MONASH University

Module 1
Summary Factsheet

1. Introduction

Irritable bowel syndrome (IBS) is a functional bowel disorder (FBD). FBDs are diagnosed using symptom criteria, and after the exclusion of other gastrointestinal diseases, such as coeliac disease and inflammatory bowel disease (IBD).

Other FBDs include:

- functional diarrhoea
- functional constipation;
- functional abdominal bloating/distention;
- unspecified FBD; and
- opioid-induced constipation[1].

2. Prevalence of IBS

IBS is thought to affect between 3.8 and 9.2% of the population worldwide[9]. It is more common in women than men and most often diagnosed before the age of 50 years[2, 3].

Although IBS is a relatively common condition, it often goes undiagnosed. Undiagnosed IBS is problematic for the patient and can negatively influence QOL, as patients are left feeling anxious, frustrated, and searching for an organic cause for their symptoms, but unable to utilise effective, targeted therapies.

3. Cause of IBS

The cause of IBS is unknown, but likely to be multifactorial. Factors proposed to cause IBS include:

- altered gastrointestinal motility;
- visceral hypersensitivity;
- impaired perception and processing of information by the brain;
- low grade inflammation;
- immune system activation;
- intestinal permeability; and
- alterations in the gut microbiota[1].

4. Major IBS symptoms

Common symptoms of IBS include:

- lower abdominal pain
- altered bowel habit (diarrhoea, constipation, or a combination of both)
- bloating (the feeling that there is an inflated balloon in the abdomen)
- excessive passage of wind (also known as gas or flatus)
- distension (a visible increase in abdominal girth).

These symptoms often wax and wane, and symptom severity varies within and between individuals[4, 5].

5. Diagnosis of IBS

There are currently no pathophysiological tests available to adequately diagnose IBS. Instead, symptoms play an important role in establishing a positive diagnosis. IBS should be diagnosed by a medical doctor, who should take a careful history and use the Rome IV criteria (Table 1). These criteria allow IBS to be classified by predominant symptom type, into:

- IBS-C (constipation predominant)
- IBS-D (diarrhoea predominant)
- IBS-M (mixed bowel habits)
- IBS-U (unclassified).

Table 1 - Rome IV criteria for the diagnosis of irritable bowel syndrome[6]

Recurrent abdominal pain on average at least 1 day per week in the last 3 months, associated with two or more of the following: • Related to defecation • Associated with a change in a frequency of stool • Associated with a change in form (consistency) of stool. • Symptoms must have started at least 6 months ago.	
IBS with predominant constipation (IBS-C)	> 25% of bowel movements with Bristol stool form types 1 or 2 **AND** < 25% of bowel movements with Bristol stool form types 6 or 7
IBS with predominant diarrhoea (IBS-D)	> 25% of bowel movements with Bristol stool form types 6 or 7 **AND** < 25% of bowel movements with Bristol stool form types 1 or 2
IBS with mixed bowel habits (IBS-M)	> 25% of bowel movements with Bristol stool form types 1 or 2 **AND** > 25% of bowel movements with Bristol stool form types 6 or 7
IBS unclassified (IBS-U)	Patients who meet diagnostic criteria for IBS but whose bowel habits cannot be accurately categorized into 1 of the 3 groups above

The Rome criteria refer to the Bristol Stool chart (Figure 1), a tool designed to classify the form of human faeces using a 7-point stool form scale[7].

BRISTOL STOOL CHART		
TYPE ONE		Seperate hard lumps
TYPE TWO		Lumpy and sausage like
TYPE THREE		A sausage shape with cracks in the surface
TYPE FOUR		Like a smooth soft sausage or snake
TYPE FIVE		Soft blobs with clear cut edges
TYPE SIX		Mushy consistency with ragged edges
TYPE SEVEN		Liquid consistency with no solid pieces

Figure 1: Bristol stool chart

5.1. Red flags/alarm features

The symptoms of IBS (abdominal pain, bloating, altered bowel habit, excess flatulence, incomplete evacuation and nausea) overlap with many other organic diseases, so there is potential for misdiagnosis[8]. Conditions with some similar symptoms to IBS are summarised in Figure 2.

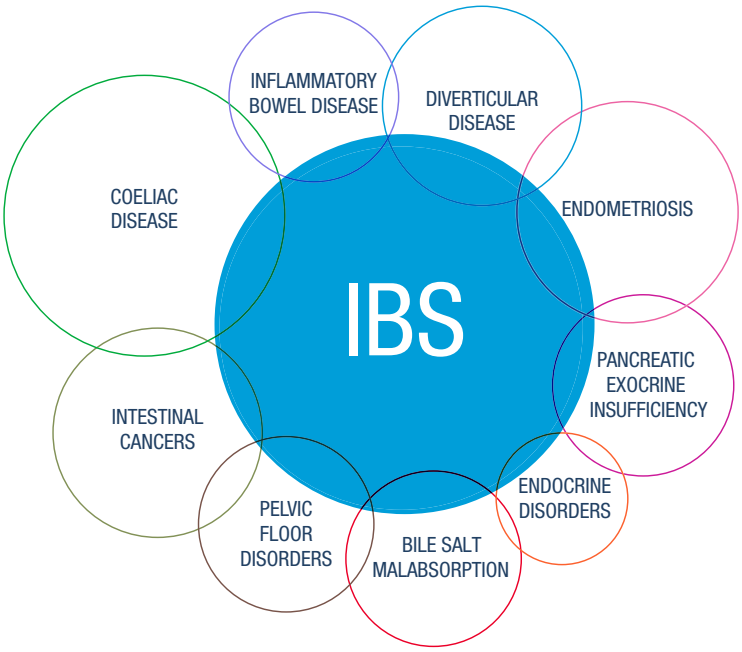

Figure 2: Conditions with some similar symptoms to IBS

These overlapping symptoms mean it is important to look for 'red flags' or 'alarm features' that may indicate the presence of conditions other than IBS, and that may require further investigation and medical input. See Figure 3.

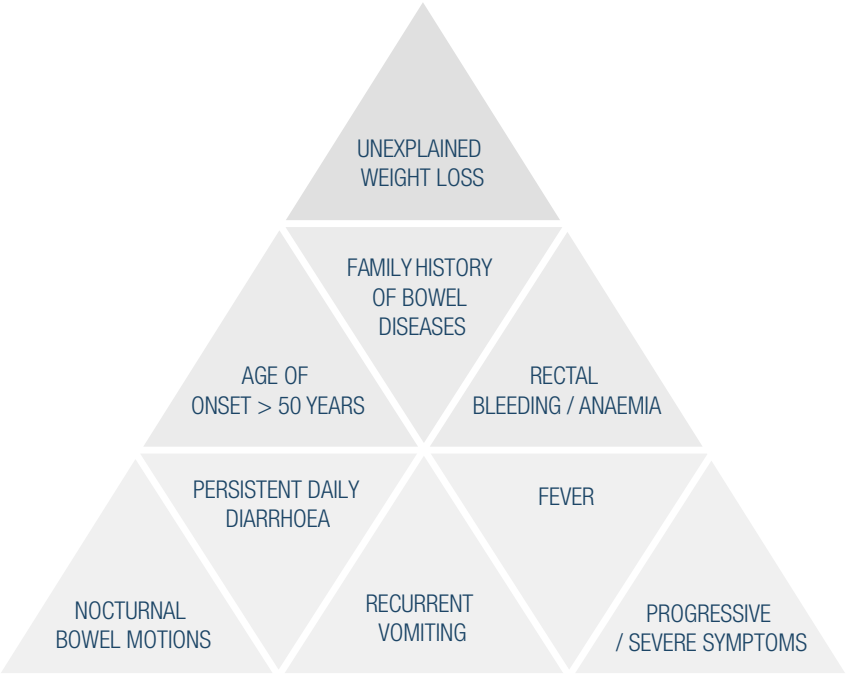

Figure 3: 'Red flags' to look for in the diagnosis of IBS

5.2. Typical investigations

Investigations that may be required before a positive diagnosis of IBS is made include:

- full blood examination
- C-reactive protein
- nutritional markers
- coeliac screening (e.g. genetic or serology testing)
- faecal calprotectin (to exclude IBD)
- Colonoscopy +/- gastroscopy (can be considered if ≥50 years of age)

These tests are usually ordered by the patient's physician or gastroenterologist. However, excessive investigations can be counterproductive and costly, so testing should be tailored to the needs of the patient.

5.3. Alternative investigations for IBS

There are a number of alternative investigations sometimes used in people with IBS. Tests that lack clinical validity (but commonly used in this population), include:

- Faecal microbiota testing
- Faecal short-chain fatty acids testing
- IgG food intolerance testing
- Salivary IgA
- Intestinal permeability testing

5.4. Differential diagnoses

Many differential diagnoses exist for IBS that would require different treatment approaches. Common tests used to exclude differential diagnoses are summarised in Table 2.

Table 2 - Common tests used to exclude differential diagnoses

DIFFERENTIAL DIAGNOSIS	TESTS FOR EXCLUSION
Coeliac disease	• Coeliac serology (screening tool): tTg + IgA or tTg + DGPIgG or tissue transglutaminase antibody, (TTG) (IgA) with total IgA level. • Small intestinal biopsy (gold standard for diagnosis). A biopsy of the distal duodenum is the only definitive diagnostic test for coeliac disease. Biopsy should be performed if the patient's screening antibody blood tests are elevated (tTG IgA or EMA). • HLA DQ2/DQ8 genetic test. Note: 1. Gluten intake must be adequate prior to coeliac serology and biopsy to prevent false negative results. 2. IgA deficiency is present in 2-3% of people with coeliac disease, so always check to see if total IgA levels are normal. 3. HLA gene test only useful if negative
Inflammatory bowel disease (IBD) (e.g. Crohn's disease and ulcerative colitis)	• There is no single test that confirms the diagnosis of IBD. • Diagnosis is made based on physical examination, patient history and various tests, including blood tests, stool examination, endoscopy, biopsies, and imaging studies. • Faecal calprotectin can be used as a screening tool.
Diverticular disease	• Diverticula can be seen on barium enema or endoscopy (flexible sigmoidoscopy or colonoscopy). • Diverticulitis can be diagnosed based on clinical examination during an acute attack and is usually confirmed with a CT scan.
Cancers (e.g. ovarian or bowel cancer)	• Medical history and physical examination. • Colonoscopy.
Pelvic floor disorders	• Medical history and physical examination. • Anorectal manometry can discern the different dysfunctions.
Endometriosis	• Laparoscopy is the only definitive way to diagnose endometriosis.
Endocrine disorders (e.g. hyperthyroidism)	• Medical history and physical examination. • A diagnosis can be confirmed with blood tests that measure the levels of thyroxine in the blood.
Pancreatic exocrine insufficiency	• Indirect tests are often utilised, including faecal elastase-1. • Symptom improvement after pancreatic enzyme replacement therapy supports the diagnosis.
Bile acid malabsorption	• An increase in faecal bile acid is the most definitive way to diagnose bile acid malabsorption, although 48 hour faecal collection is required and hence this test is not frequently used. • SeHCAT (75Se-homocholic acid taurine) test (not readily available worldwide). • 7α-OH-4-cholesten-3-one (C4) blood test (not readily available worldwide).

5.5. Pseudo diagnoses

Diagnoses based on uncertain scientific principles are known as pseudo-diagnoses. These diagnoses present a risk to patients as their label may delay correct diagnosis and treatment. Pseudo-diagnoses commonly encountered in this population include non-coeliac gluten sensitivity (NCGS) and candidiasis.

6. Breath testing

Breath tests can be used to identify individuals who malabsorb lactose, fructose, sorbitol and/or mannitol. Breath tests measure the amount of gas in the breath after consuming a dose of the test sugar in question.

The tests are based on the premise that poorly absorbed sugars are fermented by intestinal bacteria, producing gases, including hydrogen and methane. These gases are absorbed across the intestine, carried through the bloodstream to the lungs, exhaled and collected in the breath. If a rise in breath hydrogen or methane is detected, it is interpreted that some of the test sugar has been malabsorbed. If symptoms occur during or just after the test, then 'intolerance' to the sugar is reported.

Despite widespread use, there are several reservations about the reliability and clinical value of these tests. For instance:

- The dose of the test sugar is very large and exaggerates what would be normally consumed in the diet (sorbitol, mannitol, fructose, lactose)
- Symptoms associated with breath tests occur independent of whether the sugar in question are malabsorbed (particularly sorbitol, mannitol, fructose)
- There are issues with test-re-test repeatability
- Protocols for testing vary between centres, as do cut-offs used to classify malabsorption
- Fructose and sorbitol malabsorption are considered normal physiological phenomenon and equally common in people with and without IBS.
- Lactulose and glucose breath tests are unreliable tests for the identification of SIBO.

6.1. Recommendations regarding breath tests:

- Breath tests should not be used to guide dietary restrictions. Instead, patients should be encouraged to follow a 3 phased low FODMAP diet (restriction, reintroduction, personalisation) to identify which sugars trigger IBS symptoms and which do not.
- Breath tests do not diagnose disorders. Patients should not be given labels such as 'fructose malabsorption' or 'fructose intolerance'.
- Breath tests are most useful for confirming or denying the presence of lactose malabsorption, but do not necessarily indicate whether the patient is lactose intolerant. Many people can tolerate 12-15g lactose spread across the day.

7. Therapeutic options for management of IBS

A range of factors cause IBS and as such, a range of therapeutic strategies are available to manage the condition. Treatment choice is often guided by predominant symptom type (Table 3).

Table 3 - Summary of therapeutic options for functional bowel disorders

TREATMENT TYPE	TREATMENT OPTIONS
Pharmacotherapy	Targeting diarrhoea predominant symptoms • Antidiarrheals e.g. loperamide (μ-opioid receptor agonist) • Anti-spasmodic medication e.g. peppermint oil; dicyclomine • 5-HT3 receptor antagonists e.g. alosetron; ondansetron • Bile salt sequestrants e.g. cholestryramine • Antibiotics e.g. rifaximin
	Targeting constipation predominant symptoms • Laxatives • 5-HT4 receptor antagonists e.g. prucalopride • Prosecretory agents e.g. lubiprostone (type 2 chloride-channel stimulator); linaclotide (guanylate cyclase-C agonist)
	Targeting pain • Anti-depressants e.g. tricyclic antidepressants (TCAs); selective serotonin reuptake inhibitors (SSRIs)
Dietary therapy	Healthy eating modifications • Reduction in caffeine intake • Reduction in fat intake • Reduction in alcohol intake • Avoidance of spicy foods • Increase in fluid intake
	Exclusion diets • Restriction of fermentable carbohydrates (FODMAPs) • Restriction of natural and added food chemicals • Restriction of gluten
	Modification of fibre intake • Fibre supplementation e.g. linseeds or psyllium • Manipulation of fibre types
	• Modification of meal patterns and portion size
Lifestyle change	• Exercise
Supplements	• Probiotics • Herbal supplements e.g. Iberogast™; Chinese herbal medicine
Psychological therapies	• Cognitive behavioural therapies • Gut-directed hypnotherapy
Biofeedback	• Biofeedback therapy

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