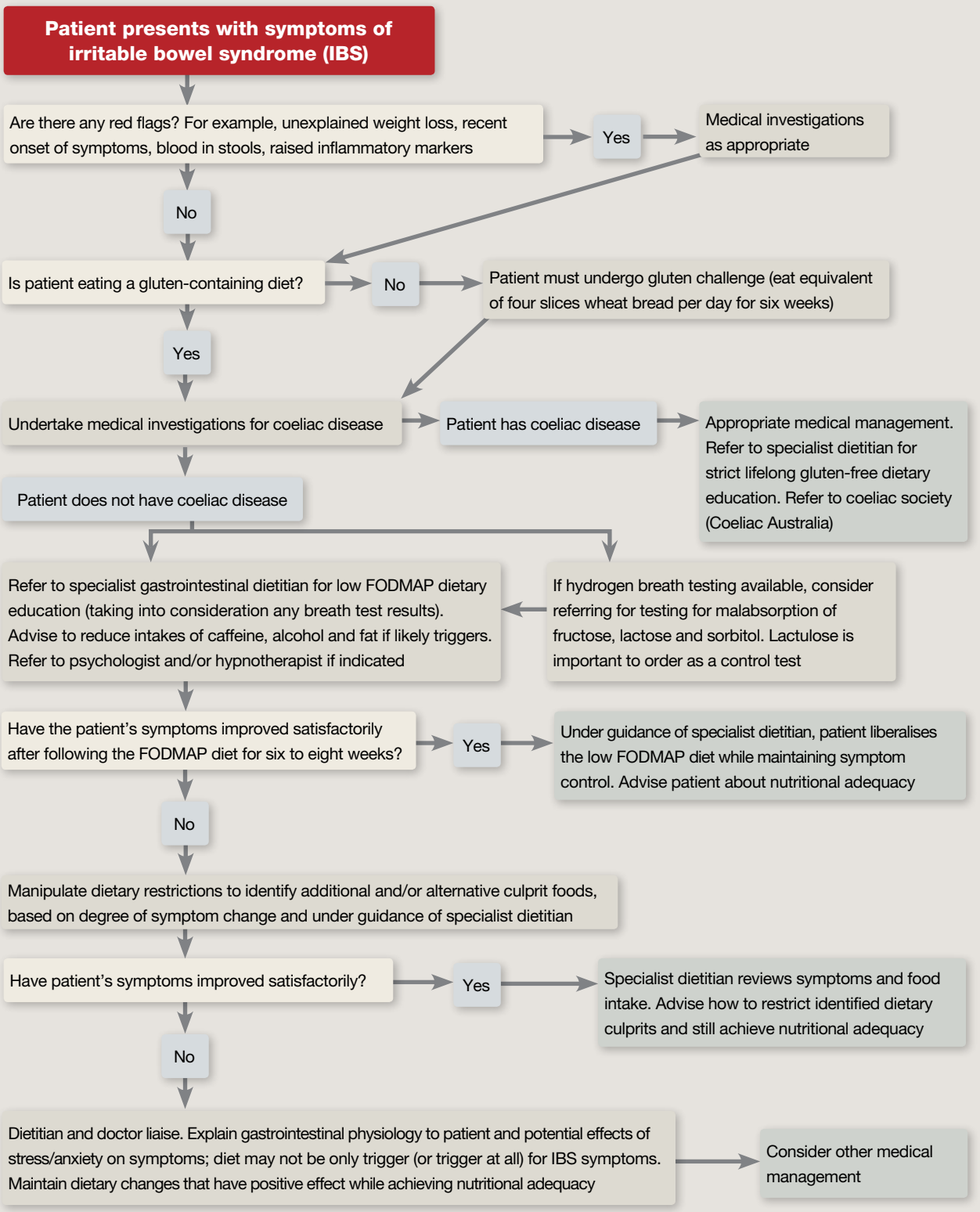

TABLE. FODMAPS: GASTROINTESTINAL MALABSORPTION

Absorption feature	Oligosaccharides		Disaccharide	Monosaccharide	Polyols	
	Fructans	Galacto-oligosaccharides	Lactose	Excess fructose	Sorbitol	Mannitol*
Is it malabsorbed in all humans?	Yes	Yes	No	No	No	No
Proportion of patients with IBS who malabsorb	100%	100%	25% (50 g dose)	45% (35 g dose)	57% (10 g dose)	20% (10 g dose)

ABBREVIATION: IBS = irritable bowel syndrome.
* As only a small number of foods contain mannitol, it is not a major contributor to IBS.

- Food does not cause IBS but may trigger symptoms in a person who has a phenotype making them susceptible to IBS – this comprises visceral hypersensitivity, altered gut flora and motility disorders.
- The low FODMAP diet is now the primary dietary therapy for the management of IBS throughout Australia.[2,3]
- FODMAP is an acronym for a group of short-chain carbohydrates: fermentable oligosaccharides, disaccharides, monosaccharides and polyols. Types of FODMAPs and foods containing them are shown in the box on page 80.[4,5]

ASSESSMENT OF THE EVIDENCE

- An Australian study found the low FODMAP diet to be efficacious in 74% of 62 patients with IBS.[6]
- A UK study found in consecutive patients with IBS that the low FODMAP diet gave superior symptom relief (76% of 43 patients) compared with the dietary management recommended by the National Institute of Clinical Excellence (NICE) guidelines (54% of 39 patients).[7]
- FODMAPs can contribute to gastrointestinal symptoms, and the mechanism of action is clear and well understood.[2] FODMAPs increase water delivery into the bowel through their osmotic effect and are rapidly fermented by colonic bacteria, increasing gas production. These responses can cause symptoms such as a change in bowel habit, excess wind, abdominal bloating, distension and pain.[8,9]
- Food chemicals, including salicylates, amines and glutamates, may be triggers for IBS in sensitive people via stimulation of nerve endings that are sensitive to luminal distension in the gut.[10,11] However, anecdotal experience suggests food chemicals affect only a minority of IBS sufferers. Further research is required to better understand the prevalence of this type of reaction and the exact mechanism of action.
- For every person with coeliac disease requiring a gluten-free diet, there are 20 following it for other reasons, including putative health benefits such as relief of gastrointestinal symptoms.[12] Yet, despite its enormous popularity, a gluten-free diet is not the most efficacious dietary treatment for IBS. As a gluten-free diet excludes wheat, rye and barley, the improvement (but not resolution) of symptoms in many people with IBS who follow a gluten-free diet for IBS may in fact be due to restriction of FODMAPs (particularly fructans), rather than gluten.

MANAGEMENT

- In patients with suspected IBS, it is important to ensure that coeliac disease and other possible medical conditions are excluded.
- A suggested dietary management pathway is shown in the flowchart on page 81. Accredited Practising Dietitians specialising in gastrointestinal nutrition are listed at the website of the Dietitians Association of Australia (www.daa.asn.au).
- The low FODMAP diet is recommended as the first line of dietary management of symptoms of IBS. Details of the diet and suitable recipes are available in books such as *Low FODMAP Recipes*.[13]
- FODMAPs differ in their capacity to trigger symptoms in individuals with IBS (see the Table).[14,15] FODMAPs are candidates for contributing to symptoms only if they are malabsorbed.

- FODMAPs need to be restricted only if they contribute to symptoms. The low FODMAP diet is intended to be individualised according to the type of offending FODMAP and the threshold of how much a patient can tolerate before experiencing symptoms, which differs between individuals.
- When best practice protocols are followed, hydrogen and/or methane breath tests may be helpful in identifying malabsorption of fructose, lactose and possibly sorbitol. If malabsorption is present then breath gases such as hydrogen and methane are increased following ingestion of the substance.
- Breath tests for malabsorption of fructans and galacto-oligosaccharides are not helpful because all humans will malabsorb these particular FODMAPs.
- Dietary restriction of food chemicals (via an elimination diet) may be trialled if a low FODMAP diet is ineffective. Dietary restriction of food chemicals can also be trialled in conjunction with a low FODMAP diet if the diet alone has not resolved symptoms to a satisfactory level.
- The existence of noncoeliac gluten sensitivity ('gluten intolerance') is controversial,[16] and restricting gluten may not be beneficial in patients with IBS. If gluten restriction is trialled, then coeliac disease must be excluded beforehand (as results of tests for coeliac disease may be affected by gluten restriction). The effectiveness of the low FODMAP diet should also be assessed before trialling gluten restriction.
- When appropriate, consider advising patients with IBS to reduce intakes of fat, caffeine and alcohol if these are consumed in excess or are suspected to be contributing to symptoms. [17,18]

MT

REFERENCES

1. Saito YA, Locke III GR, Weaver AL, et al. Diet and functional gastrointestinal disorders: a population-based case-control study. Am J Gastroenterol 2005; 100: 2743-2748 .
2. Shepherd SJ, Parker FJ, Muir JG, Gibson PR. Dietary triggers of abdominal symptoms in patients with irritable bowel syndrome-randomised placebo-controlled evidence. Clin Gastroenterol Hepatol 2008; 6: 765-771.
3. Gastrointestinal Expert Group (GEG). Therapeutic guidelines: gastrointestinal. Version 5. Melbourne: Therapeutic Guidelines Limited; 2011.
4. Halmos E, Muir JG, Shepherd S, Gibson PR. Functional bowel disorders and FODMAPs. Med Today 2011; 12(3): 29-38.
5. Gibson PR, Shepherd SJ. Food choice as a key management strategy for functional gastrointestinal symptoms. Am J Gastroenterol 2012; 107: 657-666.
6. Shepherd SJ, Gibson PR. Fructose malabsorption and symptoms of irritable bowel syndrome: guidelines for effective dietary management. J Am Diet Assoc 2006; 106: 1631-1639.
7. Staudacher HM, Whelan K, Irving PM, et al. Comparison of symptom response following advice for a diet low in fermentable carbohydrates (FODMAPs) versus standard dietary advice in patients with irritable bowel syndrome. J Hum Nutr Diet 2011; 24: 487-495.
8. Barrett JS, Muir JG, Gearry RB, et al. Dietary FODMAPs increase delivery of water and fermentable substrates to the proximal colon. Aliment Pharmacol Ther 2010; 31: 874-882.
9. Ong DK, Mitchell SB, Barrett JS, et al. Manipulation of dietary short chain carbohydrates alters the pattern of hydrogen and methane gas production and genesis of symptoms in patients with irritable bowel syndrome. J Gastroenterol Hepatol 2010; 25: 1366-1373.
10. Niec AM, Frankum B, Talley NJ. Are adverse food reactions linked to irritable bowel syndrome? Am J Gastroenterol 1998; 93: 2184-2190.
11. Raithel M, Baenkler HW, Naegel A, et al. Significance of salicylate intolerance in diseases of the lower gastrointestinal tract. J Physiol Pharmacol 2005; 56 Suppl 5: 89-102.
12. Vinning G, McMahon G. Gluten-free grains: a demand-and-supply analysis of prospects for the Australian grains industry. Canberra: Rural Industries Research and Development Corporation, Australian Government; 2006
13. Shepherd S. Low FODMAP recipes. Melbourne: Penguin Australia; 2013.
14. Yao CK, Tan HL, Langenberg DR, et al. Dietary sorbitol and mannitol: food content and distinct absorption patterns between healthy individuals and patients with irritable bowel syndrome. J Hum Nutr Diet 2013; Aug 3. doi: 10.1111/jhn.12144.
15. Barrett JS, Irving PM, Shepherd SJ, et al. Comparison of the prevalence of fructose and lactose malabsorption across chronic intestinal disorders. Aliment Pharmacol Ther 2009; 30: 165-174.
16. Biesiekierski JR, Peters SL, Newnham ED, Rosella O, Muir JG, Gibson PR. No effects of gluten in patients with self-reported non-celiac gluten sensitivity after dietary reduction of fermentable, poorly absorbed, short-chain carbohydrates. Gastroenterology 2013; 145: 320-328.e3.
17. Simren M, Abrahamsson H, Bjornsson ES. Lipid-induced colonic hypersensitivity in the irritable bowel syndrome: the role of bowel habit, sex, and psychologic factors. Clin Gastroenterol Hepatol 2007; 5: 201-208.
18. Rao SS, Welcher K, Zimmerman B, et al. Is coffee a colonic stimulant? Eur J Gastroenterol Hepatol 198; 10: 113-118.

COMPETING INTERESTS. Dr Shepherd has published a book on food intolerances and several cookbooks related to dietary approaches to irritable bowel syndrome. She also runs a dietetic practice and related businesses regarding gastrointestinal nutrition.

Share your innocence

Sometimes on our journey of learning we can be enlightened by events that are humorous, surprising or touching. Clarity is invariably sharpened by looking through the retrospectoscope. We'd love to hear about your own, previously unpublished, experiences and will send a bottle of Moss Wood Margaret River Cabernet Sauvignon to those who submit contributions that we publish (under a nom de plume if you wish).
Please send your anecdotes to:
Medicine Today, PO Box 5698,
Chatswood West, NSW 1515,
or editorial@medicinetoday.com.au
for consideration.