MONASH University

Module 10
Summary Factsheet

1. Endometriosis

1.1 Definition

Endometriosis is a chronic, inflammatory gynaecological condition that can cause significant pain and infertility[1, 2].

1.1 Prevalence

Endometriosis is thought to affect 10% of women of reproductive age, equating 1.76 billion women worldwide[3], although a large proportion of these cases are undiagnosed. 20% of sufferers are rendered subfertile or infertile [2, 4].

1.3 Common symptoms of endometriosis

Gastrointestinal symptoms are common among women with endometriosis and there is considerable overlap between the symptoms of endometriosis and IBS. In practice, distinguishing between the two conditions can be difficult, and this raises the possibility of misdiagnosis and/or delayed diagnosis. Common symptoms of endometriosis include:

- Dysmenorrhoea (painful periods)
- Pelvic pain that is not related to menstruation (it is also estimated that up to 70% women with chronic pelvic pain may in fact have endometriosis[7])
- Infertility
- Deep dyspareunia (painful intercourse)
- Back pain
- Fatigue
- Pain on defecation
- Abdominal bloating and discomfort
- Nausea
- Altered bowel habit (constipation and/or diarrhoea)

1.2 Diagnosis

The gold standard method of diagnosing endometriosis is via laparoscopy (key-hole surgery) with histological confirmation, where surgeons use excision or diathermy to remove lesions and adhesions[5].

1.2.1 Importance of an accurate, timely diagnosis

Misdiagnosis and delayed diagnosis of endometriosis are common and problematic for sufferers, leading to suboptimal treatment and poorer outcomes[4].

1.2.2 IBS and endometriosis

Key symptoms that overlap between IBS and endometriosis include:

- visceral hypersensitivity[8]
- bloating,
- diarrhoea or constipation,
- pain on defaecation,
- nausea
- reduced QOL[9].

IBS may be more common among women with endometriosis and vice versa. However, there are question about whether IBS represents a misdiagnosis or true co-morbidity in endometriosis[10].

1.2.3 Red flags for endometriosis

Red flags for endometriosis should be screened for before IBS is diagnosed in women. These include:

- Dyspareunia (pain on intercourse)
- Menorrhagia – heavy periods
- Pain referred to the back and pelvis
- Exacerbation of bowel symptoms with menstruation
- Primary family member with endometriosis
- Difficulty conceiving

1.3 Management of endometriosis

Management strategies for endometriosis are summarized in the table below.

Intervention	Mechanism	Efficacy	Side effects	Contraindications
Combined oral contraceptives [46]	Induces pseudo-pregnancy state Causes decidualisation and atrophy of endometrium	Commonly used, but not useful in women wishing to fall pregnant	Irregular bleeding, abdominal bloating, breast tenderness, weight gain, moods / depression, headache	Attempting pregnancy, Hx DVT/PE, diabetic complications, migraines, liver disease, smoker, hypertension
Progestogen therapy [45]	Suppress oestrogen receptors leading to decidualisation and atrophy of endometrium	Pain relief in up to 80% women	As above and acne + fluid retention	Attempting pregnancy
GnRH agonists [45]	Inhibits proliferation of endometriosis, indices chemical menopause (temporary)	For moderate to severe endometriosis, pre-IVF has improved pregnancy in 3 trials	Hot flushes / sweats, vaginal dryness, mood / depression, acne, muscle pain, decreased breast size, bone mineral depletion	Attempting pregnancy
Danazol [46]	Suppresses ovulation	Rarely used due to side effects	Weight gain, acne, hirsutism, deeper voice	Attempting pregnancy
Analgesics, NSAIDs[45] e.g. paracetamol and stronger analgesics	Anti-inflammatory	No real benefits demonstrated in studies. Anecdotal reports of efficacy	GI tract disturbances, heartburn, constipation	Dependence, constipation
Tri-cyclic antidepressants (low dose) e.g. amitryptilline [45] and anti-epileptics e.g. gabapentin[45]	Reduces central sensitisation. Used for gut pain in IBS and other pain syndromes. More effective in a multi-disciplinary approach	No clear evidence for efficacy in endometriosis. Trials needed	Sleepiness initially, low blood pressure	Chronic constipation
Aromatase inhibitors [46]	Aromatase inhibitors [46] Inhibits extra-ovarian oestrogen synthesis	Recent addition. Promising results for women with infertility	Vaginal dryness hot flushes, headache Back pain Arthralgia	Osteoporosis
Low FODMAP diet [47]	Reduces pain from visceral hypersensitivity and bloating	Useful adjunct therapy	Risk of orthorexia	History of eating disorder
Laparoscopic surgery (e.g. laser ablation, excision, and diathermy) [46,48]		Reduces up to 70% of symptoms in approx. 60% of women, but success rates variable and recurrence is common.	Risks associated with general anaesthetic and surgery – pain, infection, bleeding. “Phantom” pain may persist	

1.3.1 Role of a low FODMAP diet

A retrospective study by researchers at Monash University revealed that patients with IBS and endometriosis respond more favourably to a low FODMAP diet than patients with IBS alone[11].

1.4 Recommendations for practice

- Screen patients who present with suspected or known IBS for red flags that may indicate the presence of endometriosis.
- Specific, guided questions may be required to identify red flags indicative of endometriosis.
- If red flags for endometriosis are identified, refer the patient back to their GP or onto a gynecologist for further investigation (if endometriosis is undiagnosed).
- Gastrointestinal symptoms are common among women with endometriosis, and preliminary research suggests that a low FODMAP diet may assist in managing these.
- In patients with IBS and comorbid endometriosis, trial a low FODMAP diet for 2-6 weeks to assist in the management of bowel symptoms. The diet should follow the 3 phased process described in modules 5 and 6.
- Remember, a low FODMAP diet will not treat endometriosis per se, it may simply improve bowel symptoms associated with the two conditions.
- If a low FODMAP diet is trialled, validated questionnaires should be used to assess symptom response.

2. IBS in children and adolescents

2.1 Symptoms

Children and adolescents with IBS most commonly present with the following symptoms:

- Abdominal pain, normally central periumbilical or lower, which is typically relieved on defecation
- Bloating +/- visible abdominal distension
- Excessive wind
- Diarrhoea +/- urgency +/- associated nappy rash
- Constipation +/- soiling +/- feeling of incomplete evacuation

These symptoms may play out in different behaviours, depending on the age of the child.

If a low FODMAP diet is trialled, validated questionnaires should be used to assess symptom response.

2.2 Diagnosis

IBS should be diagnosed by a medical doctor before dietary changes are commended.

Box 3 - Rome IV diagnostic criteria for IBS in children and adolescents

All of the following criteria must be fulfilled for at least 2 months before a diagnosis of IBS can be made:

1. Abdominal pain at least 4 days per month associated with one or more of the following:
   - Related to defecation
   - A change in frequency of stool
   - A change in form (appearance) of stool
2. In children with constipation, the pain does not resolve with resolution of the constipation (children in whom the pain resolves have functional constipation, not IBS)
3. After appropriate evaluation, the symptoms cannot be fully explained by another medical condition

2.2.1 Red flags

Children presenting with diagnosed or undiagnosed IBS should be screened for red flags. These are summarised in the table below.

RED-FLAG SYMPTOM	WHAT ARE WE MISSING?
Nocturnal waking symptoms	Gastroesophageal reflux disease (GORD)
Rectal bleeding	IBD, malignancy
Anaemia	Coeliac disease, IBD, malignancy
Suboptimal growth / unexplained weight loss	Coeliac disease, IBD, malignancy, non-IgE mediated allergy
Recurrent vomiting	Infection, non-IgE mediated allergy
Family history of IBD / coeliac disease	Coeliac disease, IBD
Fever	Infection, malignancy, IBD
Coeliac disease not yet excluded	Coeliac disease
Pain in an unusual place (i.e. joint pain, difficulty swallowing, chest pain, etc.)	GORD, IBD, malignancy, eosinophilic esophagitis
Delayed puberty	Coeliac disease, IBD, malignancy

2.2.2 Pseudo-diagnoses

Pseudo-diagnoses to look out for in paediatric patients include:

- Fructose malabsorption or intolerance
- Bacterial dysbiosis (or similar)
- NCGS (this may be a legitimate diagnosis, but often is not)
- Food 'allergy' (this may or may not be a legitimate diagnosis, depending on who made it and how it was made)

2.2.3 Differential diagnoses

Differential diagnoses to consider in children include:

- Other abdominal pain-related FGIDs
- Non IgE-mediated allergy

2.3 Investigations

As in adults, IBS is diagnosed based on symptom criteria, with investigations carried out to exclude organic causes of symptoms and to reassure parents and children that there is nothing more seriously wrong. Typical investigations include:

- Pathology tests including:
  - Full blood count
  - Liver function tests
  - Erythrocyte sedimentation rate
  - Plasma viscosity
  - Iron studies
  - C-reactive protein
  - Serological screening for coeliac disease (if gluten intake is adequate)
- Stool sample
- Physical examination
- Anthropometry

Specialist investigations such as radiological imaging or gastrointestinal endoscopy are usually only indicated in the presence of red-flag symptoms or if the results of baseline investigations were abnormal[14].

2.3.1 Breath testing

Hydrogen breath tests are considered a poor guide to dietary restrictions and should be used and interpreted with caution. Instead, a 3 phased FODMAP diet is considered the most reliable means of assessing FODMAP tolerance.

2.4 Dietetic assessment

Key questions to ask at the initial dietetic assessment include:

- Do the child's symptoms correspond with the Rome IV criteria?
- Has coeliac disease been appropriately excluded using blood tests and/or duodenal biopsy? If so, was gluten intake sufficient at the time of coeliac disease screening?
- In young children, when did symptoms first occur? What is the child's feeding history?
- Are red flags / alarm features present?
- What is the psychosocial setting? Is the child stressed? Could this be contributing to symptoms?
- Can the child differentiate between different bodily sensations? For example, nervous "butterflies", the feeling of an impending bowel action, nausea, abdominal pain or sensations of hunger / satiety / fullness from over-eating.

2.4.1 Anthropometry

Growth assessment in children should consider:

- weight,
- recumbent length (birth to 24 months) or standing height (>2-20 years),
- head circumference (<36 months),
- plotting on relevant paediatric growth charts,
- growth history

2.4.2 Bowel & GI symptoms (type, severity, impact on QOL, duration, pattern)

Assessment of GI symptoms may involve questioning the child and/or family about 5 key areas – type, duration, severity, pattern and impact of symptoms.

2.4.3 Family history

Children with a parental history of IBS and/or chronic pain are at increased risk of developing IBS in childhood, so establishing whether this parental history exists is important.

2.4.4 Medical history

Relevant past medical history includes episodes of gastroenteritis, presence of autoimmune conditions (such as type 1 diabetes), previous anaemia or other micronutrient deficiencies.

2.4.5 Medications

Many medications and supplements cause gastrointestinal side effects, so obtaining a medication history (including laxative use) is important.

2.4.6 Investigations (bloods, scopes, confirmed nutrient deficiencies / FGIDs)

Relevant investigations may include coeliac serology, blood count, iron studies, C-reactive protein and stool samples and specialist investigations (e.g. radiological imaging and gastrointestinal endoscopy).

2.4.7 Red flags

See table page 5.

If red flags are identified, the child should be referred back to their GP / paediatrician / gastroenterologist for further investigations.

2.4.8 Dietary assessment

Feeding difficulties

In younger children, it is important to identify whether feeding difficulties exist. Feeding difficulties, such as fussy eating and food refusal, may limit the variety and volume of food intake, as well as the child's acceptance of new foods. If the child will not accept low FODMAP substitute foods, a low FODMAP diet may be contraindicated.

Fibre intake

In the absence of any paediatric IBS guidelines regarding fibre intake in IBS, it is prudent to ensure that children meet national nutrient reference values for fibre[15]. These are summarised in Table 1.

Table 1: Adequate intake of fibre in infants, children and adolescents

AGE	AVERAGE INTAKE (AI)
0-6 months	No AI has been set
7-12 months	No AI has been set
1-3 years	14g per day
4-8 years	18g per day
BOYS	
9-13 years	24g per day
14-18 years	28g per day
GIRLS	
9-13 years	20g per day
14-18 years	22g per day

Fluid intake

As discussed in Module 4, it is important to assess fluid intake, taking note of both the quantity and types of fluids consumed. Specific questioning about fruit juice and milk intake is recommended as these are high FODMAP fluids that may contribute to symptoms. Children living in extremely hot climates may require a higher fluid intake to remain hydrated, especially if they are very active.

AGE	AVERAGE INTAKE (AI)
0-6 months	0.7 L/day (from breast milk or formula)
7-12 months	0.8 L/day (from breast milk, formula, food, plain water and other beverages, including 0.6 L as fluids)
1-3 years	1.0 L/day (from fluids)
4-8 years	1.2 L/day (from fluids)
BOYS	
9-13 years	1.6 L/day (from fluids)y
14-18 years	1.9 L/day (from fluids)
GIRLS	
9-13 years	1.4 L/day (from fluids)
14-18 years	1.6 L/day (from fluids)

FODMAP intake

In children, FODMAP intake should be considered in relation to national nutrition guidelines regarding the number of serves of food that should be included from each of the five food groups. For example, if a child has a very high FODMAP intake on daily basis due to excessive intake of fruit and/or grains, FODMAP restriction may not be necessary. Rather, the child may achieve adequate symptom relief with dietary advice to consume a balanced diet that limits fruit and/or grain intake to the recommended daily serves.

2.5 Efficacy of a low FODMAP diet in children with IBS

Despite the lack of RCTs in this area, observational data collected from children with FBDs suggest the diet may help in children with FGIDs[16-19, 41-44].

2.6 Management

In children, dietary restrictions should be kept to a minimum. For this reason, it is recommended that children with IBS be initially advised to:

- normalise eating consistent with the dietary guidelines.
- attempt to open their bowels regularly.

In children with ongoing IBS symptoms, a low FODMAP diet may be considered, but only:

- under the supervision of a dietitian with expertise in the area;
- when the risk of eating disorders is low; and
- when feeding problems (such as food refusal and selective eating) are minimal.

2.6.1 4 weeks on low FODMAP diet

To keep dietary restrictions to a minimum, a 'gentle' version of the low FODMAP diet should be prescribed. This approach is described in detail in Module 5. When using a gentle approach in children, provide a tailored list of very high FODMAP foods to avoid, and low FODMAP alternatives that the child will accept (see example below):

	HIGH FODMAP FOODS	LOW FODMAP ALTERNATIVES (that the child usually accepts)
BREAKFAST	• •	• •
LUNCH	• •	• •
DINNER	• •	• •
SNACKS	• •	• •

	FRUCTANS	EXCESS FRUCTOSE	LACTOSE	MANNITOL	SORBITOL	GOS
FRUIT	Dried fruit	Apple, pear, mango, watermelon			Stone fruits (peach, nectarine, plum), watermelon	
VEGETABLES	Garlic, onion	Artichoke		Mushrooms, cauliflower		
BREADS AND CEREALS	Wheat / rye / barley based breakfast cereal, bread, pasta, biscuits and snack products					
PULSES						Red kidney beans, split peas, falafels, baked beans
NUTS AND SEEDS						Cashews* and pistachios*
DAIRY			Cows' milk, custard, sweetened condensed milk, evaporated milk, ice cream, yoghurt			
SUGARS / SWEETENERS		Honey, high fructose corn syrup			Sugar-free confectionery	
OTHER		Fruit juice				

2.6.2 Plan for social challenges

It is recommended that:

- Meals are modified for the whole family so they are low in FODMAPs
- Dietary restrictions are kept to a minimum on special occasions
- Considered other eating environments (such as childcare, kinder, school, before and after school care, school camp, parties and eating-out) are considered

2.6.3 Toileting routine

Establishing a regular toileting routine can help some children to open their bowels more regularly. A good time to encourage regular toileting is after meals.

2.6.4 Increasing physical activity

Physical inactivity may exacerbate symptoms of constipation, while regular exercise can help to move faecal matter through the body more efficiently. Strategies to increase physical activity include limiting screen time and encouraging families to get outside together.

2.6.5 Adequate fluid intake

Inadequate fluid intake can cause or exacerbate constipation. If fluid intake is inadequate, encourage strategies such as carrying a water bottle and drinking in the car, during classes, during extra-curricular activities.

2.7 Follow up (≤ 6 weeks)

The child should be reviewed within 6 weeks of beginning the low FODMAP diet. The following items should be checked at follow-up:

- Anthropometry (weight) compared with baseline
- Compare symptoms to baseline
- Assess compliance with dietary and lifestyle advice

If the child responds to a low FODMAP diet by their 4-6 week follow up appointment, the reintroduction phase should be discussed. However, if the diet is unsuccessful, the low FODMAP diet should be abandoned and other therapies should be considered.

2.8 Phase 2 - Simplified challenge approach

If the child achieved adequate symptom control on a 'simplified' low FODMAP diet in Phase 1, they should use a 'simplified' challenge approach in Phase 2. This 'simplified' approach is described in detail in Module 6, and should be easier for the family to implement, while still being sufficient to identify food triggers and expand the diet.

The following tips may help to guide patients through the reintroduction phase:

- Using a simplified challenge approach, very high FODMAP foods that were restricted in Phase 1 are challenged, one FODMAP subgroup at a time, to determine the child's individual level of tolerance.
- Serving size of the challenge food will depend on the age of the child, but a reasonable guide is half the serving size that the child would normally consume (for example, ½ teaspoon honey or ¼ cup milk). If this serving size is tolerated, they may be encouraged to try larger serves and/or to challenge other foods from the same group (e.g. ¼ mango for a fructose challenge or ½ a tub of yoghurt for a lactose challenge).
- Start by challenging foods that are expected to be well tolerated.

- Encourage the family to consider the overall FODMAP load. For example, if challenging with garlic or onion, they may want to include this with a rice dish, rather than a pasta dish (wheat based) so the overall FODMAP load is lower.
- Avoid challenging on days when the child has social events involving food.
- If the patient had a positive lactose breath testing result, it is still worth challenging lactose.
- If foods are poorly tolerated, encourage the family to repeat the challenge later.

2.9 Phase 3 – FODMAP Personalisation

As in adults, Phase 3 is important in children as they can begin to relax dietary restrictions and bring back well tolerated foods based on challenge results in Phase 2. Well tolerated foods and FODMAPs can be brought back all at once, or gradually over a few weeks.

Because children will usually have followed simplified approach to Phases 1 and 2, it may be sufficient to provide a list of foods to bring back into the diet and a list of foods to continue to restrict, based on challenge results in Phase 2.

Remind parents that challenges of poorly tolerated FODMAPs should be repeated over time to re-assess tolerance.

2.10 Review

Regular review of children may be needed to:

- monitor nutritional adequacy and growth
- screen for disordered eating
- ensure that challenges of restricted foods are repeated over time to re-assess tolerance

Infantile Colic

2.11 Definition

Infantile colic is characterised by unexplained, inconsolable crying-fussing episodes and occurs in infants who are typically-developing and otherwise healthy[20, 21]. The condition commences in the early weeks of life, peaking at around 6 to 8 weeks of age and spontaneously resolves by 3-4 months of age.

2.12 Prevalence

Prevalence estimates vary widely, from 15–40%[22], depending on geography and definitions used. The condition occurs in both breast-fed and formula-fed infants.

2.13 Common symptoms and effects on mother and baby

Common symptoms on the infant include:

- excessive flatulence,
- frequent, excessive crying,
- unsettled, fussy or irritable behaviour without a definite explanation,
- signs of perceived pain, such as drawing up of the knees, arching the back, looking red-faced, clenching fists and wrinkling brows.

Parents may also experience exhaustion, difficulties concentrating and loss of patience when taking care of a colic baby. They may also feel incompetence and fear about harming their child.

2.14 Diagnosis

Infantile colic is a benign and self-limiting condition. A diagnosis is generally made following a thorough medical examination that reviews the infant's medical history and excludes all abnormalities, other than inconsolable crying[23, 24]. A diagnosis of infantile colic should be made with reference to the **Rome IV Criteria[25]:**

FOR CLINICAL PURPOSES, MUST INCLUDE ALL OF THE FOLLOWING:

1. A newborn who is less than 5 months of age when the symptoms start and stop.
2. Recurrent and prolonged periods of crying, fussing or irritability reported by caregivers that occur without obvious cause and cannot be prevented or resolved by caregivers.
3. No evidence of newborn failure to thrive, fever, or illness

2.15 Existing management practices

A number of treatments are either marketed directly, or said anecdotally, to treat infantile colic. However, most lack evidence and some may be harmful.

- Pharmacological agents (e.g. simethicone, dicyclomine hydrochloride, cimetropium bromide) are commonly used by parents to treat infantile colic, but none are recommended, either due to a lack of evidence supporting their benefit, or due to evidence of possible harm.
- Probiotics – Recent meta-analyses and systematic reviews suggest that in exclusively breastfed babies aged under 3 months, Lactobacillus reuteri DSM17938 (BioGaiaTM) may reduce excessive crying [33-38]. Inadequate evidence supports the use of other probiotics or mixed strains.
- Lactase enzyme supplementation – generally not recommended – **lactase deficiency is rare in infancy** and there is no evidence to suggest a benefit of lactase supplementation in the treatment of infantile colic.
- Gripe water – not recommended due to a lack of evidence.
- Herbal teas (for mother) – not recommended due to both a lack of evidence to support their benefit and evidence of possible harm.
- Dietary strategies – Limited evidence supports the efficacy of most of these approaches and caution should be applied to some (see following table).
- Formula changes are usually not helpful unless there is a proven cow milk allergy.
- Weaning from breast milk is not beneficial.

TARGET	BREASTFED INFANTS	FORMULA-FED INFANTS
MATERNAL DIET	• Removal of dairy products • Removal of major allergenic foods (wheat, soy, dairy, eggs, fish and nuts) • Removal of gas-producing foods (cabbage, onions, garlic, cruciferous vegetables and legumes/pulses) • Removal of high protein foods (meats and legumes)	
INFANT DIET	• Switching from breast milk to a hypoallergenic formula	Changing from a standard cow's milk formula to a: • partially, extensively or completely hydrolysed formula • soy-based formula • hypoallergenic formula • fibre-enriched formula • low lactose formula • formula with added pre- or probiotic/s

Role of a low FODMAP diet

The promising findings of the recent Monash University study that measured the effect of a maternal low FODMAP diet on symptoms of infantile colic suggest that a low FODMAP diet may represent a useful, short-term intervention in breastfeeding mothers of infant with colic.

2.16 Practice recommendations

- Mothers should be encouraged and supported to continue breastfeeding due to the heightened risk of early cessation in this population and the superior nutritional benefits of breast milk[26].
- Remind parents that most therapies used to treat infantile colic lack scientific evidence to support their efficacy and some may impose risks to either the infant or the breastfeeding mother.
- If a lactating mother is wishing to trial a restrictive diet, the dietitian has an important role to play in ensuring nutritional adequacy.
- Preliminary research suggests that a low FODMAP diet may represent a useful, short-term intervention in breastfeeding mothers of infant with colic.

3. Small intestinal bacterial overgrowth

3.1 Definition

Small intestinal bacterial over growth (SIBO) is a condition characterised by an abnormally large number of bacteria in the small intestine. When SIBO occurs in the setting of IBS, it is proposed that excessively large populations of bacteria in the small intestine trigger gastrointestinal symptoms via gas production from fermentation. This results in distension of the narrow lumen and the hallmark symptoms of bloating, abdominal pain and diarrhoea.

3.2 Diagnosis

The very existence of SIBO is disputed owing to questions about definition and diagnosis. A number of techniques are used to diagnose SIBO [27]. Small intestinal aspiration and culture is considered the 'gold standard', but it is a costly and invasive procedure and only detects SIBO located proximally. Hydrogen and methane breath tests are commonly used, but their accuracy is poor, and there is no consensus regarding a positive result cut-off.

3.3 Prevalence (in general population/IBS)

The prevalence of SIBO is not well known due to a lack of consensus regarding the definition of the condition and issues with diagnostic methods. SIBO is estimated to affect between 4-78% of individuals with IBS[28-31].

3.4 Common symptoms

Symptoms attributed to SIBO include:

- Abdominal distension and/or cramping
- Abdominal pain
- Bloating
- Excessive flatulence
- Diarrhoea

However, as noted in a comprehensive review of this area, surprisingly few studies have characterised the predominant symptoms in SIBO and the only symptoms consistently linked include diarrhoea, abdominal pain and bloating[32].

3.5 Relationship between SIBO and IBS

- Uncertainty exists regarding the relationship between IBS and SIBO.
- Symptoms common to both conditions include abdominal pain, bloating, flatulence, diarrhoea and/or constipation. These overlapping symptoms between SIBO and IBS make it difficult to differentiate the two conditions based on clinical features.
- It is not known whether SIBO is more prevalent in IBS and/or whether SIBO causes IBS or vice versa.
- While antibiotics may improve symptoms in IBS and SIBO, it is not known whether these antibiotics are acting on bacteria in the small or large intestine, with dysbiosis of the large intestine also seen in IBS.

3.6 Management

A number of therapies are commonly used to treat SIBO, although many lack evidence to substantiate their effects. Commonly used management strategies include:

- Antibiotic therapy (often using rifaximin) - symptomatic improvements shown, but not clear whether these were related to the eradication of SIBO
- Probiotics supplements – inconsistent effects on symptoms
- Diet therapies (e.g. elemental diet, low FODMAP diet [39,40], low starch diet, specific carbohydrate diet) – proposed to work by reducing substrate available for bacterial fermentation, thus reducing gas production, bloating and abdominal pain. However, no studies are available to confirm these effects, and it is not known for how long dietary treatment is required. Although current guidelines do mention dietary modification to treat SIBO (in particular the low FODMAP diet), data supporting this recommendation are borrowed from studies in people with IBS [40].

3.7 Recommendations for practice

Many questions remain regarding the existence of SIBO, valid diagnostic tests and the best treatment approach. Given these issues, the condition is often treated empirically. If patients are wishing to trial a dietary approach, it is important that nutritional adequacy is first considered and deficiencies corrected, given the risk of nutritional inadequacy in this population. Ideally, patients should treat their SIBO using one strategy at a time, so a clearer picture might be obtained regarding which treatments are working.

If patients are wishing to trial a low FODMAP diet, this should follow a 3 phased approach as described below and in Modules 5 and 6.

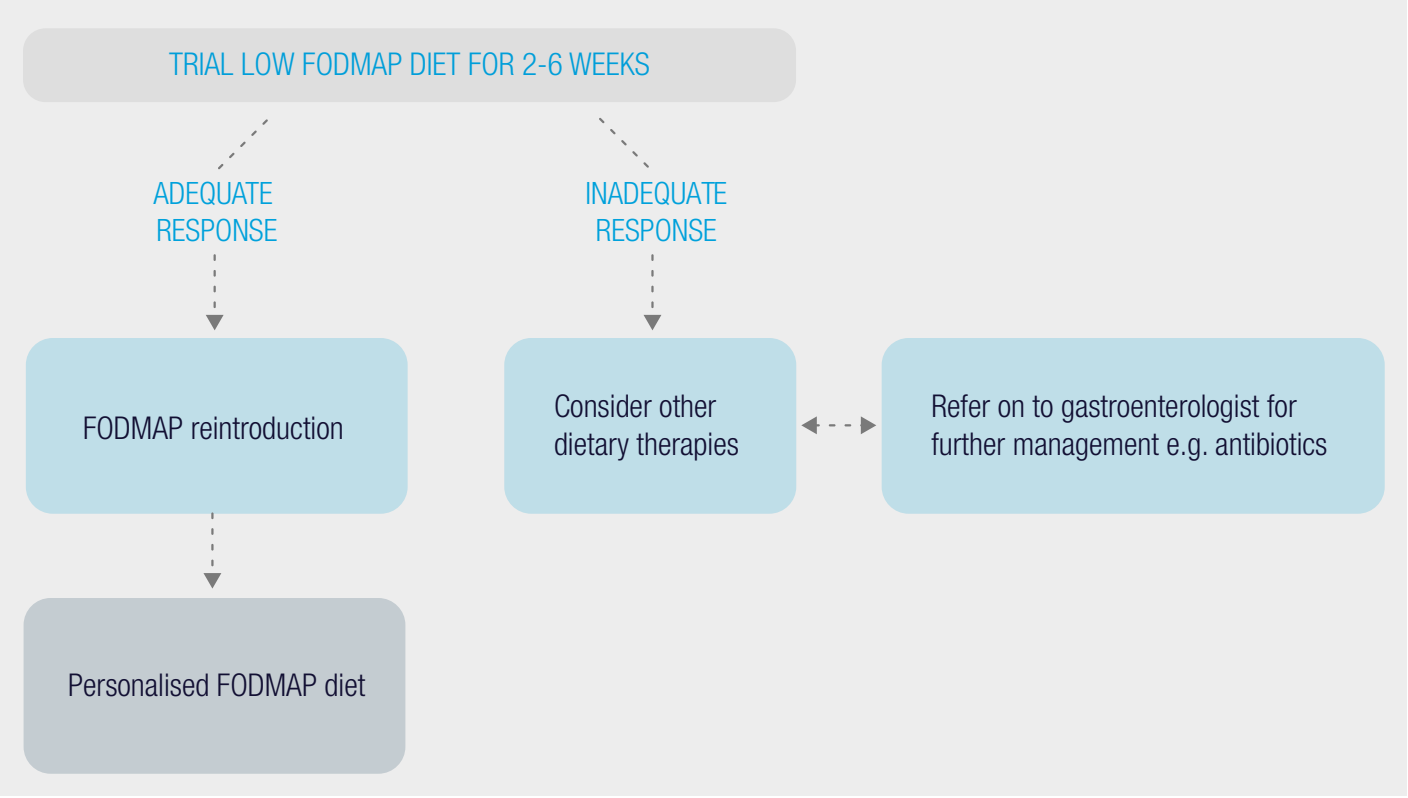

Figure 1: Dietetic management of patients with suspected SIBO

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