MONASH University

Module 5
Summary Factsheet

1. Introduction

This module provides an overview of the 3 phased FODMAP diet, focussing on Phase 1.

2. Education

Patients commencing a FODMAP diet may benefit from education re the following topics.

2.1 3 phases of the FODMAP diet

A FODMAP diet is a 3 phased diet, the major goal of which is to find a balance between good symptom control and expansion of the diet. Highlighting these 3 phases at the outset establishes the expectation that the low FODMAP diet followed in Phase 1 is not the diet followed long-term.

Box 1 - 3 Phases of the FODMAP diet

Phase 1 - Low FODMAP diet (2-6 weeks)[1-2]

Aim is to identify FODMAP sensitive individuals and induce symptom relief.

- High and moderate FODMAP foods are swapped for low FODMAP alternatives.
- Traffic light colours in the Food Guide of the Monash FODMAP App indicate high (red), moderate (amber) and low (green) FODMAP foods.
- Patient eats mostly low FODMAP foods in this step

Phase 2 - FODMAP reintroduction (6-8 weeks*)

Aim is to identify sensitivities to individual FODMAP subgroups (excess fructose, lactose, GOS, fructans, mannitol and/or sorbitol).

- Patients only progress to phase 2 if they experience an adequate improvement in symptoms in Phase 1
- Background diet remains low in FODMAPs
- Staged food challenges (using foods containing moderate then high amounts of only 1 FODMAP subgroup at a time) are used to determine which FODMAPs are tolerated, and which are not.
- Diary function of Monash FODMAP App used to identify challenge foods and record symptom responses to each challenge.

Phase 3 - FODMAP personalisation (long-term diet)

Aim is to liberalise restrictions, expand the diet and establish a 'personalised' FODMAP diet for the long-term.

- Patient should now understand which FODMAPs they tolerate and which trigger symptoms.
- Set Filters in the Monash FODMAP App to tailor the Food Guide to suit the patient's personal FODMAP sensitivities.
- Patient includes well tolerated foods and FODMAPs in their diet, and only restricts poorly tolerated FODMAPs to a level that provides adequate symptom control.
- Ongoing challenges with poorly tolerated FODMAP subgroups recommended as FODMAP tolerance and IBS symptoms may change over time.

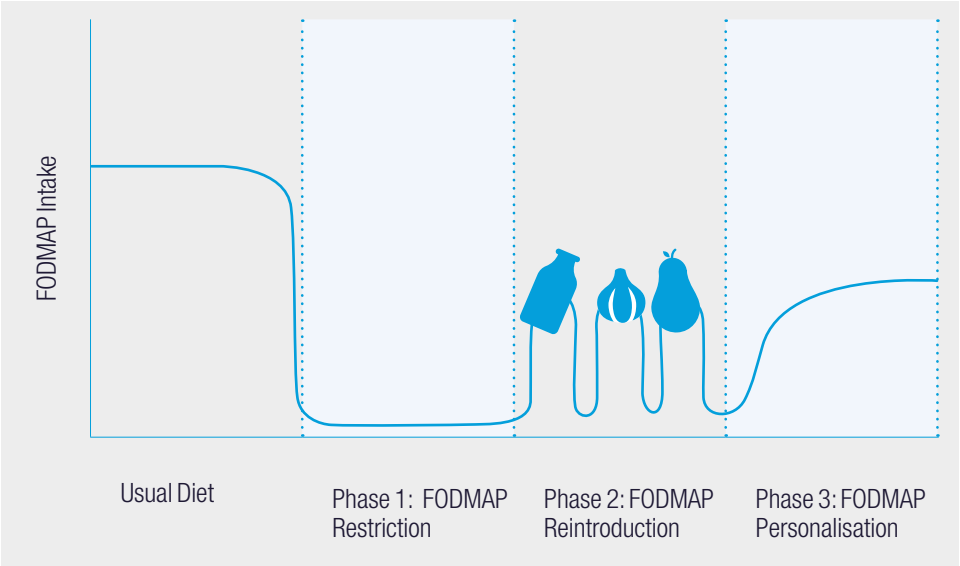


Figure 1: FODMAP intake over the 3 phases of the FODMAP diet

2.2 Serving size and substitution

Remind patients that the notions of serving size and substitution are important on a FODMAP diet.

- Serving size is important because foods that are high in FODMAPs at larger serving sizes may be moderate or low in FODMAPs in smaller serving sizes.
- Also, patients will achieve a more nutritionally adequate diet by substituting high FODMAP foods for nutritionally equivalent, low FODMAP alternatives (Table 1).

Table 1 - High FODMAP foods and low FODMAP alternatives

	HIGH / MODERATE FODMAP FOOD	LOW FODMAP ALTERNATIVE
MEAT, POULTRY, SEAFOOD, EGGS	Marinated meats, meats served with sauces, processed meats (e.g. sausages, salami)	Plain cooked meats, poultry, seafood, eggs
FRUIT	Apple, mango, dried fruit, peach, nectarine, plum, watermelon, pear	Orange, mandarin, kiwi fruit (green), rhubarb, pineapple, strawberries (5 mediums), cantaloupe (3/4 cup)
VEGETABLES	Garlic, onion, leek, artichoke, asparagus, mushroom, cauliflower, snow peas	Cucumber, bok choy, green capsicum, lettuce, potato, bean sprouts, carrot
BREADS AND CEREALS	Wheat bread, rye bread, barley based breakfast cereal, barley flakes	Spelt sourdough bread, gluten free bread, gluten free corn flakes, gluten free pasta, quinoa pasta, rice cakes (plain), oat sourdough bread (1 slice), quinoa flakes
PULSES / VEGETARIAN	Red kidney beans, falafels, baked beans split peas	Chickpeas (1/4 cup canned), lentils (canned)
NUTS AND SEEDS	Cashews, pistachios	Macadamias, peanuts, pine nuts
DAIRY	Cows' milk, sweetened condensed milk, evaporated milk, icecream, soy milk (soy bean), custard	Lactose free milk, yoghurt (small amounts), whipped cream, soy milk (soy protein), cheddar cheese
SUGARS / SWEETENERS	Honey, high fructose corn syrup, sugar-free confectionery, agave syrup	Dark chocolate, table sugar, maple syrup, rice malt syrup
OTHER	Garlic/onion based marinades and sauces, vegetarian mince, fruit juice	Barbeque sauce, mayonnaise, soy sauce, cranberry juice, chutney

2.3 IBS and the mechanisms of FODMAP action

Some patients will want to understand more about the pathophysiology of IBS and the mechanisms of FODMAP action in the gut. The following animation will help to describe these concepts and Boxes 2-4 provide descriptions that can be used in describing these concepts to patients.

https://www.youtube.com/watch?time_continue=4&v=stdYoA4G9Dg

Box 2 - Educating patients about the pathophysiology of IBS and the mechanisms of FODMAP action

- There are nerves that line the intestines which are overactive in IBS. As a result, normal changes in the gut (such as increases in the amount of gas and water in the gut), can be experienced as painful episodes of bloating and abdominal pain.
- When FODMAPs are ingested, they attract water into the small intestine, causing the intestines to distend (expand) and causing motility changes (changes in the movement of the gut and contents within the gut). FODMAPs are also poorly absorbed in the small intestine, so when they reach the large intestine, bacteria use FODMAPs as an energy source to survive. The bacteria rapidly ferment the FODMAPs and produce gas as a result.
- These actions cause an expansion of intestinal contents, stretching the intestinal wall. Because people with IBS have a highly sensitive gut, 'stretching' the intestinal wall causes exaggerated sensations of pain and discomfort

Box 3 - Educating patients about the characteristics of FODMAPs

FODMAPs are a group of short chain carbohydrates (or sugars) that are:

- Small in size
- Poorly absorbed or not absorbed at all in the small and large intestine
- Readily fermented by gut bacteria

Sugars classified as FODMAPs include oligosaccharides (fructans and GOS), polyols (sorbitol and mannitol), fructose and lactose.

Box 4 - Educating patients about the actions of individual FODMAP subgroups

Fructans and GOS

Fructans and GOS are not digested in the small intestine because humans lack the enzymes needed to break these chains of sugars into individual sugar units. Instead, these sugars pass into the large intestine where they are used as fuel by the gut bacteria (fermented), resulting in gas production. The gas produced causes the intestines to expand (distend) and causes wind in healthy people (a normal part of digestion). However, because people with IBS have a highly sensitive gut and problems regulating movements of the gut and contents within (gut motility), these changes may result in symptoms of bloating, abdominal pain/discomfort and altered bowel habit.

Sorbitol, mannitol and fructose

The polyols (sorbitol and mannitol) and fructose are absorbed slowly along the length of the small intestine. As they move through the small intestine, they attract water into the intestine (by osmosis), causing the intestines to expand (distend). These effects also occur in the large intestine and may result in symptoms of pain and diarrhoea.

> *Remind patients that these effects on small intestinal water content occur regardless of the extent to which they are absorbed in the small intestine.*

If sorbitol, mannitol and/or fructose are not fully absorbed in the small intestine, they spill over into the large intestine where they are used as fuel by gut bacteria (fermented), resulting in gas production. Combined, these effects result in symptoms of abdominal pain, bloating and altered bowel habit (diarrhoea in particular).

Lactose

To be absorbed, lactose must be broken into its individual sugar units by the enzyme, lactase. In the small proportion of people with IBS who lack the enzyme needed to break lactose into individual sugar units, lactose reaches the large intestine undigested. Here, lactose attracts water into the large intestine and is used as fuel by the gut bacteria (fermented), producing gas. In people with lactose intolerance, the gas production can result in symptoms of bloating, wind, pain and diarrhoea (depending upon the dose of lactose consumed).

> *Remind patients that lactose intolerance is often transient, so lactose tolerance should be re-tested (using an elimination-challenge approach with food or using breath tests) to determine whether tolerance improves with time.*

3. Determining level of restriction required

The FODMAP diet is not a 'one-size-fits-all' diet therapy. Rather, the diet should be tailored to suit the characteristics and circumstances of individual patients. Figure 2 describes how to adapt the Phase 1 low FODMAP diet.

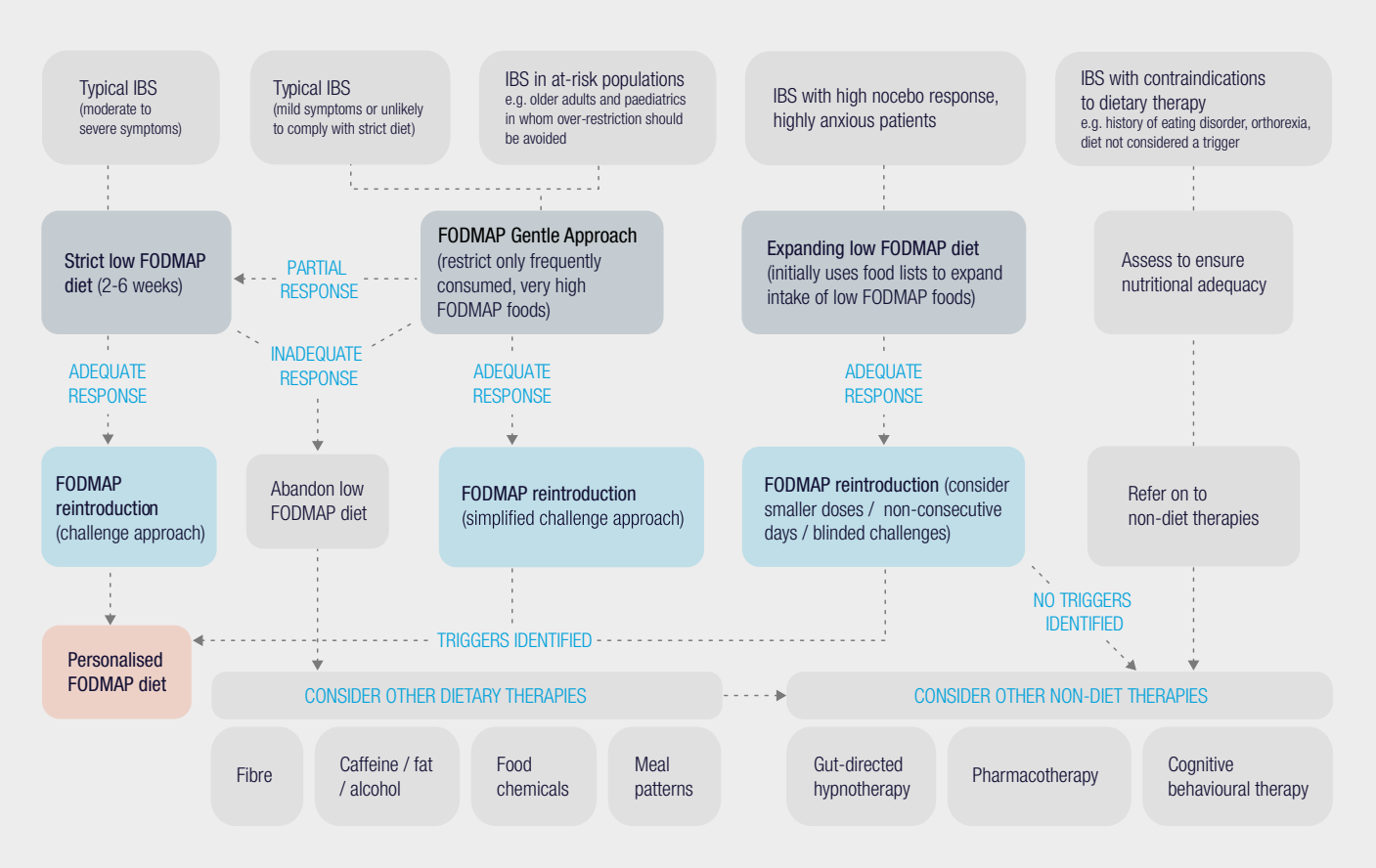


Figure 2: Adapting the FODMAP diet to suit different patient groups

3.1 'Strict' low FODMAP diet

A 'strict' approach to the Phase 1 diet will suit most patients. Using this approach, foods containing high (red) or moderate (amber) amounts of FODMAPs are replaced with nutritionally equivalent, low FODMAP (green) alternatives. Example substitutions are provided in Table 1.

Discussing low FODMAP choices in the context of the five food groups will help patients achieve a more nutritionally adequate, low FODMAP diet (Table 2).

Table 2 - Low FODMAP choices from each of the five food groups

	SERVES PER DAY	
Fruit	At least 2	1 medium (150g) orange 2 small (150g) mandarins, kiwi fruits (green) 1 cup (150g) papaya (yellow), pineapple or rhubarb 125ml cranberry juice
Vegetables	5-7	½ cup cooked vegetables (e.g. carrots, squash, Japanese pumpkin, parsnip, eggplant) 1 cup salad (lettuce, cucumber, green capsicum) 1 small potato
Milk, yoghurt, cheese	2-4	1 cup (250ml) regular or lactose free milk (if lactose intolerance present) 1 tub (200g) yoghurt or lactose free yoghurt (if lactose intolerance present) 40g cheddar cheese 1 cup (250ml) soy milk, made from soy protein with at least 120mg of calcium per 100ml
Fats and oils and extra foods*	Limit your intake of these	Oil, butter, margarine Plain biscuits, cakes Pies, pastries Dark chocolate, chips, ice-cream (2/5 scoops or 30g, vanilla) Alcoholic beverages Soft drink
Meat, fish, poultry	2-3	65-80g cooked meat, chicken 80-100g fish fresh or canned 2 eggs large 170g tofu, firm or tempeh
Bread, cereals, rice, pasta and noodles*	At least 4	1 slice (40g) of gluten free or low FODMAP bread ½ cup (90g) of cooked rice (white or brown) ½ cup (90g) cooked pasta (gluten free) ½ cup (90g) rice noodles ½ cup (120g) cooked porridge ½ cup (75g) cooked quinoa ½ cup of gluten free corn flakes

3.2 FODMAP Gentle Approach

Using a FODMAP gentle approach the patient should have fewer dietary restrictions, as they would only restrict foods that are:

- very high in FODMAPs,
- frequently consumed, and
- suspected to be major symptom triggers[3]

If using a FODMAP gentle approach to Phase 1, try to minimise dietary instructions. Patients may benefit from a short, tailored list of foods to avoid (Table 3). Patients who use a FODMAP gentle approach in Phase 1, can follow a 'simplified' challenge approach in Phase 2.

This approach may be suitable for the following patients:

TYPES OF PATIENTS	EXAMPLE
Unwilling or unable to comply with a rigid dietary regime	Cognitively challenged or elderly patients
Patients at risk of over-restriction	Patients with current or a history of eating disorders
Young children - nutritional adequacy and good eating habits are a priority in this population	
Patients with co-morbidities, where a restrictive diet is contraindicated	Pregnant mothers, IBD patients
Patients already following other dietary restrictions	Patients with coeliac disease and following a gluten-free diet, vegan / vegetarian patients
Patients with known tolerance to lactose, based on breath tests or dietary challenge	
Patients who consume a very high FODMAP intake but only experience mild symptoms	These patients may tolerate green and amber serves of foods, but may wish to include certain high FODMAP foods in phase 1

Considerations when recommending the gentle approach:

- These patients may benefit from a short, tailored list of foods to avoid.
- A major disadvantage for this approach is that it may be unclear whether a patient is sensitive to FODMAPs. For example, if symptom improvement is inadequate, it may be unclear whether the patient is insensitive to FODMAPs or whether a greater degree of FODMAP restriction is needed to achieve symptom improvement.
- The 'strict' approach should be the first-line approach, and the 'gentle' approach should only be used in patients when a strict approach is contraindicated.

Table 3 - Very high FODMAP foods to avoid using a 'FODMAP gentle approach' approach in Phase 1

	OLIGOSACCHARIDES (FRUCTANS AND GOS)	FRUCTOSE IN EXCESS OF GLUCOSE	LACTOSE	POLYOLS
FRUIT	Dried Fruit*	Apple, pear, mango, watermelon, dried fruit*		Stone fruits (peach, nectarine, plum)
VEGETABLES	Garlic**, onion**	Artichoke		Mushrooms*, cauliflower*,
BREADS AND CEREALS	Wheat/rye/barley based breakfast cereal, bread, 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		

* Only remove these foods in certain patients. For example, a patient who eats mushrooms frequently may be encouraged to avoid mushrooms initially. By contrast, a patient who eats mushrooms only occasionally and in small quantities, may be advised to continue consuming these foods.

**Exclude garlic and onion if they are major ingredients, but include if they are minor ingredients in processed foods (e.g. garlic/onion added as a flavouring agent in marinades, sauces & vegetarian mince).

3.3 'Expanding' low FODMAP diet

An 'expanding' approach to Phase 1 involves broadening the patient's diet to include more low FODMAP serves, knowing that these should be tolerated.

An 'expanding' approach to Phase 1 may be suitable in patients who:

- Are already following a highly restricted diet
- Are highly anxious or who are suspected of having high 'nocebo' responses

Once the patient has included low FODMAP serves in Phase 1, a slower approach to Phase 2 can be commenced. This may involve starting with smaller challenge doses (e.g. 1/2 the amber serve) and/or including challenge foods second daily.

3.4 Group FODMAP diet education

Some dietetic services may consider group FODMAP diet education. The advantages of group versus one-on-one FODMAP diet education are highlighted in Table 4.

Table 4 - Advantages of group versus one on one education

ADVANTAGES GROUP EDUCATION	ADVANTAGES ONE-ON-ONE EDUCATION
Facilitates participants learning from each other – may be particularly useful for learning practical skills	Some patients may feel embarrassed talking about bowel symptoms in front of a group
Facilitates peer support and sharing of experiences between participants	More suitable for patients with atypical symptoms, other allergies/intolerances, other medical history
May reduce patients' sense of isolation	requires less physical space
Cheaper	Allows the dietitian to screen for red flags
Less resource intensive – suitable when demand for dietetic services out stripes supply	Allows more flexibility with appointment times and this may improve attendance
May reduce wait times to see a dietitian	More suitable for non-English speaking patients

The efficacy of group education sessions may be improved by:

- Allowing patients to choose between group or one-on-one FODMAP diet education
- Providing a triage service that allows red flags to be screened for and complex cases to be referred onto one-on-one dietetic education

4. Low FODMAP shopping

4.1 Label reading tips

- Gluten free products are often, but not always low in FODMAPs. Check the ingredients list for high FODMAP ingredients (such as garlic, onion, dried fruit, fruit juice, and chickpea/lupin flour). See Table 5
- Even if only low FODMAP items are listed on the ingredients list, the product may still be high in FODMAPs due to the effects of food processing and serving size.
- If patients are unsure about the FODMAP content of a food product, they should try including a small quantity when symptoms are otherwise well controlled and monitoring symptoms. If the product is tolerated, it is safe to include

Table 5 - High FODMAP ingredients to look for on food labels

FRUCTOSE	POLYOLS	FRUCTANS
• Fructose • High fructose corn syrup • Honey • Fruit juice • Fruit juice concentrate • Fruit pieces* • Crystalline fructose • Agave syrup • Fruit sugar • Dried fruit	• Sorbitol • Mannitol • Xxylitol • Isomalt • Erythritol • Fruit juice • Fruit juice concentrate • Dried fruit	• Garlic / garlic salt / garlic powder / garlic extract • Onion / onion salt / onion powder / onion extract • Wheat* • Rye* • Inulin • Fructan • Fructooligosaccharide (FOS) • Chicory / chicory root extract / chicory root powder

*If a main ingredient

5. Identifying low FODMAP foods

Table 6 highlights high and low FODMAP foods from each of the major food groups and key points about each food group that may be worth discussing with patients.

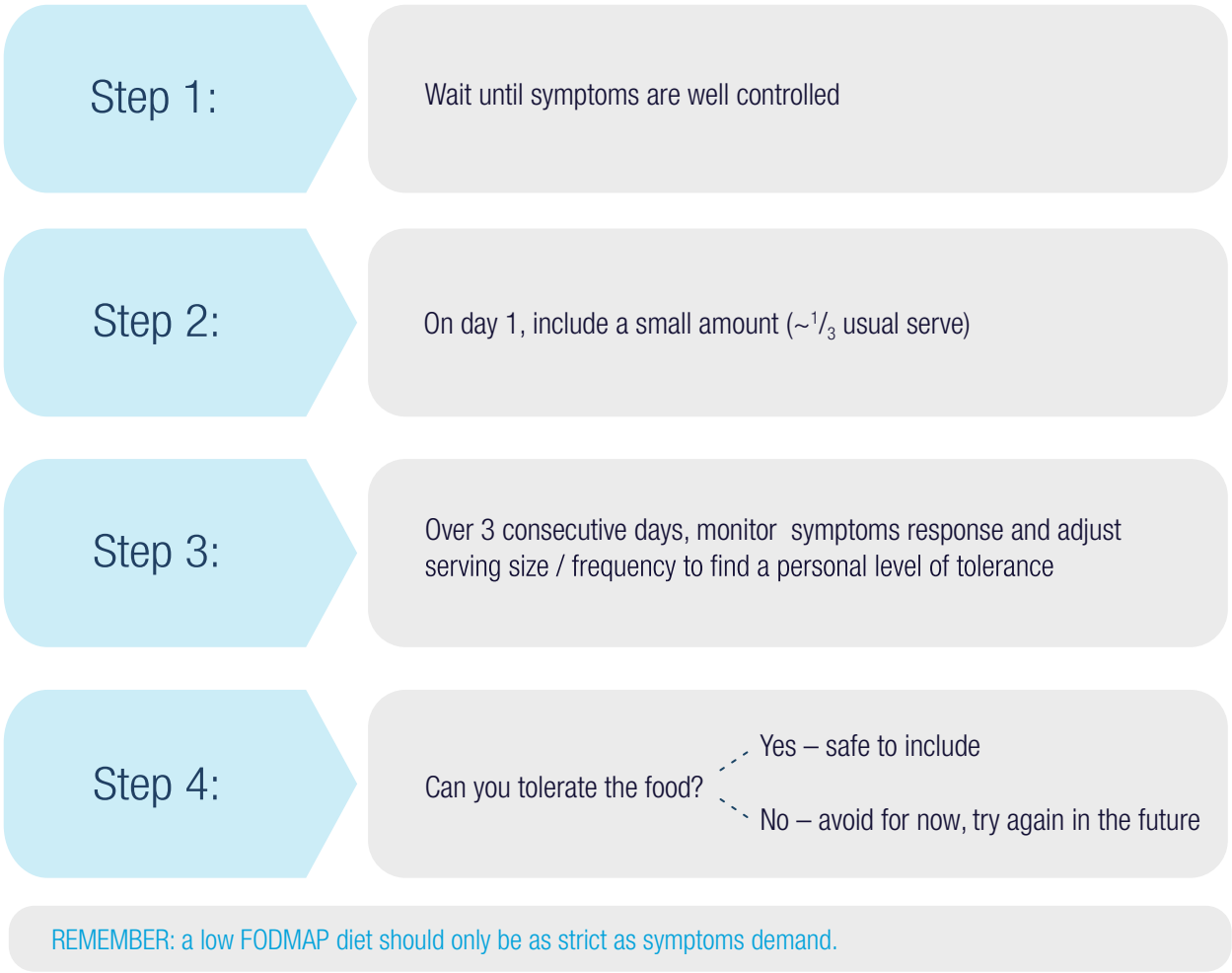
Table 6 - FODMAP composition of food

	HIGH FODMAP FOOD	LOW FODMAP ALTERNATIVE	NOTES TO PATIENTS
MEAT, POULTRY, SEAFOOD, EGGS	Marinated meats, processed meats (e.g. sausage / salami), meats served with sauces	Plain cooked meats, poultry, seafood, eggs	• Naturally low FODMAP (unless marinated in / processed with high FODMAP ingredients)
FRUIT	Apple, pear, mango, dried fruit, stone fruit (peach, nectarine, plum), watermelon	Orange, firm banana, mandarin, kiwi fruit (green), rhubarb, pineapple, strawberries (5 mediums), cantaloupe (3/4 cup)	• Main FODMAPs present are excess fructose + sorbitol • Dried fruit and fruit juices are concentrated sources of FODMAPs • Some fruits may be particularly poorly tolerated - Very high FODMAP fruits e.g. apple, pear, mango, dried fruit, peach, nectarine, plum, watermelon - Fruits rich in numerous FODMAPs e.g. cherries, clingstone peach, nashi pear, packham pear, watermelon, dried apple / apricot / pear / prunes
VEGETABLES	Garlic, onion, leek, artichoke, asparagus, snow peas, mushrooms, cauliflower.	Green capsicum, bok choy, lettuce, potato, bean sprouts	• Main FODMAPs present are mannitol and fructans • Some vegetables may be particularly poorly tolerated - Very high FODMAP vegetables (onion, garlic, artichoke, leek, mushroom, cauliflower) - Vegetables rich in numerous FODMAPs (jerusalem artichoke, beetroot, mushroom)
BREADS AND CEREALS	Wheat / rye / barley based breakfast cereal, bread, biscuits and snack products	Spelt sourdough bread, gluten free bread, oat sourdough bread (1 slice), oats, quinoa flakes, corn flakes (½ cup), gluten free pasta, quinoa pasta, rice cakes (plain)	• The main FODMAPs present are fructans and GOS. • Low FODMAP options include naturally low FODMAP grains (e.g. rice, quinoa and millet) + specialty products (e.g. gluten free breads and cereals) • Remind patients to look for high FODMAP ingredients on specialty products (e.g. onion, garlic, dried fruit, inulin, high fructose corn syrup, fructose) • Sourdough breads subjected to longer fermentation times will be lower in fructans, (e.g. sourdough spelt bread)
PULSES	Red kidney beans, split peas, falafels, baked beans	Chickpeas (1/4 cup canned), lentils (canned)	• The main FODMAP present is GOS • GOS are water soluble, so boiling and soaking pulses lowers FODMAP content
NUTS AND SEEDS	Cashews, pistachios	Macadamias, peanuts, pine nuts	• Most seeds are low FODMAP • Main FODMAPs present in nuts are GOS and fructans • There are several low FODMAP nut varieties – these are nutritious, low FODMAP snack ideas for patients
DAIRY	Cows' milk, custard, sweetened condensed milk, evaporated milk, icecream	Lactose free milk, yoghurt (small amounts), soy milk (soy protein), whipped cream	• The main FODMAP present is lactose • Dairy foods are not excluded from a low FODMAP diet • Many dairy foods contain little or no lactose and are suitable to include (e.g. butter, hard cheese) • Many plant-based milk alternatives are low in FODMAPs, e.g. soy milk (made from soy protein), almond milk and rice milk • BUT, milk alternatives do not naturally contain calcium, so remind patients to choose calcium fortified varieties (containing >120mg calcium per 100ml)
SUGARS / SWEETENERS	Honey, high fructose corn syrup, sugar-free confectionery	Dark chocolate, table sugar, maple syrup, rice malt syrup	• The FODMAPs present in sugar sweetened foods and beverages are fructose and sugar polyols (e.g. sorbitol, xylitol, erythrytol) • Encourage patients to read food labels to identify high FODMAP sugars and sweeteners

6. Eating foods with unknown FODMAP content

Patients wanting to include foods with an unknown FODMAP content can test their tolerance to the item (Figure 3).

Figure 3: Trying foods with unknown FODMAP content



REMEMBER: a low FODMAP diet should only be as strict as symptoms demand.

7. Tips for eating out on a low FODMAP diet

Box 4 - Eating out tips

- Look at menus online to find restaurants / cafes with suitable low FODMAP options
- Know their worst trigger foods so they can ask for these to be excluded from dishes
- Order a gluten free meal that excludes their worst trigger foods
- Choose protein based meals (fish, red meats, or poultry) served with vegetables / salad / potato / rice / rice noodles on the side rather than bread or pasta
- Avoid heavily sauced, rich dishes (such as curries) as they are harder to modify and often contain garlic and onion
- Avoid dishes made with stock (such as soups and risottos) as they often contain garlic and onion
- Ask for a recommendation regarding dishes that do not contain onion or garlic
- Ask for dips, sauces and dressings to be served separately (these often contain garlic and onion)
- Call the restaurant in advance (outside of busy hours) for more complicated requests

Box 5 - Cuisines that may be more likely to offer low FODMAP options

- Pizza – order a gluten-free base and low FODMAP toppings
- Greek – low FODMAP options include Saganaki, olives (plain), horta, chargrilled fish / scallops / octopus / tiger prawns, patates, chicken from the spit, mixed grills with salad and patates. Avoid dips, moussaka, pistaccio (baked pasta with béchamel sauce) and honey based desserts
- Vietnamese – low FODMAP options include rice vermicelli with beef, chicken, prawn or tofu (ask for firm tofu and no onion in the salad); rice paper rolls; (check no onion inside), and bun (sauces separate, plain meat if marinated in garlic and no onion in the salad)
- Thai - low FODMAP options include stir-fry and served with rice. Ask for firm tofu, mild chilli and no garlic or onion. Avoid curries that often contain high FODMAP ingredients.
- Japanese –low FODMAP options include sushi, sashimi, tempura and grilled meats / seafood / firm tofu served with rice / vegetables / seaweed. Soy and wasabi are low FODMAP. Because serving sizes are often small, higher FODMAP ingredients may be tolerated, for example avocado in a hand roll, wheat in tempura batter.
- Korean barbeque – dishes are usually cooked in front of the customer, so patients can choose which ingredients are added to the dish
- Pub meals – low FODMAP options include grilled meat/chicken/fish with steamed vegetables / salad / potato. Ask for sauces to be served separately and plain meat if it is marinated

8. Tips to assist patients while travelling

Box 6 - Travelling Tips

- Complete phases 1 and 2 before departure so they are aware of their worst triggers and able to follow a less restrictive diet
- Take low FODMAP snacks on the flight
- Pack medications in hand luggage
- Order a gluten-free meal for the flight, but beware of high FODMAP ingredients
- Book self-contained accommodation so they can prepare their own meals
- Learn to say 'no… (e.g. onion/garlic)' in the local language
- Visit local markets to buy fresh food
- Research menus of local eateries online to find suitable low FODMAP options (See eating out tips in this module)

9. Low FODMAP cooking

Table 7: Cooking techniques that lower FODMAP content

	TIPS TO UTILISE THIS TECHNIQUE
Boiling, straining, canning, soaking and pressing	• Choosing canned rather than dried lentils and chickpeas • Choosing canned rather than fresh beetroot • Discarding the water that legumes, pulses and vegetables are boiled or canned in • Choosing firm tofu over silken tofu (the former having undergone pressing that removes GOS containing liquid) • Boiling rather than roasting vegetables such as butternut pumpkin, spaghetti squash, and sweet potato
Fermentation	• Choosing sourdough spelt bread (made using traditional methods and a long fermentation time) • Avoiding other fermented foods, such as sauerkraut (may be higher in mannitol)
Pickling, activation and 'sprouting'[4]	• Using pickled rather than fresh onion and beetroot • Trying products made using sprouted mung beans and barley (keeping in mind that while these grains and pulses have been tested for FODMAP content, end-products made using them have not, so a test to tolerance approach is recommended).

10. Recipe modification

Patients may need to adapt their recipes to lower their FODMAP content. Suggested swaps are highlighted in Table 8.

Table 8 - Swapping high for low FODMAP ingredients

HIGH FODMAP INGREDIENT	LOW FODMAP ALTERNATIVE
Onion, leek	Green tips spring onion
Garlic	Garlic infused oil
Stock	Home made stock made with low FODMAP ingredients
Pasta, wheat noodles	Rice, rice noodles
Dried fruit	Dried cranberries (1 tablespoon or 15g) Dried banana chips (15 chips or 30g)
Red kidney beans, split peas, baked beans	Canned lentils Canned chickpeas (½ serve or 42g)
Honey	Maple syrup Rice malt syrup
Cashews Pistachios	Macadamias Peanuts
Wheat flour	Rice flour Sorghum flour
Cows' milk Yoghurt	Soy milk (soy protein) Almond milk Rice milk

If patients complain that their Phase 1 low FODMAP diet is bland and lacking flavour, encourage them to experiment with flavoursome, low FODMAP ingredients, for example:

- Herbs (such as parsley, coriander, thyme, basil and rosemary)
- Spices (such as cumin, coriander, turmeric, but avoid seasoning mixes and blends)
- Asafetida powder (pinch only for onion flavor)
- Garlic infused oil
- Chives
- Green tips spring onion
- Ginger
- Lemon and lime juice
- Maple syrup
- Salt & pepper
- Stock (made without onions/garlic)

11. Adding low FODMAP fibre

As highlighted Figure 4, a low FODMAP diet can compromise fibre intake, as many foods naturally high in fibre (legumes, lentils, grains and cereals, nuts, fruits and vegetables) are also high in FODMAPs. Patients may therefore need specific advice on how to achieve an adequate fibre intake while following a low FODMAP diet Box 8.

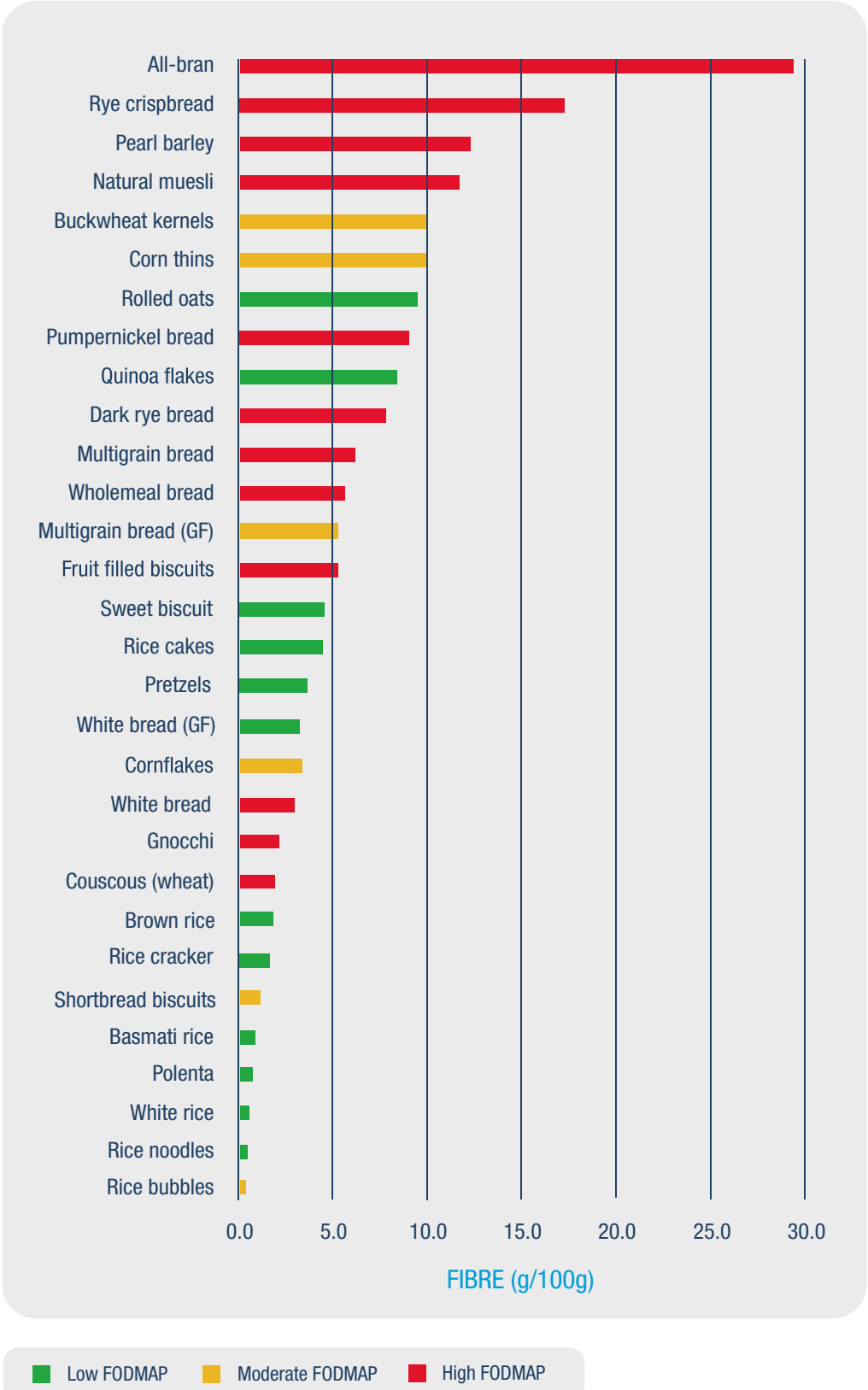


Figure 4: Fibre content versus Monash FODMAP rating

Box 7 - Tips to help patients to achieve an adequate fibre intake

- Snack on low FODMAP fruit (e.g. raspberries, rhubarb, kiwifruit, mandarin, strawberries, passionfruit and oranges)
- Include low FODMAP vegetables with meals (e.g. carrot - skin on, green beans, potato - skin on, corn, silverbeet and eggplant)
- Check food labels when buying low FODMAP bread and cereal products. Compare products in the per 100g column to find higher fibre options. Examples include quinoa flakes, brown rice, gluten free multigrain bread, rice bran, oat bran, sourdough spelt bread and porridge (oats).
- Add canned lentils/ canned chick peas to a casserole/salad. Rinse these products before use to further reduce FODMAP content.
- Snack on low FODMAP nuts (e.g. macadamias, almonds and peanuts)
- Add oat bran, rice bran or linseeds/flax to breakfast cereal
- Consider a fibre supplement. Supplements to consider psyllium/ispaghula, linseeds/flax, sterculia and methylcellulose. Wheat bran is not recommended in IBS

12. Assessing symptom response

Box 8 - Reminders for patients re symptom response

- While a low FODMAP diet is effective in around ¾ of sufferers, not everyone will experience symptom relief on the diet
- Most people find their symptoms do not resolve completely
- Symptom response to a low FODMAP diet can be highly individual – some people will experience overwhelming relief, others only a little.
- Some symptoms are normal, such as a small amount of wind or bloating. It is important to understand the type and/or severity of symptoms that the patient is considering to be acceptable or unacceptable
- IBS symptoms tend to fluctuate over time; sometimes they may be very mild and sometimes they may be more severe.
- Many factors outside of diet can influence IBS symptoms, including stress, anxiety, gastroenteritis, menstruation (in women), physical activity and other lifestyle factors. The Diary in the Monash App helps to capture information about the other factors that influence IBS symptoms.

Assessing symptom response to Phase 1 of the diet will help you to decide whether the patient should:

- Abandon the low FODMAP diet and consider other therapies (if compliance was good, but symptom improvement was inadequate), OR
- Enter Phase 2 to identify specific FODMAP sensitivities (if symptom response was adequate)

15.1 Monitoring changes in IBS symptoms

Patients can monitor symptom response on a low FODMAP diet using:

- The Diary function in the Monash FODMAP App (to track food intake, IBS symptoms, bowel movements, stress levels)
- Try to assess IBS symptom control after 2-6 weeks on a low FODMAP diet (Figures 5 and 6). If the patient considers their symptom response 'adequate', then it is time they enter phase 2 and reintroduce FODMAPs. However, if symptom response was inadequate, work with them to:
    - › Confirm compliance to the dietary restrictions
    - › Work through troubleshooting strategies and put in place a management plan to improve symptom response
    - › Consider other dietary therapies and/or a referral on to another health professional

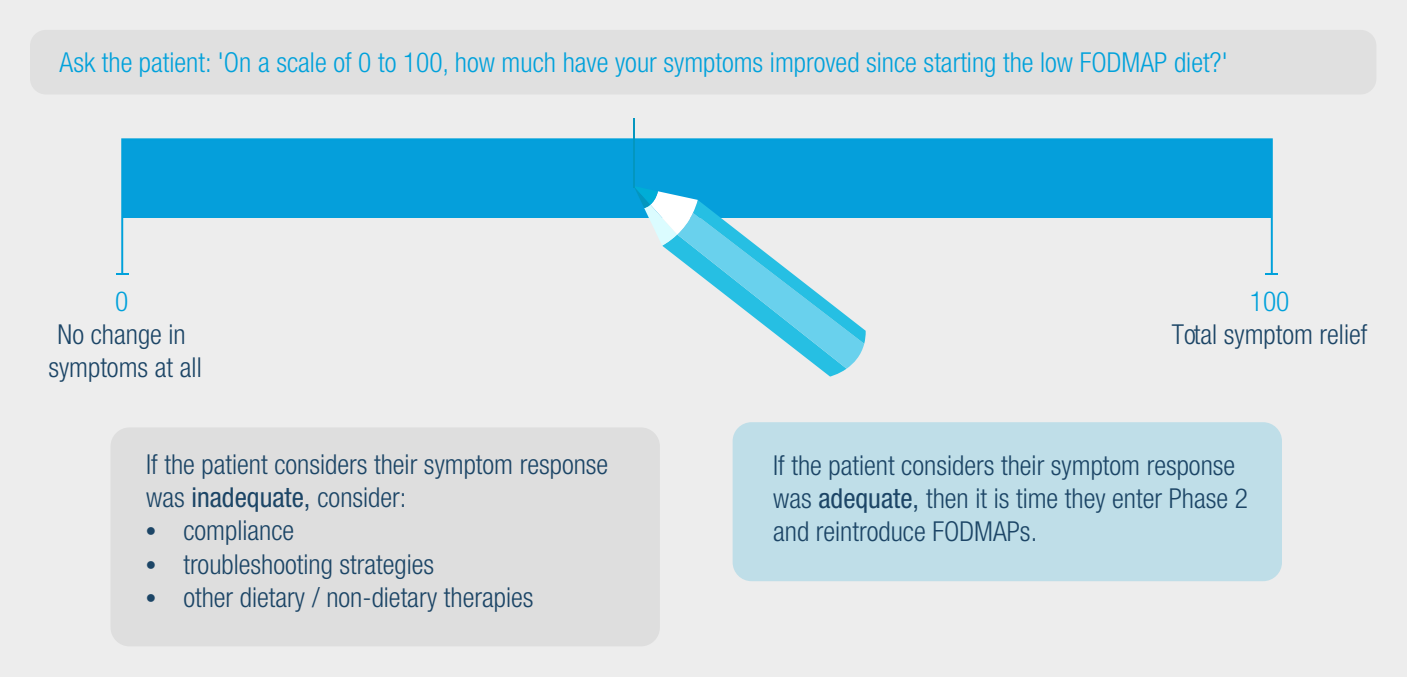


Figure 5: Assessing symptom response to a low FODMAP diet

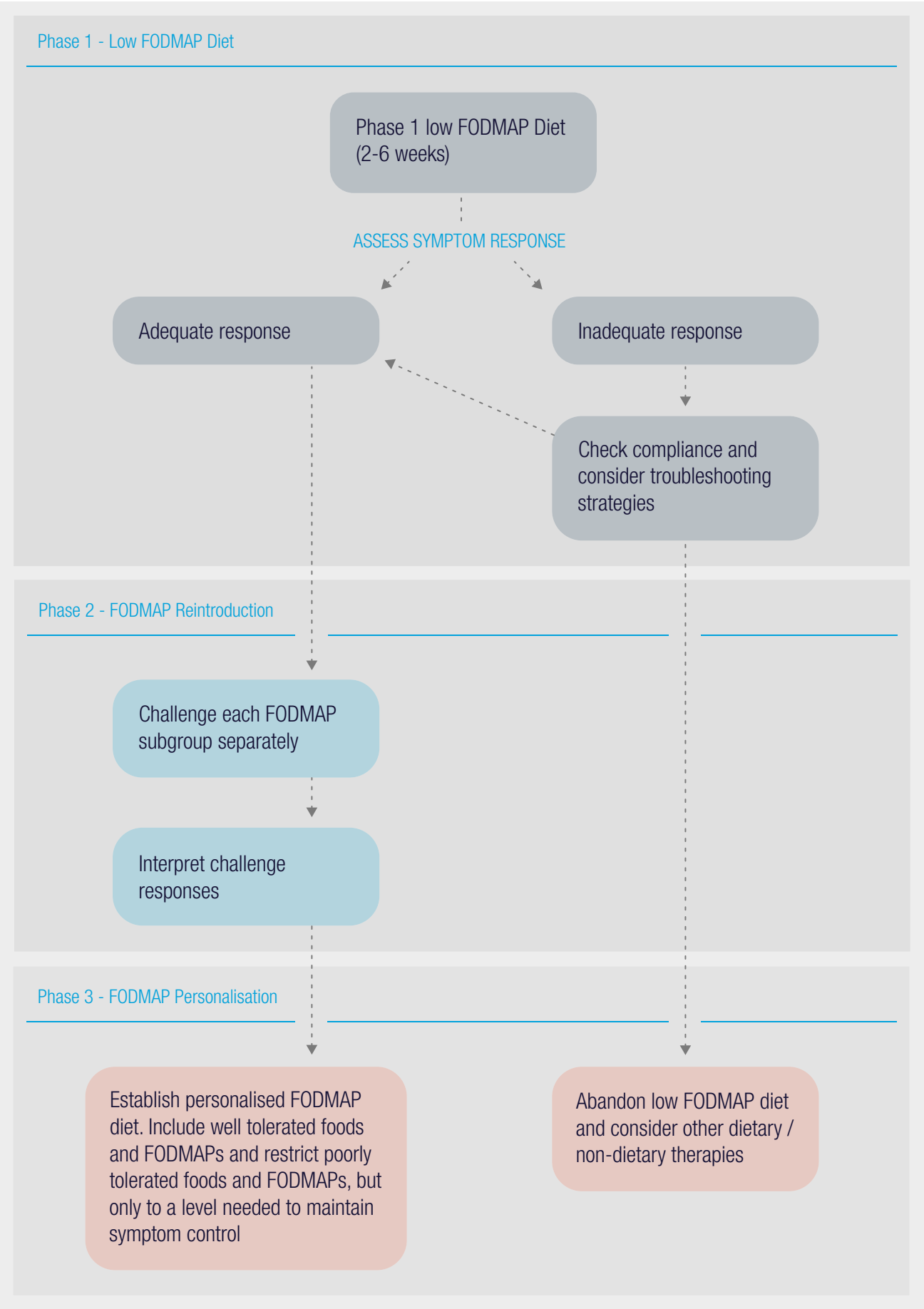


Figure 6: Clinical management flowchart - use of a FODMAP diet in IBS

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