IBD Diet Booklet

The Role of Diet in Mild to Moderate Inflammatory Bowel Disease (IBD)

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What is IBD: Crohn's disease and ulcerative colitis?

Inflammatory bowel disease (IBD) describes auto-inflammatory conditions of the gastrointestinal tract. The two main types of IBD are Crohn's disease (CD) and ulcerative colitis (UC).

- CD can affect any part of the gastrointestinal tract from mouth to anus, but most commonly affects the small and/or large intestine, and may involve the whole thickness of the gastrointestinal wall.
- UC is limited to the large intestine (colon or large bowel), will start at the rectum moving backwards through the colon and will only affect the mucosa (bowel lining).

IBD may be classified as mild, moderate or severe disease depending on age at diagnosis, location and behaviour of inflammation in CD, and the extent (spread) and severity of inflammation for UC. The nature of both CD and UC may include times of active disease (uncontrolled inflammation, also known as a flare) and remission (stable disease, no symptoms).

The IBD diet booklet will address the relevance of diet for mild to moderate IBD, meaning people with IBD who can be managed in the community without requiring hospital admission. The four areas of focus in this resource will include the role of diet for:

1. Nutritional adequacy
2. Treating inflammation
3. Symptom management; and
4. Prevention of IBD in populations at risk of development.

1. Nutritional adequacy in IBD

Why is nutritional state important?

Achieving and maintaining good nutrition is important for good health, so that the body can live, grow and function well. Malnutrition occurs if there is an imbalance in nutrients, either not enough or too much. Malnutrition is not a trivial problem and is associated with fatigue, reduced quality of life, depression and may even weaken response to medications. Furthermore, malnourished patients are more likely to become sick and have slower rates of recovery.

Malnutrition is more common in patients with IBD than the general population, particularly patients with active CD. This is usually due to a combination of poor dietary intake associated with feeling unwell and increased nutritional requirements resulting from inflammation and impairment of nutrient absorption if the small bowel is affected. Weight is not always a good predictor of malnutrition as many patients with IBD will have reduced muscle mass and strength but not necessarily fat mass or total weight. Muscle is important for movement and metabolism (conversion of food to energy), so reduced muscle mass and function will increase the risk of being unwell.

Malnutrition may be suggested by various tests that are completed by your treating doctor, but are also indicated by visual assessment, i.e., if it looks like you have altered muscle mass and/or total weight. **If you are malnourished, it is recommended that you see a dietitian,** who will guide you on how to replete specific nutrients and maintain good nutritional status. The two types of malnutrition are under-nutrition and over-nutrition.

Under-nutrition describes a loss or imbalance in energy (kilojoules or calories) and/or nutrients, which will usually result in weight loss and vitamin and mineral deficiencies. Under-nutrition is usually treated with an increased intake of energy and/or protein and repletion of any vitamin and mineral deficiencies.

Over-nutrition (overweight and obesity) is now seen in an increasing proportion of people with IBD, as it is in the general community. The relevance of over-nutrition specifically in IBD is unknown, but there is a concept that fat around the intestines might drive intestinal inflammation in patients with CD. It is important to note that obesity does not exclude malnutrition and the two can be present together. It is important that adequate nutrition is maintained if weight management strategies are applied.

Below are some tips on how to increase energy and protein in your diet if you are under-nourished:

- **Eat frequently through the day,** even if you are not hungry – including lots of meals and snacks
- **Try not to fill up on low energy drinks** like tea or water – choose milk-based drinks or smoothies
- **Add fat to your meals** (e.g., butter, margarine, olive oil, salad dressings, mayonnaises, cream and cheese)
- **Include protein-rich foods** in preference to other foods, such as meat/meat alternatives, eggs, dairy and nuts
- **A nutritional supplement** that contains energy, protein and essential vitamin and minerals may be needed if diet alone is not enough to treat under-nutrition

Vitamins and minerals of importance in IBD

Iron is essential for making haemoglobin, the protein that transports oxygen around the body. Iron is also important for producing energy, supporting immunity and fighting infection. Hence, low iron levels in the body can cause anaemia (reduced haemoglobin levels) and fatigue. People with active IBD are at greater risk of iron deficiency because inflammation turns off the ability to absorb iron from the intestine, can cause blood losses at the site of inflammation and can reduce appetite. Other risk factors for iron deficiency are being vegetarian or vegan and having menstrual blood loss in pre-menopausal women.

There are two different sources of iron in food: haem iron and non-haem iron. Haem iron is found in animal flesh and is absorbed up to four times more easily than non-haem iron.

Sources of haem iron

- **Meat**
  – beef, lamb, pork, veal
  (the redder the meat, the higher the iron content)
- **Offal**
  – liver, kidney, liverwurst, pate
- **Poultry**
  – chicken, turkey, duck
- **Fish and shellfish**

Sources of non-haem iron

- **Eggs**
- **Green leafy vegetables**
  (silverbeet, spinach, Brussels sprouts, broccoli)
- **Nuts**
- **Legumes**
  (lentils, baked beans)
- **Fortified breakfast cereals and products**

Vitamin C can help the body absorb the non-haem iron. Vitamin C is found in many fruits and vegetables, such as kiwifruit, oranges and capsicum.

If you are iron deficient, it may be recommended that you replete your iron stores using food (particularly those rich in haem iron), take an oral supplement (although absorption might be limited) or have an intravenous iron infusion as prescribed by your doctor.

Vitamin D is commonly reduced in people with inflammatory conditions. Vitamin D has an important role in the regulation of calcium and bone health, and may even be helpful in reducing inflammation. The body makes vitamin D from sunlight exposure but some milks and margarines are now also fortified with vitamin D. If you are deficient, it may be recommended that you use a vitamin D supplement. Your treating doctor and dietitian will guide you on the suitable dose that is required to treat the deficiency.

Vitamin B12 is important for the normal functioning of the brain and nervous system, and for the efficient production of red blood cells. Deficiencies can be seen in people with IBD, particularly in those with small bowel disease or resection (removal of a portion of the bowel) and can result in fatigue and poor memory. Vitamin B12 is found exclusively in animal-derived products including meat, milk and eggs, so vegans are at risk of deficiency too and may need supplementation. Injection-form of vitamin B12 is more effective in treating deficiency than oral supplementation.

Zinc is an essential component for a number of enzymes required for digestion of carbohydrates, fats and proteins. Zinc plays an important role in immunity, wound healing, blood clotting and thyroid function. People with chronic diarrhoea, including some people with IBD, are at risk of zinc deficiency. Food sources of zinc include animal products like meat, poultry, fish and cheese. Zinc is better absorbed from these animal products than plant foods (e.g., legumes, wholegrains, miso, tofu), so vegetarians and vegans are also at risk of deficiency.

Folate is important in the body for cell growth and its deficiency can lead to anaemia and fatigue. Folate deficiency is not as common as other micronutrients (because it is often added to foods), but IBD patients on restrictive diets or receiving sulfasalazine or methotrexate therapy are at higher risk. Folate is commonly found in wholegrains, leafy green vegetables and fortified breakfast cereals.

Calcium is an essential mineral needed to build and maintain strong bones and teeth and prevent osteoporosis (decreased bone density). It is particularly important in people with IBD because inflammation affects bone formation and active disease can affect absorption of calcium. Additionally, use of corticosteroids can result in increased bone loss. The richest sources of calcium in food are from dairy, fish with edible bones (e.g., sardines and canned salmon) and dairy alternatives that have been fortified with calcium. It is recommended that we all include 3-4 serves of dairy (or alternatives) daily to meet requirements. One serve of dairy includes 1 cup milk, 1 tub yoghurt or 2 slices cheese.

Magnesium has a role in the body's energy production and also important for calcium regulation and bone health. People with chronic or severe diarrhoea, like some patients with IBD, will have increased magnesium loss. However, it is important to note that magnesium supplementation can also act as a laxative and induce diarrhoea. Dietary sources of magnesium include spices, nuts, leafy green vegetables (such as spinach), soybean and cocoa.

2. Treating inflammation with diet

Treatment of IBD is aimed at achieving clinical and endoscopic remission, meaning good symptom control, healing the intestinal mucosa and preventing flare-ups. There are many different types of medications that are used to achieve remission, but maintenance of remission is also very important. Your treating doctor will guide you on your treatment plan and discuss with you the need for therapy and its safety. It is very important that you take the medications prescribed by your doctor, even if you are feeling well, to ensure that you achieve and maintain remission and reduce the risk of flare-ups.

The only dietary therapy that has been shown to induce remission is exclusive enteral nutrition (EEN) and this is only the case for CD. Discuss with your treating doctor if EEN is a suitable treatment option for you.

Exclusive Enteral Nutrition (EEN)

EEN describes a therapy where all food and drink (except water) is removed and replaced with a liquid nutritional supplement for 6-8 weeks. To date, it is mostly used in children with CD with good evidence of showing that it is similar to corticosteroids for inducing clinical remission and superior for healing the bowel. It also promotes weight gain and improves vitamin D status and quality of life. In adults, the results have been more variable, possibly because it is more difficult to stick to the diet. Removal of food is difficult for many people and, unfortunately, mixing enteral nutrition with food (called partial enteral nutrition) is not as effective in the treatment of IBD. EEN should be commenced and monitored under the guidance of both a gastroenterologist and dietitian.

Diets promoted to treat inflammation in IBD

Since the emergence of EEN, we can no longer deny that diet may help to treat inflammation in IBD. Unfortunately, we do not know the exact food components that are involved in disease activity. However, there have been many theories that have arisen. Most research have been limited to laboratory and animal studies and have targeted specific food components that are thought to induce inflammation, such as specific dietary emulsifiers and thickeners. While results are promising, there are no human studies to support these results and we do not yet have the knowledge in food composition to transpose the information into a useable diet. There are many research groups around the world who are investigating the role of diet in treating inflammation in IBD, so while we have no proven therapeutic diet yet, the use of diet in managing IBD may change in the future.

Diets claiming to treat IBD

There are many diets promoted on the internet and by complementary and alternative medicine practitioners to treat IBD. Anecdotally, some of these diets do work in a proportion of people to help control symptoms and sometimes improve inflammation. However, many of these diets are extreme and remove entire food groups, promote strict compliance (i.e., no cheating) and are used for an undefined period of time. Particularly if the diet is ongoing, this may be concerning for nutritional adequacy. It is recommended that you discuss the consideration of adopting any restricted diet with both your gastroenterologist and dietitian.

3. Symptom management using diet

Gastrointestinal symptoms, such as abdominal pain, diarrhoea, bloating and constipation, may not be indications of inflammation. People with IBD are three times more likely than the general population to have symptoms related to how the bowel is functioning rather than due to bowel inflammation (called functional gut symptoms), otherwise known as irritable bowel syndrome (IBS). This is why it is important to ensure that the presence and degree of inflammation is not based only on symptoms. Your doctor will interpret various tests and guide you as to whether your symptoms are inflammatory (active IBD) or functional (IBS) or both. Below is a table that describes symptoms commonly seen in both IBD and IBS versus symptoms that are only seen in IBD.

Table: Common symptoms of both IBD and IBS compared to symptoms seen only in IBD

IBD & IBS	IBD only
Abdominal pain	Blood in stools
Bloating & abdominal distension	Noctural (over-night) diarrhoea
Diarrhoea & defaecation urgency	Weight loss
Constipation	Fever
Altered bowel habits	
Fatigue	

Irritable bowel syndrome (IBS)

IBS is more common than IBD, affecting approximately 10% of the general population, but a greater percentage of people with IBD. Unlike IBD, there is *no bowel inflammation from IBS*. IBS refers to the 'function' of the bowel and describes an increase in the sensitivity rather than inflammation of the bowel in the majority of IBS sufferers. The diagnosis of IBS is made based on the presence of symptoms and the absence or minimal levels of inflammation seen on colonoscopy, bowel imaging and/or stool and blood tests. This is why it is so important to determine whether your symptoms are from bowel inflammation or IBS. Medications that treat IBD are targeted to reduce inflammation (and symptoms related to the inflammation), but they do not work well in controlling the IBS symptoms.

Alternatively, diet helps to treat up to three-quarters of people with IBS. The diet with the most amount of evidence that helps the biggest percentage of people with IBS is a low FODMAP diet. FODMAP is an acronym of the names of molecules found in food that are absorbed poorly: fermentable oligosaccharides, disaccharides, monosaccharides and polyols. A low FODMAP diet aims to reduce foods containing poorly absorbed, short-chain carbohydrates that lead to a production of gas and fluid in the bowel. See the table below for some examples of foods containing FODMAPs and the low FODMAP alternatives. Even though the reduction of dietary FODMAPs may reduce symptoms, FODMAPs are prebiotic, meaning they stimulate the growth of good bacteria in the gut that is thought to be beneficial for general bowel health. It is for this reason that a low FODMAP diet should be guided by a dietitian so that you can find the minimal level of FODMAP restriction that is needed to control symptoms. Additionally, if you are at risk of any nutritional deficiencies, a dietitian will consider this in your overall management to ensure that both symptom control and health are not compromised.

Table: Examples of high FODMAP foods and low FODMAP alternatives

High FODMAP foods	Low FODMAP alternatives
Wheat, rye, barley	Rice (all varieties), plain rolled oats, buckwheat
Onion, garlic, leek	Potato, zucchini, green beans, capsicum, tomato, carrots
Apples, pears, stone fruit	Most berries, kiwifruit, orange
Milk, yoghurt	Lactose-free milk, lactose-free yoghurt, hard/ripened cheese
Legumes (e.g., lentils, chickpeas, kidney beans)	All meat, chicken, fish, eggs, plain tofu

Gluten-free diet

It is well known that a gluten-free diet treats coeliac disease, which is an inflammatory condition that is very different to IBD. While a gluten-free diet will help to heal inflammation in coeliac disease, it will not treat inflammation in IBD. However, many people with IBD feel better on a gluten-free diet because a gluten-free diet is often used to treat IBS symptoms. Unlike people with coeliac disease, people applying a gluten-free diet for IBS symptoms often do not need to be strict in following the diet (e.g., cross-contamination of gluten and gluten as a minor ingredient is well tolerated). It is important to note that gluten-containing grains also contain FODMAPs, so people feel better because FODMAPs are incidentally reduced. If you do not feel any improvement in symptoms on a gluten-free diet, you do not have to follow the diet.

Low fibre diets

Anecdotally, many people find that they feel better on a modified or low fibre diet during times of flare. Sometimes, even a low residue diet is applied. This is a diet that reduces all undigested food components that will contribute to stool. However, these diets are generally not recommended for people with mild or moderate disease. These diets can be very restrictive and increase the risk of nutritional inadequacy. Furthermore, a high fibre diet during times of remission has been associated with reduced risk of flare in people with UC. If a modified or low fibre diet does not help with symptom control, it is not recommended that you follow it. The only time that it is necessary that fibre be restricted is for severe disease (particularly small bowel disease) and/or if you have or are at risk of certain complications of IBD, particularly bowel obstruction, due to a narrowed part of the bowel.

Other diets

Sometimes specialised diets may be recommended for complications of IBD, such as a low oxalate diet if you have kidney stones or matching fat intake with medications if you have fat malabsorption. Your treating doctor and dietitian will guide you on these diets if they are indicated.

4. Prevention of IBD in people at high risk

There is a genetic component to the development of IBD; for example, first-degree relatives (a parent, brother, sister or child) with IBD are at 10-fold higher risk of developing IBD than the general population. However, environmental factors play a greater role in disease development. Unfortunately, there is not much known about lifestyle and the development of IBD, except that cigarette smoking will increase the risk of developing CD and will worsen disease outcomes. Not much is known about specific foods and their contribution to the risk of developing IBD, because it is very difficult to work out what people were eating for the years prior to the development of the disease. There have been multiple theories developed related to sugar intake, the type of fats people eat, how much protein is consumed and how we store food. There are also theories around one or many food additives (e.g., additive emulsifiers and thickeners). While arguments can be made for these theories, the scientific basis of them is not proven. Hence, there are no specific recommendations for prevention of IBD at the current time.

However, a few recommendations can be made, based upon limited information and lots of common sense. First, many of the additives to food that are being investigated for their relationship to the development of IBD are found in manufactured foods. Generally, it is not a bad idea to limit the intake of a lot of manufactured foods in people at risk of developing IBD. Secondly, a diet rich in fruit and vegetables may be protective of IBD development. Such a dietary practice has benefits for health in general. Thirdly, excessive consumption of animal protein may carry some risk, especially for UC. While meat is an excellent dietary source of protein and micronutrients like iron and zinc, too much can carry risks for other conditions such as cancer of the bowel. Fourthly, a balanced diet comprising five food groups (vegetables, fruit, grains, meat/alternatives, dairy/alternatives) and limiting foods high in fat, sugar and alcohol will promote general health and reduce risk of developing all chronic diseases. Lastly, breastfeeding for at least three months appears to be protective for the infant at risk of IBD development and should be encouraged, if possible.

5. Find your nearest IBD dietitian

An IBD dietitian keeps up to date with current research and can help you sort fact from fiction and use evidence-based strategies to complement treatment provided by your gastroenterologist.

For IBD diet resources (fact sheets and videos) and to find your nearest IBD Dietitian visit https://deccanibd.org or scan the QR code.

An IBD Dietitian can help with:[1]

- Ensuring someone with IBD gets all essential nutrients, which may be particularly important for those with Crohn's disease who have impaired absorption of nutrients;
- Provide diet therapy to treat active disease, in conjunction with the treating gastroenterologist;
- Changing diet to help control gut symptoms, such as abdominal pain, bloating, diarrhoea, constipation, which may or may not be related to gut inflammation;
- Guiding specialty diets if needed for complications of IBD, such as bowel obstruction, fat malabsorption, kidney stones; and
- Optimising nutrition to help with recovery of surgery, if needed.

deccan
Dietitian Crohn's Colitis Australian Network

Reference: 1. Deccan, Dietitian Crohn's Colitis Australian Network: https://deccanibd.org

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or visit **patients.ferring.com.au**
to access IBD information and resources.

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